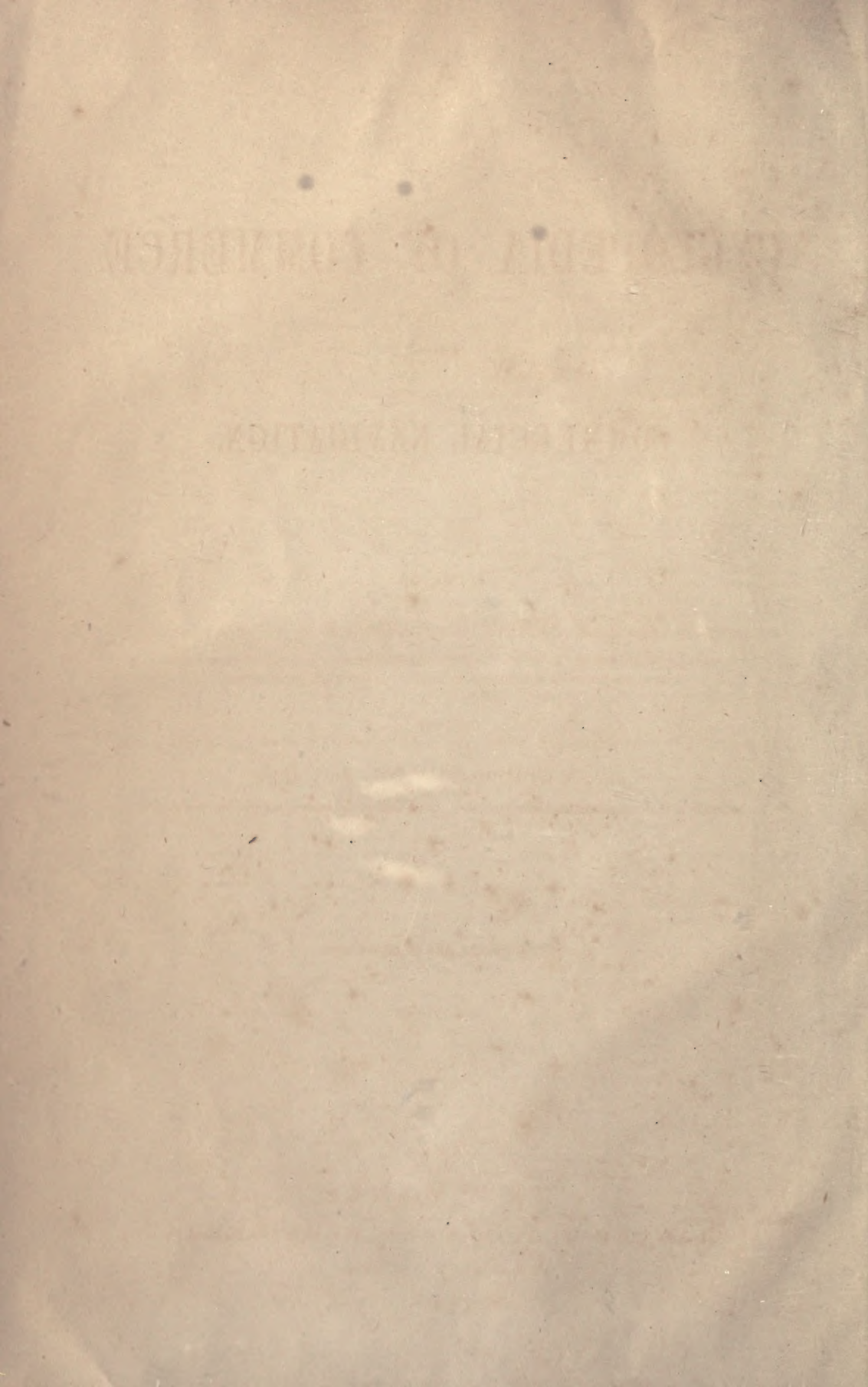


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CYCLOPEDIA OF COMMERCE

AND

COMMERCIAL NAVIGATION.

EDITED BY

J. SMITH HOMANS,

(i.e., Isaac Smith Homans)

CORRESPONDING SECRETARY OF THE CHAMBER OF COMMERCE OF THE STATE OF NEW YORK,

AND EDITOR OF "THE BANKERS' MAGAZINE AND STATISTICAL REGISTER;"

AND BY

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AUTHOR OF "AN HISTORICAL AND STATISTICAL SKETCH OF THE FOREIGN COMMERCE OF THE U. S."

With Maps and Engravings.

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NEW YORK:

HARPER & BROTHERS, PUBLISHERS,

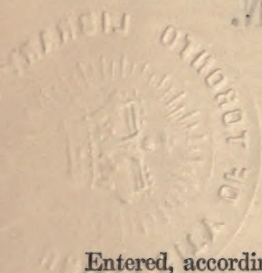
FRANKLIN SQUARE.

1858.

CYCLOPEDIA OF COMMERCE

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COMMERCIAL NAVIGATION



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5-23 P. 1880

5519 Trade and Navigation

NEW YORK:

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FRANKLIN SQUARE

1858

Imports.—The value of imports, both from Austria and other countries, was, in the same year, 68,514,437 florins, or £6,851,443. Foreign countries, it must be added, enter only for one fourth of this intercourse, the rest belongs entirely to the Austrian dominions. Since the end of the late war the custom-duties between Hungary and Austria have been abolished. In how far this change has hitherto affected the commerce of the former, would, in consequence of its abnormal political state, be difficult to decipher, even if the requisite data had been made public. As difficult would it be to form a sure estimate of the revenue and expenditure of Hungary since the late war, as both rest on momentary arbitrary measures undertaken either as precautions against revolution or in consequence of the periodical sickness of the Austrian finances. Ample data, however, are extant as to the public revenue and expenditure of Hungary before 1848. The chief sources of revenue up to that date were—the house-tax, war-tax, the toll duties, the crown and fiscal domains, and salt revenues, which, with the minor sources of income, such as the lottery, the post-office, and the mines, yielded, according to Fenyecs, £3,400,000, a sum less than that of Lombardy, but more than sufficient to cover public expenses, in consequence of the internal organization of the counties, where the salaries of the constitutional officials were but nominal. In the new régime a not unimportant item in the public revenue is the tobacco monopoly introduced into the Hungarian dominions by an imperial edict of November, 1850. By this edict no one may cultivate tobacco, except by previous permission, specifying the place and mode of cultivation, each owner being obliged to deliver up his produce to the government, which determines its value. The monopoly in itself, no less than the domiciliary visits to which it gave rise, greatly injured this thriving branch of Hungarian industry. A great many, indeed, have in consequence of this given up its cultivation, dispensing even with its use.—E. B.

For commerce of Hungary, see HUNT'S *Mag.*, xxi., 191 (CASSALI); DE BOW'S *Review*, xiii., 433; *Races of Hungary*; *Nor. Am. Rev.*, lxx., and lxxii.; *Ch. Exam.*, xlviii., 44.

Huron, Lake, one of the five great lakes of North America, lies between Lake Superior on the north-west, Lake Michigan on the west, and Lake Erie and Lake Ontario on the south and south-east: Its shape is so irregular that it is difficult accurately to determine its exact dimensions. Its length from north to south is 260 miles, and 160 miles in breadth from east to west, in its widest part, but exclusive of the bay on the north-east, it is only 90, and its circumference 1100 miles. Its principal indentations are Saginaw Bay, extending into Michigan, and two others; one immediately north of Manitou Islands, and the other south-east of them. The latter, called Georgian Bay, is about 170 miles long, by 70 broad; almost a separate sheet of water, divided from Huron by a nearly continuous series of islands which are closely connected by the great peninsula of Cabot's Head, and with Point de Tour, the easternmost cape of northern Michigan. Manitou (or Great Spirit) Island is the largest of the group, and Drummond Island separates another sheet of water from the main lake, 80 miles long and 20 broad. The boundary between the United States and Canada passes along the middle of the main Huron 225 miles, and between Lesser Manitou and Drummond Islands, by what is called the Middle Passage, and curves round to the north and west 25 miles, to the entrance of St. Mary's river. The elevation of the surface of Lake Huron above the surface of the ocean is 574 feet, or less than that of Lake Superior by 53 feet, or than that of Lake Michigan by 4 feet.

The greatest depth toward its west shore is at least 1000 feet, and its mean depth 900 feet, or about 800 feet below the level of the Atlantic. See LAKES.

Hurricane (Sp. *Huracan*), a violent storm, generally accompanied by thunder and lightning, and distinguished from every other kind of tempest by the vehemence of the wind, and the sudden changes to which it is subject. Hurricanes prevail chiefly in the East and West Indies, the Isle of France, and in some parts of China. The following graphic description of the usual phenomena attending the West Indian hurricanes, from the pen of Edmund Burke, may be interesting to the reader: "It is in the rainy season, principally in the month of August, more rarely in July and September, that they are assailed by hurricanes, the most terrible calamity to which they are subject from the climate. This destroys at one stroke the labor of many years, and frustrates the most exalted hopes of the planter, and often just at the moment when he thinks himself out of the reach of fortune. It is a sudden and violent storm of wind, rain, thunder, and lightning, attended with a furious swelling of the sea, and sometimes with an earthquake; in short, with every circumstance which the elements can assemble that is terrible and destructive. First they see, as a prelude to the ensuing havoc, whole fields of sugar-canes whirled into the air, and scattered over the face of the country. The strongest trees of the forest are torn up by the roots and driven about like stubble. Their wind-mills are swept away in a moment. Their works, their fixtures, the ponderous copper boilers and stills of several hundred weight, are wrenched from the ground and battered to pieces. Their houses are no protection; the roofs are torn off at one blast, while the rain, which in an hour rises 5 feet, rushes in upon them with an irresistible violence. There are signs which the Indians of these islands taught our planters, by which they can prognosticate the approach of a hurricane. It comes on either in the quarters, or at the full or change of the moon. If it will come on at the full moon, you being at the change, observe these signs. That day you will see the sky very turbulent. You will observe the sky more red than at other times. You will perceive a dead calm, and the hills clear of all those clouds and mists which usually hover about them. In the clefts of the earth, and in the wells, you will hear a hollow, rumbling sound, like the rushing of a great wind. At night the stars seem much larger than usual, and surrounded with a sort of burs. The north-west sky has a sort of menacing look, and the sea emits a strong smell, and rises into vast waves, often without any wind. The wind itself now forsakes its usually steady easterly stream, and shifts about to the west, from whence it sometimes blows with intermissions violently and irregularly for about two hours at a time. You have the same signs at the full of the moon. The moon itself is surrounded with a great bur, and sometimes the sun has the same appearance."

Hydrographical Charts or Maps, usually called sea-charts, are projections of some part of the sea or coast for the use of navigation. In these, are laid down all the rhumbs or points of the compass, the meridians, parallels, etc., with the coasts, capes, islands, rocks, shoals, shallows, etc., in their proper places and proportions.

Hydrography, the art of measuring and describing the sea, rivers, canals, lakes and the like. With regard to the sea, it gives an account of its tides, countertides, soundings, bays, gulfs, creeks, and also of the rocks, shelves, sands, shallows, promontories, and harbors; the distance and bearing of one port from another, with every thing that is remarkable, whether out at sea or on the coast.

I.

Ice. The sale of ice and snow preserved in the caverns of Vesuvius and on the more elevated parts of Ætna, has long been a considerable branch of trade in Naples, Catania, and the adjoining towns; but it was reserved for the Americans to carry the trade in ice to an extent which could not previously have been anticipated. The extreme heat of the summer in the New England States occasions a natural demand for ice, which the extreme cold of the winter gives the means of supplying. The fresh water lakes adjoining Boston and other large towns being deeply frozen in winter, large ice-houses are filled with the ice taken from them, which is retailed in summer at a low price. The practice had not, however, been long established till it occurred to some ingenious speculators to attempt to realize a profit by shipping ice to the southern parts of the Union and the West Indies: and the speculation having succeeded, the trade was subsequently extended to the Spanish Main and South America, and more recently to Europe, India, and China! The business has, in fact, become of the first importance; numerous companies and a very large amount of tonnage being now engaged in the ice trade from Boston. And owing to the greater skill and economy with which the business is at present conducted, the ice which used a few years ago to cost 6 cents per lb. in New Orleans and Havana, may now be had for 1 cent; and there has been a like fall in its price in India and other more distant places. An immense warehouse has recently been constructed at Calcutta for the reception of the ice brought by the ships, whence it is supplied in the quantities required for the public accommodation. This singular fabric has triple walls, five distinct roofs, incloses about three fourths of an acre, and is fitted to hold upward of 30,000 tons of ice! It is said that a similar dépôt is about to be formed at Canton.

The Ice Trade of the United States.—The ice trade of the United States was commenced by Mr. Frederic Tudor, of Boston, in 1805. This gentleman, having previously sent agents to the West Indies to procure information, determined to make his first experiment in that region. Finding no one willing to receive so strange an article on shipboard, he was compelled to purchase a vessel, the brig *Favorite*, of about 130 tons, which he loaded with ice from a pond in Saugus, Massachusetts, belonging to his father, and sent to St. Pierre, Martinique. This first enterprise resulted in a loss of about \$4500, but was, nevertheless, followed up until the embargo and war put an end to the foreign trade, at which period it had yielded no profit to its projector. Its operations had been confined to Martinique and Jamaica. After the close of the war with England in 1815, Mr. Tudor recommenced his operations by shipments to Havana under a contract with the government of Cuba, which enabled him to pursue his undertaking without loss, and extend it, in 1817, to Charleston, South Carolina; in the following year to Savannah, Georgia; and in 1820, to New Orleans. In the mean time it had been tried again (by other parties) at Martinique and St. Thomas, and failed, and by Mr. Tudor at St. Jago de Cuba, where it also failed, after a trial of three years.

On the 18th May, 1833, the first shipment of ice was made to the East Indies by Mr. Tudor in the ship *Tuscany*, for Calcutta, and since that period he has extended his operations to Madras and Bombay. Previously to 1832 the trade had been chiefly confined to the operations of the original projector, although several enterprises had been undertaken by other persons, and abandoned. The increase of shipments to this period had been small, the whole amounting, in 1832,

to 4,352 tons, which was taken entirely from Fresh Pond, in Cambridge, and shipped by Mr. Tudor, who was then alone in the trade. Up to this time the ice business was of a very complicated nature. Ship-owners objected to receive it on freight, fearing its effect on the durability of their vessels and the safety of voyages; ice-houses at home and abroad were required, and the proper mode of constructing them was to be ascertained. The best modes of preparing ships to receive cargoes were the subject of expensive and almost endless experiments. The machines to cut and prepare ice for shipping and storing, and to perform the operations of hoisting it into store-houses and lowering it into the holds of vessels, were all to be invented, involving much expense and vexation. Many of these difficulties have now been overcome, and since 1832 the trade has increased much, and appears destined to a still more rapid increase for some years. It has also been divided among many parties, and its methods have been further improved, and a knowledge of them more widely diffused.

The ice has been chiefly taken from Fresh and Spy Ponds, and since 1841 mainly transported on the Charlestown Branch Railroad, which was constructed for that purpose. Quite recently, ice establishments have been made at most of the ponds near Boston, and it is probable that in a few years the products of all these waters may be required to supply the trade. In the year 1839 the great quantity of ice cut at Fresh Pond, and the consequent difficulties which had arisen among the proprietors, as to where each should take ice, induced them to agree to distinct boundary lines, which were settled by three commissioners, viz., Simon Greenleaf, Levi Farwell, and S. M. Felton, esquires, on the principle of giving to each the same proportion of contiguous surface of the lake, as the length of his shore-line was to its whole border. This settlement was made by partition deed, executed by all the owners, and recorded in the registry of deeds of Middlesex county. Published maps were also placed in public institutions and private hands. These maps show the direction and length of the boundary lines of each owner, and the area. This arrangement has been of great advantage to the parties, and enabled them to secure more ice than could otherwise be taken from a pond of equal extent.

The shipments of ice from Boston coastwise for the year ending December 31st, 1847, amounted to 51,887 tons. The ice shipped to foreign ports during the same period amounted to 22,591 tons, and was sent to the following places, viz.; Havana, Matanzas, Trinidad, St. Jago, Cuba, Martinique, St. Thomas, St. John's, Mayaguez, Porto Rico, Guadaloupe, Barbadoes, Trinidad, Antigua, St. Vincent, Nassau, Jamaica, Pernambuco, Demerara, Honduras, Vera Cruz, Rio de Janeiro, Mauritius, Isle of Bourbon, Manilla, Calcutta, Madras, Bombay, Ceylon, Hong Kong, Whampoa, Batavia, and Liverpool.

The freight paid during this year is supposed to have averaged as high as \$2 50 per ton, at which rate it would amount, on the 74,478 tons shipped abroad and coastwise, to \$186,195. There is a great variation in the cost of securing ice and stowing it on board vessels, caused by winters favorable or otherwise for securing it, and by the greater or less expense of the fittings required for voyages of different duration, or by difference of season when the shipments are made. Taking all these contingencies into consideration, the cost of ice when stowed on board may be estimated to average \$2 per ton, which would give for the quantity shipped \$148,956. There were in 1847 upward of 29 cargoes of provisions, fruits, and vegetables shipped in

ice to ports where otherwise such articles could not be sent—say to Barbadoes, Trinidad, Demerara, Antigua, St. Vincent, Guadaloupe, St. Thomas, Honduras, and Calcutta—the invoiced cost of which at Boston would average about \$2500 each, \$72,500. To these items may be added the profits of the trade to those engaged in it, \$100,000. Total returns, \$507,651.

The ice trade has been without doubt one of the main stays which preserved the Calcutta trade almost exclusively to Boston, and it would do so for China if that country were in a more quiet condition. The freights paid to India by Mr. Tudor for ice amount to from 10 to 15 per cent. of the earnings for the whole run of the ship out and home, and it is earned without cost or deduction to the charterer or ship-owner.

It is probable that the commercial marine of the United States has been materially increased by the operation of the ice trade. A large portion of the vessels formerly engaged in the freighting trade from Boston sailed in ballast, depending for remuneration on freights of cotton, rice, tobacco, sugar, etc., to be obtained in more southern latitudes, often competing with the vessels of other nations which could earn a freight out and home. Now a small outward freight from Boston can usually be obtained for the transportation of ice to those places where freighting vessels ordinarily obtain cargoes. The ice trade has generally been unsuccessful to places where profitable return freights can not be obtained, because to such places a heavy freight must be paid on the ice, which it can not bear; and also because southern places which do not produce valuable exports, are usually unable to consume expensive luxuries.

The methods and materials for preparing vessels for the transportation of ice have been various. Formerly their holds were sealed up at the sides, bottom, and top, with boards nailed to joist ribs secured to the skin of the vessel, and with double bulkheads forward and aft. The spaces thus formed were filled with refuse tan, rice-hulls, meadow-hay, straw, wood-shavings, or like materials. These spaces were made of a thickness proportionate to the length of the voyage, and with reference to the season. The immediate surface of the ice was covered with the same materials, excepting tan. At the present time saw-dust is used almost exclusively for voyages of considerable length. It is placed immediately between the ice and the skin of the vessel. This material is obtained from the State of Maine, and before its use for this purpose was entirely wasted at the water-mills, and, falling into the streams, occasioned serious obstructions. During the year 1847, 4600 cords were brought to Boston, at an average value of \$2 50 per cord, delivered. The lumber is also wholly from the State of Maine. The value of it is, however, small, in the present mode of fitting vessels. Almost the whole value of the returns of the ice trade, including freight, is a gain to this country. The ice itself, the labor expended on it, the materials for its preservation, and the means of its transportation, would be worthless if the trade did not exist. The prices at which ice sells in places where there is competition vary constantly. In Havana, where it is a monopoly, it is sold at 6½ cents per pound, and there the trade has not increased since 1832, when the shipments were 1112 tons, while at New Orleans, where it has been sold at from half a cent to three cents per pound, it has increased during the same period from 2310 tons to upward of 28,000. At Calcutta the trade commenced, in 1833, with a shipment for that year of 201 tons, and the price has never been above 6 cents per pound, and is now about 2½ cents. The export to that place had increased in 1847 to 3000 tons, but probably less than one fifth of that quantity is actually sold, owing to the great length of the voyage.

Ice being shipped and used at all seasons, large storehouses are required to preserve it. Exclusive of ice-houses on the wharves at East Charlestown and

East Boston, in which ice is stored for short periods, there had been erected in 1847, and previously:

	Tons.
At Fresh Pond, in Cambridge, ice-houses capable of containing.....	86,782
At Spy Pond, in West Cambridge.....	28,000
At Little Pond " ".....	2,400
At Wenham Pond.....	13,000
At Medford Pond.....	4,000
At Eel Pond, in Malden.....	2,000
At Horn Pond, in Woburn.....	4,000
At Sumner's Pond.....	1,200
Total.....	141,382

The ice-houses now in use are built above ground. In southern countries, where ice is most valuable, they are constructed at great expense, usually of brick or stone, and the protection to the ice consists in air spaces, or in dry, light vegetable substances inclosed between two walls. In this vicinity, on the borders of the lakes, where ice is least valuable, they are usually built of wood, in which case they are of two walls, formed by placing two ranges of joists upright, framed into plates at the top, and placed in the ground at the bottom, or framed into sills; these two ranges are ceiled with boards secured to that side of each range which is nearest the other, and the space between the two boardings filled with refuse tan wet from the yards. This wet tan is frozen during the winter, and until it is thawed in the spring and summer, little waste occurs; afterward the waste is more rapid, but, as a large portion of the ice is shipped or otherwise used before this takes place, the loss in quantity is small, and, occurring before the expenses of transportation have been paid, is of less pecuniary moment.

In one instance, brick has been used in the construction of an ice-house which covers 36,000 feet of land, and the vaults of this ice-house are 40 feet in depth, and its walls are four feet thick from outside to inside, inclosing two sets of air-spaces. Such a construction is more costly, but has the advantage of durability and safety from fire, to which ice-houses are much exposed from the frequent juxtaposition of railroad-engines, and the light, dry material used about them to cover and otherwise preserve ice. At first, the implements of husbandry only were used in securing ice, but as the trade became more important, other machines and different methods were adopted, and abandoned when better were brought forward, or when the increased magnitude of the business required greater facilities. More ice is now secured in one favorable day than would have supplied the whole trade in 1832. Ordinarily, before there has been cold enough to form ice of suitable thickness, snow falls on its surface. If this occurs when the ice is four or more inches in thickness, and the snow not heavy enough to sink the ice, it can be removed by using horses attached to the "snow-scraper;" and under such circumstances this is the method in common use. But if snow falls so heavy as to bring the water above the surface of the ice, it is removed, after it has congealed into snow-ice, with the "ice-plane," which takes off about two inches deep and 22 inches wide of its surface. This machine is drawn by two horses, and is guided by inserting its "guides" into grooves previously made with the "ice-cutter." The chips made by it are scraped off in the same manner as dry snow. These preliminary expenses are often very great; frequently, after much expense has been incurred to remove a body of snow or snow-ice, the weather becomes warm and spoils the ice on which so much has been expended. And, on the other hand, if it is not done and the cold continues, there will be little or no increase of thickness to the ice, which is equally a disaster.

When ice has been formed of sufficient thickness, and freed from snow and snow-ice, it is reduced to blocks of uniform size, ordinarily 22 inches square, by the "ice cutter." This machine is similar to a car-

pen's plow, except that it has a series of cutting-chisels, one succeeding another, and deepening the groove. It is drawn by a horse, and cuts at one passage about two inches deep, and if the ice requires to be planed to remove snow-ice, the guides of the "snow-plane" are used in grooves of this depth, but when grooves are required to split from, the "ice-cutter" should be drawn two or three times through each. These grooves should be parallel to each other, and to make them so, the "ice-cutter" has a guide, which is placed in the last groove made. When the grooves in one direction have been made, others at right angles with them are produced in the same manner. After this has been done, one groove at the end is opened, and also the two outside grooves; a wedging-bar is then stricken into the groove next the end one, and at several places along its length, which detaches it easily from the mass; then the same bar is forced, with a slight blow, into the transverse grooves, which reduces the ice to very uniform square blocks. The blocks of ice thus formed are brought to the receiving-doors of the ice-houses (which are built on the immediate borders of the ponds), either by placing them on sleds, or floating in canals cut through the ice. Various modes of elevating the ice are in use; the endless chain, in combination with the inclined plane, has been successfully used, and also the common pile-driving steam-engine; but at present horse-power is more used than any other. The ice is placed in the houses in regular courses, every block exactly covering the next below it. When a vault has been filled, it is immediately covered with wood-shavings and the receiving-doors fitted up, to prevent waste, until the contents are required for shipment abroad or use at home. The weight of ice for shipment is usually determined at the wharves, immediately before being put on shipboard, on scales which have been constructed for the purpose; and this single operation settles the weight to be paid for by the party for whose account the ice is shipped; the amount due for freight on shipboard, for transportation on the railroad, and that which is to be received by the owner of the ice.—*American Almanac, year 1849.*

The aggregate of freights paid for ice shipped in Boston in 1856, was \$2 50 the ton, clean and clear to the ship-owner; therefore he received from this trade last year \$365,000 (a large interest), and probably more profit than any other interest whatever in the business. Railroads and wagons were paid \$100,000; laborers, \$160,000; towns, for taxes of ice privileges and ice in store, \$1500; and wharves \$20,000 to \$25,000. There are 93 wagons and about 150 horses employed in distributing ice in Boston and vicinity; 60,000 tons are thus retailed, supplying 18,000 families, hotels, stores, and factories.

The tons of ice prepared for market, its value, capital invested, and number of persons employed in this business in Massachusetts, in the year 1855, are shown in the annexed summary:

Counties.	Tons prepared for market.	Value annually.	Capital invested.	Hands employed.
Bristol.....	16,200	\$10,000	\$16,000	10
Essex.....	13,900	76,200	25,000	65
Middlesex.....	366,200	550,400	660,700	362
Plymouth.....	800	2,500	3,000	8
Total.....	397,100	\$639,100	\$704,700	445

The annual domestic consumption of ice in the chief cities of the United States is estimated as follows:

Tons.	Tons.
Boston..... 60,000	Charleston..... 15,000
New York..... 300,000	Mobile..... 15,000
Philadelphia..... 200,000	New Orleans..... 40,000
Baltimore..... 45,000	St. Louis..... 25,000
Washington..... 20,000	Cincinnati..... 25,000

In the smaller towns, especially in those where water is introduced by reservoirs, the consumption of ice is about two thirds as great in proportion to their population as in the larger cities.

New York, up to this time, has exported but little ice, being chiefly engaged in procuring an amount sufficient for its domestic supply. New York city and vicinity is, for the most part, supplied with ice by four or five joint-stock companies. The amount of ice placed in storage for the winter of 1856-7, by these various companies, is estimated as follows:

	Tons.
Knickerbocker Ice Co.....	250,000
New York and Brooklyn Co.....	40,000
People's Co.....	20,000
Independent Co.....	20,000
Passaic Co.....	7,000
Total.....	387,000

The Knickerbocker Company, which engrosses a large proportion of the business, is a consolidation of three separate concerns into one company, with a capital of \$300,000. Its supply of ice is derived from Rockland and Highland lakes. The New York and Brooklyn Company obtains its supply from the Hudson River at Athens; the Independent from the same place; the People's from the same river at Catskill; and the Passaic from the reservoir at Jersey City.

Export Trade.—The export of ice during the year 1856, from Boston, has been as follows:

	Tons.		Tons.
East Indies.....	14,380	Port Spain.....	704
Peru.....	1,194	Pernambuco.....	257
Callao.....	6,744	Martinique.....	211
Melbourne, Australia.....	596	South America.....	375
Sydney, N. S. W.....	520	Cuba.....	314
Valparaiso.....	614	Bahia.....	375
Guyana.....	1,028	Porto Rico.....	181
Ceylon.....	467	Masanilla.....	57
Rio Janeiro.....	1,762	Nassau, N. P.....	180
Havana.....	5,801	Remedios.....	10
Demerara.....	1,100	Bermuda.....	40
Montevideo.....	898	Rio Hache.....	10
Kingston, Ja.....	1,594	Southern ports.....	81,895
Aspinwall.....	557		
Cardenas.....	422	Total, 1856.....	125,814
St. Thomas.....	778	" 1855.....	98,080
Buenos Ayres.....	530	" 1854.....	115,315
Brazil.....	43	" 1853.....	82,792
Barbadoes.....	877	" 1852.....	96,482
St. Jago.....	445	" 1851.....	99,787
Matanzas.....	605	" 1850.....	99,623
New Granada.....	390	" 1849.....	66,308
Laguaira.....	218	" 1848.....	57,507
Porto Cabello.....	50	" 1847.....	54,625

The total capital invested in the ice business is \$700,000, and the total quantity gathered 397,000 tons, about one third only of which is exported.

EXPORTS OF ICE FROM THE UNITED STATES, FOR EACH YEAR ENDING JUNE 30TH, 1853, 1854, AND 1855.

Countries.	1853.	1854.	1855.
	Value.	Value.	Tons.
Danish West Indies.....	\$2,059	\$4,099	1,525
Dutch East Indies.....	7,705	.....	2,180
England.....	4,506	585	791
Gibraltar.....	520	.....	.....
British East Indies.....	62,040	108,819	9,084
British Guiana.....	69	683	927
British West Indies.....	22,064	12,236	8,880
Australia.....	1,191	4,409	495
French West Indies.....	3,416	1,675	428
Spain on the Mediter.....	960	309	271
Manilla.....	3,189	1,500	997
Cuba.....	38,402	25,273	7,645
Spanish West Indies.....	2,522	916	.....
Portugal.....	343	300	285
Mexico.....	1,055	2,450	36
Central Republic.....	245	.....	20
New Granada.....	4,030	4,768	180
Venezuela.....	68	134	.....
Brazil.....	8,523	11,071	3,109
Peru.....	14,186	16,286	5,881
Chili.....	2,932	4,905	1,587
China.....	900	553	.....
Africa.....	2,965	.....	.....
Canada.....	.....	12	.....
British Amer. colonies.....	.....	675	506
France.....	.....	.....	54
Porto Rico.....	.....	.....	197
Cape de Verd Islands.....	.....	.....	600
Buenos Ayres.....	.....	.....	288
Ecuador.....	.....	.....	808
Total.....	\$175,056	\$202,118	41,117

From this statement it would appear that the British East Indies absorb the largest quantity of ice from this region. Cuba next, and Peru the third in import-

ance. At present the aggregate is very trifling, but as fast as the article becomes known in southern climates, it will be more appreciated, and will become a permanent article of export from Boston, where the shipments are principally made. For Ice-houses, see CAREY'S *Mus.*, xii., 175. Ice Trade, etc., see HUNT'S *Mag.*, v., 444, xi., 877; *Jour. of Sci.*, iii., 179, ix., 136, xlvii., 179, xlviii., 373; *Bankers' Mag.*, iii., 406; *Am. Elec.*, iii., 307, 512 (LOUIS AGASSIZ), iv. i.

Icebergs. The accumulation upon elevated situations of frozen snow, produces those moving masses of ice called *glaciers*. In the Alps, and in Norway, these glaciers coming down to a mild region melt away; but in the arctic regions, they often flow into the sea and produce icebergs. While floating about, these masses may increase indefinitely in size, from receiving fresh accessions of snow, or by the freezing of the water continually splashed against them, as well as by the sudden freezing of the water which falls as rain. They are of all sizes, from mere fragments to upward of half a mile in diameter, and of all weights, from a few pounds to 100,000 tons. They rise sometimes 150 feet above the water, and this is but an eighth of the whole mass. They float about in hundreds, and are often driven by winds far into the ocean, and become exceedingly dangerous to navigation. Icebergs from each pole have approached nearer the equator than 40° north and south latitude; they have been met with in the neighborhood of the Cape of Good Hope. Many of these icebergs originating on land, present the same phenomena as glaciers. Hence, upon near inspection, they are found to be loaded with the debris which, as glaciers, they scraped off the mountain sides, past which they flowed to the sea. This debris contains masses of greenstone, clay-slate, gneiss, granite, etc. In the polar circle, where the floating masses reach to many hundreds of miles in length, they are called *ice islands*. When two of these approach each other, any vessel which happens to be between them is almost certain to be crushed to pieces. The larger of the two, by its greater momentum, urges itself beneath the smaller, which is thus tilted up on the shoulders of the larger, whose mass it goes to increase. The *iceblink* is an appearance produced on the horizon by these ice islands when stationary, and which indicates the existence of an ice-island before it is itself visible.

Ice-boats, boats so constructed as to sail upon ice, and which are very common in Holland. They go with incredible swiftness, sometimes so quickly as to affect the breath, and are found very useful in conveying goods and passengers across lakes and great rivers. Boats of different sizes are placed in a traverse form upon a 2½ or 3 inch deal board. At the extremity of each end are fixed irons, which turn up in the form of skates. Upon this plank the boat rests, and the two ends serve as outriggers to prevent oversetting, whence ropes are fastened that lead to the head of the mast in the nature of shrouds, and others passed through a block across the bowsprit. The rudder is made somewhat like a hatchet with the head placed downward, which being pressed down, cuts the ice, and serves all the purposes of a rudder in the water, by enabling the helmsman to steer.

Ice Islands, a name given by sailors to a great quantity of ice collected into one huge solid mass, and floating about the seas near or within the polar circles. The motion of the lesser pieces is as rapid as the currents; the greater, which are sometimes 200 leagues long, and 60 or 80 broad, move slowly and majestically; often fix by the tide, immovable by the power of the ocean, and then produce near the horizon that bright white appearance called the *iceblink*. The approximation of two great fields produces a most singular phenomenon; it forces the lesser (if the term can be applied to pieces of several acres square), out of the water, and adds it to the surface:

a second and often a third succeeds, so that the whole forms an aggregate of a tremendous weight. These float in the sea like so many rugged mountains, and are sometimes 500 or 600 yards thick; but the far greater part is concealed beneath the water. These are continually increased in height by the freezing of the spray of the sea, or the melting of the snow which falls on them. Those which remain in this frozen climate receive continual additions; others are gradually wafted by the northern winds into southern latitudes, and melt by degrees by the heat of the sun, till they waste away, or disappear in the boundless element.

Iceland, one of the largest islands in Europe (being little inferior, in point of superficial extent, to Ireland), is situated in the north part of the Atlantic Ocean, between N. lat. 63° 23' 30", and 66° 32'; and W. long. 13° 32' 14", and 24° 34' 14"; the north point being thus very near to the arctic circle, but not passing beyond it, as all maps but a recent authoritative one have represented it. Its extreme length from east to west is about 280 miles, and its breadth from north to south varies from 180 to 200 miles.

The precise period at which this island was discovered and first colonized is unknown; but from the *Landnamabok*, an ancient Icelandic chronicle, and a work generally relied upon as authentic, we learn that the Norwegians were the first settlers upon its coasts. Naddodr, a famous pirate of that adventurous nation, was, on his return to the Faroe Islands from a predatory excursion, about the year 860, driven by a tempest upon the coast of Iceland. He ascended to the summit of a mountain, but observing around him neither the vestige of a human residence, nor aught else than vast and trackless fields of snow, he immediately abandoned it. Probably aware of this discovery, Gardar Svarfason, a Swede, followed the same track a few years afterward, and succeeding in circumnavigating the country, discovered it to be an island. He there spent the winter; but finding little inducement to make it a permanent residence, he, in the following spring, returned to Norway. The third adventurer on this coast was one Floki, another celebrated Norwegian pirate, who, during the two seasons, explored a considerable portion of the southern and western coasts. His attempt at forming a permanent settlement proved, however, like that of his predecessors, a failure; his cattle died, his expected crops were ruined, and, after experiencing innumerable distresses and hardships from the inclemency of the weather, he determined to repair to a warmer region, and gave to the island at his departure the name by which it has ever since been known. That this name, and the report which he spread on his return of the inhospitable nature of the island, were principally the effect of prejudice and disappointment, is evident from the contradictory account given of it by his companions, one of whom thought he could only convey an adequate idea of its richness and fertility by declaring that butter dropped from every plant.

The ancient Icelanders possessed, as is still the case with their posterity, few of the luxuries or refinements of life; and were occasionally exposed to severe privations, from the nature of their soil, and the climate under which they lived. There is reason, however, to believe, though the fact can not with perfect accuracy be ascertained, that the climate of Iceland was once less austere than it now is; and that not only trees and shrubs, but even corn, were grown upon the island. Of the ancient existence of the former, the trunks occasionally discovered in the bogs afford pretty satisfactory evidence. Grain of any description is not now a native of this island; and a few birches, not rising much more than a yard in height, afford the only approach toward timber. Like the present inhabitants, the ancient Icelanders were much dispersed over the country, their habitations being seldom

grouped together, but placed wherever the situation and nature of the soil appeared suitable. Their occupations and modes of life appear also to have borne much similitude. The produce of the farm, and the capture of fish, afforded them, as they do the present inhabitants, the principal means of subsistence; and their traffic with foreign countries made a valuable addition to their domestic comforts.

Population.—The population of Iceland has undergone considerable vicissitudes through the operation of epidemics. At 50,444 in 1703, it had sunk, in 1769, to 46,201, nor did it rise much above this point throughout the remainder of the century. In 1850 it was 59,157. This is small for an island whose surface is to that of Ireland as four to five; but that surface, both from its own nature, and the character of the climate, is perhaps as unfavorable as any which exists between the limits of the two arctic circles. Deducting the areas of the numerous fiords with which it is intersected, the square contents of the land may be calculated at 37,388 statute miles: but as the centre of the island consists entirely of snowy and uninhabited mountains, the peopled portion can not be considered more than 25,000 square miles; and the population therefore will not much exceed two persons to each square mile. At present the population must be increasing with great rapidity, if we may judge from the proportion of births to deaths, the respective numbers in 1852 being 2435 (of which 333 were illegitimate) and 1437. The whole population is employed either in farming, which occupies about three fourths of the men, or in fishing. Other employments do not exist, nor is there any other class of people or townsmen, save the small number of merchants in Reikiavik and the other trading establishments. Every branch of industry is therefore domestic, and confined chiefly to articles of clothing, such as coarse cloth, gloves, mittens, and stockings. The peasantry are generally ingenious, and manufacture such simple pieces of furniture as their cottages require; some also aspire to make trinkets of silver, and articles from the walrus' tusks. The trade of Iceland has never, till the present time, been managed in what modern science points out as the most advantageous way. The Danish government long had a monopoly of the business of this remote dependency. For many years, while this was abolished, Danish merchants had a preference to trading, by virtue of higher duties exacted from those of other countries. It was not until 1856 that the foreign merchant was encouraged to come to Iceland by a perfect equality of terms. The only place in the island entitled to be considered as a port is Reikiavik: only a few trading stations exist elsewhere. There is an annual export of from 1,000,000 to 1,200,000 pounds of raw wool, besides about 200,000 pairs of knitted stockings, and 300,000 mittens, or gloves without fingers. The Iceland sheep have remarkably fine fleeces of wool, which the farmers, in the spring of the year, take off whole; their weight being usually from four to five pounds. The other principal branch of industry in Iceland is fishing, which must be considered as in a thriving state. The fishing-banks around the island abound in cod and other species, and the number of boats engaged in the business in 1853 amounted to 3506, being an advance of nearly 50 per cent. in 20 years. Fish-oil, whale-blubber, skins, eider-down, feathers, and the *Lichen Islandicus*, for medicinal purposes, may also be included among their list of exports. These the natives dispose of to the Danish merchants in exchange for coffee, sugar, tobacco, snuff, a small quantity of brandy, rye and rye-bread, biscuit, wheaten flour, salt, soap, and such other small articles as are in constant use for domestic purposes. Those who can afford it, purchase a supply of linens and cottons, which of late years have become of more common use, and which must tend greatly to cleanliness, and the prevention of those diseases which wool-

on clothing worn next the skin tends to engender. The traffic thus occasioned takes place in the early part of summer, and while it lasts creates a kind of fair, with no little bustle and business in the capital. All the articles brought from the interior for sale at the sea-ports, and all those taken back for winter consumption, are transported on pack-horses. There is not, in fact, in all Iceland such a machine as a wheel-carriage; before any such can be used, there must be roads, of which, up to the present time, none exist. The lines of transit along the country are mere tracks, cut deep by use where the ground is soft, and encumbered by blocks where it is hard. Yet full as these paths are of difficulties, it is surprising at what a pace the small, hardy, sure-footed horses of the country will proceed. For foot traveling they are in general impracticable.

The revenue of the island, arising from crown property, commercial charges, a small tax on transference of property, etc., amounted in the year ending 31st March, 1854, to 29,949 rix-dollars (£3119), while the expenditure for officers' salaries, educating the clergy, and other items, was 56,743 rix-dollars, or more than double the income, the excess being supplied by the central government. The income, however, appears to be increasing in proportion.

The scanty produce of the land is, however, to a great degree compensated for by the abundance of fine fish which occurs on the coast. In several parts of the island, particularly on the north and north-west, the shark fishery is a regular occupation. Strong hooks fastened to chains are baited and anchored a little way out to sea, and the fish when caught are thus towed to shore. Of the skin, shoes are made; a considerable quantity of oil is extracted, and some parts of the flesh are occasionally smoked and used by the natives for food. The cod is very plentiful; the haddock grows to a large size; ling, skate, flounders, and halibut, are likewise very common; the herring, too, frequents the fiords in vast shoals, but this branch of the fishery has hitherto been little attended to. The salmon in the rivers are said to be very fine, and no country in the world produce them in greater quantity. Seals are particularly numerous on the shores of the Breide-fiord and the western coast. See *Ed. Rev.*, iii., 334 (SYDNEY SMITH), xix., 416; *Quar. Rev.*, liv., 185, xix., 291, vii., 43 (R. SOUTHEY); *Westm. Rev.*, lii., 264; *North Am. Rev.*, xxxv., 75 (O. W. B. PEABODY); *For. Quar.*, ix., 41.

Illinois, one of the United States, is bounded north by Wisconsin, east by Lake Michigan and Indiana, from which it is separated for a third of its length by the Wabash River, south by the Ohio, which separates it from Kentucky, and west by the Mississippi. It lies between N. lat. 37° and 42° 30', and between W. long. 87° 49' and 91° 28'. Greatest length from north to south 378 miles; greatest breadth, 212 miles; average breadth, 140 miles. Its area is estimated at 55,409 square miles, being only about 3000 square miles less than that of England and Wales. According to the census of 1850, little more than a sixth part of the State was under cultivation.

Illinois is one of the most level States in the Union. With the exception of a range of low hills in the south, and a good deal of broken land in the north-west, as well as a few elevations near the Illinois, and some lofty bluffs along the Mississippi, the State may be regarded as an extensive table-land, gently inclining toward the south-west. At the mouth of the Ohio the soil is only about 340 feet above tide-water in the Gulf of Mexico, and the highest elevation in the whole State does not exceed 800 feet above that standard. Its surface is occupied almost entirely by prairies, which are popularly distinguished by the names, "wet" and "dry," "alluvial" and "rolling." The wet prairies are peaty, indicating that they have once been morasses. Those of an alluvial nature are dry,

with a rich black loam, and exceedingly fertile. They are covered with a coarse kind of grass, which grows to an enormous size. The soil of the high and "rolling" prairies is, in general, only of second-rate quality, and abounds in springs. Grape-vines are abundant. The prairies furnish an inexhaustible summer range for cattle. From the exceeding flatness of some of the plains, the rains that fall are allowed to stagnate, and thus render the situation unhealthy. The Grand Prairie, which is the largest tract of this description, is probably the highest table-land between the Mississippi and the Wabash. It extends from the county of Jackson, in a north-east direction, to the Iroquois county, and varies in breadth from 1 to upward of 12 miles. Although passing under one name, it does not consist of one single tract of land, but is broken up into several reaches of prairie ground, with strips of wood running between them. It is rich and fertile, and several settlements have been located on its border, which is everywhere skirted with wood. The prairies, generally, are not plentifully supplied with timber, most of them being only interspersed with groups of trees, or skirted with strips of forest. Much of the young wood is destroyed by the annual winter burning of the coarse grass, which covers at least two thirds of the prairie land. In spring the prairies again become profusely decked with the greatest variety of beautiful and delicate flowers of every hue.

Illinois is distant from the sea, but is well provided with rivers. Nearly three fourths of its boundary is formed by navigable rivers; and on the north-east it has Lake Michigan for upward of 60 miles. The Mississippi, which forms its entire western, and the Ohio, which forms the southern boundary, give commercial access to those valleys which bear their names. The Wabash, a noble stream which bounds the State on the east for more than 100 miles, is navigable for more than that distance. For internal communication, the Illinois, which belongs entirely to this State, is navigable at all seasons for steamboats for 260 miles, to La Salle, where navigation is stopped occasionally by the little rapids, and where a canal branches off, connecting the river with Lake Michigan. The principal tributaries of the Illinois, which is itself formed by the junction of the Kankakee and the Des Plaines, are the Fox River, which rises in Huron Territory, and has a course of 200 miles before it joins the Illinois; the Vermillion River, which falls into it from the south-east; the Sangamon from the east, the Mackinaw from the north-east, and the Spoon River from the north-west. These are almost all navigable for considerable distances. The Sangamon is navigable for 140 miles. The Little Wabash and the Embarrass, which flow into the Wabash, are likewise navigable for upward of 150 miles. The Rock River, which rises in Wisconsin, and falls into the Mississippi, after a course of about 300 miles, is navigable for some distance, but its upper course is impeded by rapids.

The climate of Illinois, extending as it does over a space of $5\frac{1}{2}$ degrees of latitude, must necessarily be varied. The natural difference of temperature between the northern and the southern parts is, however, increased, by the numerous and large rivers which bound and intersect the country, and by its state of cultivation. Everywhere the winters are severe, the summers hot and long, and the temperature subject to frequent and sudden changes. In the southern parts of the State the summer heat is very oppressive and enervating; and is only occasionally relieved by fresh breezes from the prairies. In winter the snow falls to a considerable depth, and lies occasionally for three months; and many of the rivers remain frozen for the same length of time. In some parts of the State only a few inches of snow falls, and it quickly disappears.

Illinois possesses a vast extent of arable land. The soil, although varied, is generally highly productive, and for agriculture, it has been considered as unsurpassed by any State in the American confederacy. The soil in "the bottoms," or along the river valleys, such as those of the Rock River, the Sangamon, and Kaskaskia, consists chiefly of rich alluvial deposits, and is so productive as frequently to yield 40 bushels of wheat or 100 bushels of Indian corn to the acre. Nearly all the tracts adjacent to the rivers are of this character. "The American Bottom," as it is called, is the richest river alluvium, and has been cropped without deterioration for a century. It extends along the Mississippi for 90 miles; but in consequence of its liability to inundation, much of it is uncultivated. The prairies, although less productive, are still very fertile, and on account of their greater salubrity are preferred for farms, wherever wood is to be obtained. In 1850, there were 76,208 farms in Illinois, containing 5,039,545 acres of improved ground.

Important and valuable minerals abound in this State. Bituminous coal occurs in almost every county; and in some instances may be obtained without excavation. Vast beds are found on the bluffs adjacent to the "American Bottom;" and it has been reported that anthracite coal has been found in the county of Jackson. But the great coal region is an extensive tract which extends quite across the State from Missouri to Indiana, and from Iowa to Kentucky. Iron has been found in the southern part of the State, and is said to be plentiful in the northern. The great lead region is shared between Illinois, Iowa, and Wisconsin. Galena in the north-west is nearly supported by this mineral. Silver has also been found in the west part of the State, and copper is obtained in several places. The other minerals found here are, zinc, gypsum, quartz, crystals, etc.

Manufactures, etc.—There were in the State in 1850, 16 woolen factories, with a capital invested of \$154,500, employing 124 males and 54 females, manufacturing 806,995 yards of cloth, and 187,000 pounds of yarn valued at \$206,572; 2 establishments making pig iron, with a capital of 65,000, employing 150 persons, producing 2,700 tons of pig iron, etc., valued at \$70,200; 29 establishments with a capital of \$260,400, employing 382 persons, and making 4,160 tons of castings, etc., valued at \$441,185; 280 flouring and grist mills, 487 saw mills; 94 printing offices, 10 daily, 4 tri-weekly, 94 weekly, 2 semi-monthly, 7 monthly, and 1 quarterly publications. Total value of manufactured articles, \$5,200,000. There were in January, 1856, 2,215 miles of railroad in operation, and 1,945 miles in course of construction.

The internal trade of this State is becoming considerable, and increasing in proportion to the means of internal communication. Its direct foreign commerce is small, and is chiefly with Great Britain.

COMMERCE OF THE STATE OF ILLINOIS, FROM OCTOBER 1, 1847, TO JULY 1, 1856.

YEARS.	EXPORTS.		IMPORTS.	TONNAGE CLEARED.	
	Domestic.	Total.	Total.	American.	Foreign.
1847	\$52,100	\$52,100	\$266	1,202	350
1848	41,885	41,885	4,365	807	....
1849	88,412	88,412	9,766	914	2,796
1850	17,669	17,669	15,705	....	....
1851	114,886	114,886	4,657	2,088	215
1852	51,325	51,325	4,882	3,403	213
1853	79,139	79,139	7,559	2,288	....
1854	296,046	297,046	79,344	8,014	708
1855	547,083	547,083	54,509	81,464	2,916
1856	1,845,223	1,845,223	277,404	76,980	19,511

Illinois consist of 100 counties, which contain a number of thriving towns, many of which are increasing very fast in population. Chicago is much the largest, and has connected with it the greater part of the traffic of the State. Population in 1850, 29,963. In 1853 it is said to have increased to upward of 60,000. In 1856 the population was estimated at 100,000. The capital of the State is Springfield.

The following table shows the decennial increase of the population in the State since 1810:

Years.	Whites.	Free colored.	Slaves.	Total.
1810	11,501	618	168	12,282
1820	53,788	506	917	55,211
1830	155,061	1,637	747	157,445
1840	472,254	3,589	221	476,183
1850	846,104	6,866	None.	851,470

The astonishing growth of the State of Illinois and its promising condition, in 1855, may be seen from the following returns transmitted to the Auditor of the State:

Articles.	Number.	Value.
Horses.....	95,692	\$20,364,812
Neat cattle.....	1,175,888	14,619,529
Mules and asses.....	19,523	1,106,094
Sheep.....	811,827	1,044,181
Hogs.....	1,689,637	2,512,815
Carriages and wagons.....	198,654	4,756,459
Clocks and watches.....	124,494	743,244
Pianos.....	1,227	156,158
Merchandise.....		8,423,819
Bankers' property.....		2,515,534
Manufactured articles.....		884,951
Money and credits.....		14,871,840
Bonds, stocks, etc.....		600,840
Unenumerated property.....		22,908,937
Deductions.....		8,755,886
Personal property.....		95,927,285
Town lots.....		32,395,905
Lands.....		202,194,178

The progress which the State has made, even within a single year, may be seen from the following comparisons of totals for the last two years:

	Personal property.	Lands.	Personal property. Lands and lots.
1855. . .	\$95,927,285	\$202,194,170	\$334,398,425
1854. . .	79,545,958	121,451,894	252,756,568
Increase	\$16,381,282	\$79,742,845	\$51,641,857

Its internal improvements for some years past have been very great. Canals have been formed to compensate for the natural barriers to navigation in some of its rivers, and recently its great canal from Chicago to Peru, on the Illinois River, has been completed, uniting the waters of Lake Michigan with the Mississippi; thus opening direct communication between the whole of the Lake district in the north, and the river navigation on the south. The system of railroads, projected on a grand scale upward of 20 years ago, and which had been temporarily suspended, has been resumed some years ago on a still greater scale, and is being carried on with vigor. Chicago, its principal commercial city, is connected with Rockford, St. Charles, Aurora, Peru, and many other places within the State, and beyond it, either directly or indirectly, with Detroit, Cincinnati, New York, Philadelphia, and Boston. Besides these there were railroads uniting Springfield with Jacksonville, and Naples, Alton, and Quincy, with Columbus. When its railroads under construction are finished, Illinois will be surpassed for its railroad communication by but few States in the Union.

Immigration. *Progress and Extent of Immigration to the United States.*—We will review the progress and extent of immigration to the United States of America prior to 1819, the year in which the present official history begins. As, on this point, no authentic information exists, it must be determined by such evidence as statisticians of that period possessed, and by the relations then existing between the United States and the countries from which persons emigrated. The current of emigration commenced its flow from England, Ireland, and Scotland, and from Germany through the French and British ports. It was subject to many fluctuations during a part of this time, but continued with considerable uniformity, it is believed until 1806. Mr. Samuel Blodget, a statistician of more than ordinary research and accuracy, wrote in 1806, while every fact in regard to immigration was fresh in the minds of the people, that from "the best records and estimates at present attainable"

the immigrants arriving in the United States did not average, for the 10 years from 1784 to 1794, more than 4000 per annum. During 1794, 10,000 persons were estimated to have arrived in the United States from foreign countries. In 1818, Dr. Adam Seybert, member of the House of Representatives from Pennsylvania, in his exceedingly valuable "*Statistical Annals*" of the United States, wrote to the following effect: "Though we admit that 10,000 foreigners may have arrived in the United States in 1794, we can not allow that they did so, in an equal number, in any preceding or subsequent year until 1817;" and he assumes that 6000 persons arrived in the United States from foreign countries in each year from 1790 to 1810; to him, and to the authorities he consulted, this average seemed a generous one.—SEYBERT'S *Annals*, pp. 28, 29.

During the 10 years from 1806 to 1816, extensive immigration to the United States was precluded by the unfriendly relations at that time existing between Great Britain, France, and the United States. England maintained the doctrine, and, for a while enforced it with success, that "a man once a subject, was always a subject." This deterred many from emigrating to the United States from the British empire. Numbers had previously come for the purpose of entering the merchant-service, and numbers might still have come whom the fear of British impressment frightened from carrying out their design. Another influence retarded immigration: in 1806 Great Britain issued a decree declaring the coasts of France in a state of blockade. A retaliatory decree was, in November of the same year, issued by France declaring the British Isles in a state of blockade. To these restrictions on commerce, and, consequently, on the unobstructed passage from Europe, succeeded the British orders in council, and the Milan decree of Napoleon. In March, 1809, the United States' law was passed prohibiting, for one year, intercourse with Great Britain or France. In 1810, the Napoleonic decrees were annulled, and the commerce of the United States had, in 1811, fairly commenced with France, but only to have their vessels fall into the hands of the British. Preparations were now making for active hostilities, and, on the 18th of June, 1812, war was formally declared by the United States to exist with Great Britain.

The German emigration sensibly felt this unfavorable condition of affairs, inasmuch as the Germans embarked principally at the ports of Liverpool and Havre; facilities for migrating thence to this country being more numerous, and the expense of the voyage less onerous. Thus, from 1806, was the stream of emigration pent up at its fountain. In February, 1815, peace was concluded between the United States and Great Britain; and after several months requisite to restore tranquillity, and to secure the confidence of those desiring to leave the Old World, the tide returned to its flow, and, with a speed greatly accelerated; as, from authentic information, collected principally at the several custom-houses, it appears that, during the year 1817, not less than 22,240 persons arrived at ports of the United States from foreign countries. This number included American citizens returning from abroad.—SEYBERT'S *Annals*, p. 29. In no year previous to that had one half so many foreign passengers reached our shores. Many sufferings were incident to a voyage across the Atlantic in a crowded emigrant vessel; and there were no laws of the United States either limiting the number of persons which a passenger ship or vessel should be entitled to carry, or providing any measures for the health or accommodation of the passengers. The subject seemed to deserve the immediate attention of Congress. In 1818 (March 10), Mr. Louis M'Lane, of Delaware, reported to the House of Representatives a bill "regulating passenger ships and vessels," which was read twice and referred to a committee for inves-

tigation into the subject. In December, 1818, the subject was brought before Congress by Mr. Thomas Newton, of Virginia, who explained the necessity of its passage. It was read a third time and passed by the House. After receiving amendments from both the Senate and House, it was finally passed and approved March 2, 1819. In compliance with a requirement of this act, collectors of the customs have reported quarter-yearly to the Secretary of State the number of passengers arriving in their collection districts, by sea from foreign countries; also, the sex, age, and occupation of such passengers, and the country in which they were born. Annual reports embracing that information, have, in conformity with the same act, been communicated to Congress by the Secretary of State; and, as before indicated, from these reports chiefly, this historical sketch has been compiled. The country having the largest emigration is, doubtless, Ireland; for, in addition to the 747,930 persons arriving from the United Kingdom, known to have been born in Ireland, it is safe to assume that of the 1,348,682 others, born as indefinitely stated in "Great Britain and Ireland," arriving in the United States, 1,000,000 at least, were born in Ireland alone; thus making 1,747,930 as the total Irish emigration. See EMIGRATION.

Next in numerical order comes Germany; England, third; and France, fourth. The emigration of Chinese to this country, was very inconsiderable until 1854; previous to which year, the aggregate number known to have arrived was only 88. In that year, however, 13,100 came to the United States; and in 1855, 3526; all of whom, with the exception of a single passenger, landed at the port of San Francisco; 15,950 were males, and were designated in the returns of the collector as "laborers."

As regards passengers from British America, the fact may be deemed worthy of mention, that many of them, especially of those arriving during the last four years are known to have come with the intention of returning, and not of residing in the United States. The number of such can not, however, be determined. Finally, to the 4,212,624 passengers of foreign birth arriving in the United States since September 30, 1819, may be added 250,000 as the number of immigrants who arrived prior to that date; making the total foreign arrivals from the close of the Revolutionary War to December 31, 1855, 4,462,624.—BROMWELL'S *History of Immigration*. New York: 1856. To this large number may be added, as variously estimated, from 500,000 to 1,000,000, who emigrated to the western States through Canada.

TOTAL NUMBER OF PASSENGERS, DISTINGUISHING ALIENS FROM OTHERS, ARRIVING IN THE UNITED STATES BY SEA, FROM FOREIGN COUNTRIES, FROM SEPTEMBER 30, 1819, TO DECEMBER 31, 1856.

Years ending	TOTALS.				OF WHOM WERE ALIENS.			
	Males.	Females.	Sex not stated.	Total.	Males.	Females.	Sex not stated.	Total.
September 30, 1820.....	6,447	2,680	1,194	10,311	4,871	2,398	1,121	8,385
1821.....	6,866	1,938	2,340	11,644	4,651	1,636	2,840	9,127
1822.....	5,818	1,149	2,082	8,549	3,816	1,013	2,082	6,911
1823.....	5,813	1,044	1,908	8,265	3,598	848	1,908	6,354
1824.....	6,253	1,561	1,818	9,627	4,706	1,393	1,818	7,912
1825.....	9,206	3,829	323	12,858	6,917	2,959	323	10,199
1826.....	10,218	3,633	57	13,908	7,702	3,078	57	10,837
1827.....	14,165	6,479	1,133	21,777	11,803	5,939	1,133	18,875
1828.....	19,446	10,677	61	30,184	17,261	10,060	61	27,382
1829.....	12,938	5,470	6,105	24,513	11,303	5,112	6,105	22,520
1830.....	15,917	7,514	8,575	24,887	6,439	8,185	18,743	23,322
1831.....	15,917	7,963	....	23,880	14,909	7,724	....	22,633
1832.....	35,599	18,752	....	54,351	34,596	18,583	....	53,179
Dec. 31 (3 mos.), 1832.....	4,691	2,512	100	7,303	4,691	2,512	100	7,303
1833.....	42,543	17,377	....	59,925	41,546	17,094	....	58,640
1834.....	40,730	23,180	4,038	67,948	38,796	22,540	4,029	65,365
1835.....	30,752	17,791	173	48,716	28,196	17,027	151	45,374
1836.....	51,459	28,639	824	80,972	47,365	27,533	824	76,242
1837.....	53,403	28,706	2,850	84,959	48,837	27,653	2,850	79,340
1838.....	28,504	14,900	1,755	45,159	23,474	13,635	1,755	38,864
1839.....	43,200	26,454	12	74,666	42,932	25,125	12	68,069
1840.....	53,998	33,158	51	92,207	52,833	31,132	51	84,066
1841.....	53,815	33,514	176	87,505	48,082	32,081	176	80,289
1842.....	67,124	43,475	851	110,950	62,277	41,907	851	104,565
Sept. 30 (9 mos.), 1843.....	33,172	23,354	8	56,529	20,069	22,424	8	52,496
1844.....	43,397	35,367	....	84,764	44,431	34,184	....	78,615
1845.....	69,179	49,311	1,406	119,896	65,015	45,115	1,241	114,371
1846.....	90,974	66,773	897	158,649	87,777	65,742	897	154,416
1847.....	139,167	99,325	990	239,482	136,066	97,917	965	234,968
1848.....	136,123	92,883	472	229,483	132,906	92,149	472	226,527
1849.....	179,256	119,915	512	299,683	177,232	119,280	512	297,024
1850.....	200,904	113,392	1,038	315,334	196,331	112,635	1,038	310,004
Dec. 31 (3 mos.), 1850.....	38,232	27,107	181	65,570	32,990	26,505	181	59,676
1851.....	245,017	163,745	66	408,828	217,181	162,219	66	379,466
1852.....	235,731	160,174	1,438	397,343	212,469	157,696	1,438	371,603
1853.....	236,732	164,173	72	400,982	207,953	160,615	72	368,645
1854.....	234,887	175,587	....	460,474	256,177	171,656	....	427,833
1855.....	140,131	90,233	12	230,476	115,307	85,567	8	200,577
1856.....	135,303	89,138	....	224,496	115,846	84,590	....	200,436
Total.....	2,849,239	1,809,393	48,701	4,707,333	2,600,926	1,763,726	48,408	4,413,060

Legal Rights of Naturalized Citizens in the United States.—Aliens naturalized agreeably to the acts of Congress, are not prohibited by the Constitution of the United States, the enjoyment of the same rights, and to the same extent as natural-born citizens, with the single proviso that no person shall be eligible to the office of President or Vice-President, except a citizen native-born, or a citizen of the United States at the time of the adoption of the Federal Constitution. Congress can make no law to prohibit the free exercise of their religion; nor to abridge their freedom of speech. The right of security in their persons, houses, papers, and effects, against unreasonable searches and seizures, is not denied to them; nor are they prohib-

ited the purchase and occupation of lands owned by the government. The Constitutions of the several States concede to those naturalized citizens, who take up their residence within the States, in general the same rights as are enjoyed by persons born therein. Among these rights may be mentioned that of voting and of being elected to office. See EMIGRATION. BROMWELL'S *Sketch of Immigration*. See No. Am. Rev., xl., 457 (by A. H. EVERETT); Am. Whig Rev., vi., 455, 633, vii., 419 (by O. C. GARDINER); NILES'S *Register*, xiv., 380, xviii., 157. Upon the subject of German emigration, see No. Am. Rev., ii., 1 (by EDWARD EVERETT); xx., 191 (by J. SPARKS). Immigration to the United States, see DEBOW'S *Review*, v., 243,

xiii., 455; *HUNT's Mer. Mag.*, viii., 157, xiv., 293; *FRAZER*, xvi., 562, 683, xxviii., 426; *Edin. Rev.*, vii. 185, xlv., 49, xlvii., 204, xcii., 258, xxxix., 315; *Westminster Rev.*, iii., 449, vi., 342, xxxv., 181, xl., 53, 101; *Quar. Rev.*, liv., 215, xxxvii., 539, xxiii., 373; *Blackwood*, xv., 433, xx., 470, xxi., 377, xxiii., 191, 615, v., 523, vi., 78; *Knicker*, xvi., 589.

Importation and Exportation, the bringing of commodities from and sending them to other countries. A very large portion of the revenue of a commercial country is derived from customs duties, or from duties on commodities imported from abroad; and drawbacks being given on many, and bounties on a few, articles exported; the business of importation and exportation is subjected to various regulations which must be carefully observed by those who would avoid incurring penalties, and subjecting their property to confiscation. See articles **TARIFF** and **UNITED STATES** for the imports and exports of this country.

Impressment, the forcible taking away of seamen from their ordinary employment, and compelling them to serve, against their will, in national ships. See *Ed. Rev.*, xli., 154; *Westm. Rev.*, xx., 489; *Blackwood*, xx., 745.

Indemnity, is where one person secures another from responsibility against any particular event; thus a policy of insurance is a contract of indemnity against any particular loss. Where one person also becomes bail for another, a bond of indemnity is frequently executed; and where a bond or bill of exchange has been lost or mislaid, the acceptor or obligee would not act prudently in paying it, without being secured by a bond of indemnity.

India, or Hindoostan, has from the earliest ages been celebrated as one of the most highly-favored countries on the globe, and as abounding in the choicest productions both of nature and art. In ancient times, this distant region was very imperfectly known to the Greeks and other nations of the west; but they imported its most valuable produce, its diamonds, its aromatics, its silks, and its costly manufactures. The country which abounded in those expensive luxuries was naturally reputed to be the seat of immense riches, and every romantic tale of its felicity and glory was readily believed. In the middle ages an extensive commerce with India was still maintained through the ports of Egypt and the Red Sea; and its precious produce, imported into Europe by the merchants of Venice, confirmed the popular opinion of its high refinement and its vast wealth. After the discovery of a passage to India by the Cape of Good Hope, the same ideas still prevailed; and the maritime states of Europe contended with their fleets and armies for the dominion of the Asiatic seas, and for the commerce of the country. The Portuguese, and afterward the Dutch, made important conquests, and carried on an extensive trade. In later times, Great Britain and France appeared on the field as competitors for the prize of Indian commerce and dominion, and were allowed to establish factories on the coasts for the reception and the store of goods. These were gradually converted into military posts, defended by soldiers and cannon; and in due time those two powers were ranged on opposite sides in all the wars and politics of India. This contest terminated in the triumph of the British arms. France lost her pre-eminence on the continent of India; and her great rival, enlarging her powers on every side, gradually rose to greatness and dominion, and now rules with undisputed sway from the Himalaya Mountains to Cape Comorin. This vast extension of the British power in the East has opened the way into the interior of India. It has tended greatly to enlarge our knowledge of this distant region; and if more accurate inquiry has reduced the marvelous tales of its glory and greatness within the bounds of sobriety and truth, Hindoostan, the seat of industry, of commerce, and of the arts, when Europe was sunk in

barbarism, the scene of many eventful revolutions, from the Mohammed invasion till its conquest by the armies of Britain, and inhabited by a people of peculiar manners, laws, institutions, and religion, still presents a wide field for interesting inquiry and speculation.

In the following account of this interesting country, we propose to describe—I. Its geography and natural features; its produce, its animals, its manufactures, and commerce; the numerous races by which it is inhabited, with their manners, religion, and policy; and the wars and political revolutions which have terminated in establishing the sway of Great Britain over nearly the whole continent of India.

I. The ancient geographers had no precise ideas of the extent of Hindoostan or India, terms which we mean to use synonymously in the following article; and they accordingly extended its frontier westward as far as Persia, and eastward to China. In after ages its limits often fluctuated with the events of war, and served only to mark out the course of conquest, with little or no attention to geographical accuracy. Yet in no part of the earth has nature pointed out, in the great features of the country, more distinct and magnificent boundaries. On the north it is separated from the elevated table-land of Thibet by the precipitous wall of the Himalaya Mountains, the highest land of the Asiatic continent; on the west the Suliman range, a continuation of the Sufeid Koh Mountains, separates it from Afghanistan and Beloochistan; its east boundary is formed by parallel offshoots from the opposite extremity of the Himalayas, and by the continuous ranges of forest-covered hills, which, skirting the Bengal district of Chittagong, stretch southward to the recently-acquired province of Pegu, and separate the British dominions from the territory of Burmah. The Indus and the Ganges discharge themselves into the ocean on the western and eastern coasts of Hindoostan, in about north latitude 24° and 22° ; and to the south the country is contracted into an irregular triangle, projecting into the Indian Ocean to within eight degrees of the equator, or about 1000 miles, and on all sides inclosed by the sea. The extensive region situated within these limits is nearly comprehended between the 8th and 35th degrees of north latitude, and between the longitudes 66° and 99° east; and its length from the northern barrier of the Himalaya Mountains to Cape Comorin is about 1900, while in breadth it may be estimated at 1800 miles, though, owing to the irregularity of its figure, it does not exceed 1,484,367 English square miles.

Hindoostan is of an extremely diversified aspect, and comprehends within its bounds all the varieties of climate, of soil, and of natural scenery, from the bare and naked rock, and lofty mountain buried under eternal snows, to the low and fertile plain, scorched by the tropical sun, and the seat or luxuriant vegetation. This diversity in the aspect of the country has given rise to the following territorial divisions, namely: 1. Northern Hindoostan, which comprehends the Himalaya Mountains on the north, with their lower ranges of hills stretching southward to the plains of the Indus and the Ganges, and extending from Peshawur and Cashmere on the west, to Bootan and Assam on the east. 2. Hindoostan Proper which extends southward as far as the Nerbuddah River, where the Deccan commences, and which includes the lower provinces of Bengal, the north-western provinces, together with Oude, Malwa, or Central India, the Punjab, Guzerat, Sindh, and Cutch. 3. The Deccan, bounded on the north by the Nerbuddah River, and on the south by the Rivers Krishma and Toombudra, comprehends the larger portion of the presidency of Bombay, together with Orissa, the Nizam's dominions, and the territory of Nagpore. 4. India south of the Crishma River, comprehending the territories under the administration of the government of Madras, together with the native states of Cochin, Travancore, and the Mysore.

The Himalaya Mountains contain the sources of the great rivers which flow through the burning plains of Hindoostan. The deep valleys between the mountains are the channels through which the waters flow from the higher grounds; and, by the melting of the snow, those streams, suddenly swollen into torrents, and rushing down the declivity, work out a deep and narrow channel among the rocks, where, imprisoned as it were between steep and perpendicular rocks, they roar and foam amid precipices, or in dark and unfathomable glens, exhibiting, in the conflict of their troubled waters, all the great phenomena which belong to rivers, namely, the cataract, the rapid, the boiling eddy, and the dangerous whirlpool, and only subside into smoothness when they break out and spread over the plains. Huge rocks were seen by Dr. Gerard whirled along with frightful velocity; nothing visible but an entire sheet of foam and spray, thrown up and showered upon the surrounding rocks with loud concussion, and re-echoed from bank to bank with the noise of the loudest thunder. Across these streams are thrown rude bridges made of ropes or of wood, the usual expedient by which rivers are crossed in all mountain countries. Where the breadth of the river is small, the passage is effected by one or two fir spars laid across from rock to rock; but where the space is wider, a bridge of ropes is constructed, on the principle of the chain-bridge. In attempting the passage by one of these rude bridges, a carrier who accompanied Fraser in his journey to the sources of the Ganges unfortunately lost his footing and fell into the water. He was instantly swept down the stream to its junction with the Bhagiruttee, about 50 yards, "when his head," says the traveler, "appeared for a moment, and his load floating beside him; but the foaming current of the Bhagiruttee here tumbling over large rocks with a mighty roar, seized him and hurried him along with its tremendous torrent."

Northern Hindoostan varies in its climate and in its aspect with the height of the ground. The lower ranges of mountains, though they scarcely reach the level of perpetual snows, still retain the sublime features of alpine scenery; namely, the rugged and bare mountain, the craggy rock, white, gray, red, or brown, springing up in fantastic forms above the general mass; and the deep and suddenly descending chasm, with the foul torrent foaming over its rocky bed. The luxuriant foliage is wanting which embellishes the lower hills; the rich and smiling valley is not so often seen; while the forests of dark brown fir fringing the mountains and the hollows impart a sombre and unvarying appearance to the scene. At a lower level the country improves; and though it still exhibits the mountain and the precipice, the intervening valley is clothed with verdure, and the lower hills with the most magnificent forests of large and lofty trees, the open country with roses, jasmines, and other lovely or odoriferous shrubs, and with the most luxuriant alpine plants. The valleys through which flow the head waters of the Indus and the Ganges, namely, the Sutlej, the Pabur, the Jumna, the Bhagiruttee, the Alkananda, with their tributaries, exhibit all the varied and sublime scenery of this romantic country. The valley of the Sutlej is hemmed in by brown and barren mountains, steep and rocky, without the grandeur of lofty precipices or fringing wood. The hollows through which it receives its tributary streams are dark chasms, without cultivation; the heights crowned with forts, but without any neat villages surrounded with trees to relieve the adjacent desert. The banks of the Jumna, on the other hand, though rocky and wild, are wooded and green, and the sloping faces of the hills fertile and well cultivated; and even at its source, the country, however wild and picturesque, is still not nearly so dreary as the valley of the Bhagiruttee. The features of the landscape are here lofty, rugged, and inaccessible, with less of the beautiful

than of the sublime and terrible. A pleasing contrast to this wild scenery is presented by the smiling valley through which the Pabur meanders, checkered as it is with pasture and crops, and the banks and the hills clothed with cultivation, villages, and wood. Such is the usual aspect of the lower valley of northern Hindoostan, the height of which is for the most part from 3000 to 6000 feet above the plains. The difference between the northern and southern exposures of this mountainous country is remarkable, not only in the formation and structure of the hills and rocks, but in the vegetation. The country on its southern face is of a brown and dusky color; the grass short and parched; the hills rough and lumpy, with rocks standing through the ground; the lower parts bare of wood; and above, the Weymouth pine, with a few stunted larches sprinkled among the rocks; while the higher parts are spread over with oak, holly, and alder, their leaves of brownish green, harmonizing with the burned appearance of the hills, and giving a sombre hue to the whole scene. On the northern exposure a rich color of dark green is diffused over the whole landscape; the rocky sides of the glens are bolder and grander; and they are clothed with noble forests of larch, silver and spruce firs, which shroud from the view the highest and steepest cliffs. "All," says Fraser, "was rich and dark; and here and there a glade opened, or a high slope extended from the base of the rock, or projected between two streams, of a bright beautiful green shining through the sombre forest." This difference between the northern and southern exposures is strongly marked all over the hills.

That strip of flat country, about 20 miles in breadth, which lies at the base of the great Himalaya range, dividing it from the plain of the Ganges, is called Terrae or Terreeana. It is covered with thick forests and low swamps, and, though fertile, it is so unhealthy that it is little cultivated. Bishop Heber graphically describes it as a long, black, level line, extending at the foot of the lowest hills; "so black and level," he adds, "that it might seem to have been drawn with ink and a ruler." This flat does not extend further north-west than through a portion of Rohilcund, where the healthy cultivated country reaches to the foot of the hills, which rise abruptly from the sandy flat beneath. These low hills are watered by streams from the higher mountains, that rise to the level of 1500 or 5000 feet, from which the lower range is frequently separated by fine valleys of some length, which are called *doon* by the natives, answering to the Scottish name of *strath*. The hills which rise beyond this lower range, to the height of about 5000 to 7000 feet, are lofty and majestic, and broken into numerous ridges, divided by deep shaggy dells. This appearance Fraser ascribes to the quality of the rock of which they are composed, which consists of a strongly indurated clay, with a mixture of siliceous matter, forming a rock exceedingly hard, though easily destructible by exposure to the air, and splitting into variously-sized fragments leaving hard marbly masses staring through the scanty soil. It may be finally remarked of this singular and interesting country, that though it appears from the plains to be divided into distinct ranges of terraces, it is really a vast collection of mountains heaped in masses one above another, without any order or plan that can be discovered, until the height of land is reached at the great Himalaya ridge which extends from beyond the sources of the Indus in a continuous chain far into China.

The following are the chief rivers of Hindoostan, with the length of their respective courses to the sea: Indus, 1700 miles; Brahmaputra, 1900; Ganges, 1500; Jumna (to its junction with the Ganges, 780), 1500; Sutlege (to the Indus, 900), 1490; Ghylum (to the Indus, 750), 1250; Gunduck (to the Ganges 450), 980. In the Deccan, and south of India, the Godavery,

850; Kistna, 700; Nerbuddah, 700; Mahanuddy, 550; Taptee, 460; Cavery, 400. There are few coasts of such extent so destitute of islands and harbors as that of Hindoostan. With the exception of emerged sea-banks and mere rocks, Ceylon is the only island near its shores; and on the eastern coast, Masulipatam, which admits vessels of 800 tons burden, is the only harbor for large vessels between Trincomalee, in the island of Ceylon, and the Ganges, which is free from raging surf. To this inconvenience Madras, though an important British settlement, is peculiarly liable. On the western coast, the only harbors capable of admitting large vessels are Bombay and Kurachee, in Scinde; Mangalore admits no vessels drawing more than 10 feet.

Hindoostan comprehends within its bounds the opposite extremes of heat and cold. The plains are burnt up with intense heat; while winter, with every intermediate variety of temperature, prevails in the mountains. Philosophers have in vain endeavored to fix the point of perpetual congelation under different degrees of latitude. They have, indeed, framed a graduated scale of the respective heights at which, according to calculation, this point should begin at corresponding distances from the equator; but theory is here at variance with actual observation. The climate of mountainous tracts depends so much on localities, and the particular course of the winds, as to baffle all general speculation. Hence, on the Himalaya Mountains harvests of grain are found, where, according to hypothesis, the ground should be buried under deep snow; and trees are seen to flourish in the regions of perpetual winter. Captain Webb, in ascending the Himalaya range, saw around him, at the height of 11,630 feet above the level of Calcutta, rich forests of oak, pine, and rhododendra, the ground covered with vegetation as high as the knee, strawberry-beds in full flower, and currant-bushes in blossom; and in 1818, at the Niti Pass, 16,814 feet in height, philosophy was again at fault, as the ground was clear of snow, though above the line of perpetual congelation, and many quadrupeds were feeding on the grassy banks of the Sutlege. It was remarked by Dr. Gerard that vegetation attained a higher level on the northern than on the southern face of the Himalaya ridge, where the extreme height of cultivation is 10,000 feet; the limit of the forest, 11,800 feet, and 12,000 feet that of bushes. On the northern side cultivation rises to the height of 11,400 feet; in other places to 13,600 feet; birch-trees to 14,000 feet; and tama-bushes, which form excellent fuel, to the height of about 17,000 feet. In northern Hindoostan, great and sudden changes of temperature occur, which is the cause of pulmonary affections. During summer, the thermometer, which is often in the morning at 82° or under it, rises to 70°, 75°, and 80°, or upward, during the day; the winters are, however, uniformly severe. In this also, as in other hilly countries, the traveler may be fainting to-day under a tropical sun, and shivering to-morrow amid the rigor of perpetual snows. From the banks of the Sutlege, where the thermometer frequently stands at 100° and 108°, three days' climbing will carry him into the regions of winter.

In the plains of Hindoostan, the heat during the greater part of the year is unintermitting and intense, except where it is modified by the ranges of mountains, or the table-lands toward the west. The seasons here are commonly divided into the hot, cold, and rainy. The spring and the dry season throughout the valley of the Ganges last about four months, the heat gradually increasing with the season, until, in May and June, the thermometer rises to 100° and frequently, in the interior, to 108° and 110°, when it is almost intolerable even to the natives, and still more so to Europeans, who resort to various modes of alleviation, such as the *cuscus tatty*, which is a frame of wood interwoven with twigs, between which is distributed a

layer of a particular kind of sweet-scented grass. This being hung before an open window, in the quarter of the prevailing wind, and constantly moistened on the outside by a water-carrier, diffuses a refreshing coolness.

Vegetable produce.—Hindoostan comprehends all the known varieties of the vegetable tribes. The mountainous tracts of northern Hindoostan produce all the Alpine plants, and the various species of European grain, fruits, and flowers. Deep woods cover those lower ranges of mountains, in which are found the pine-tree of various species, "the tallest, straightest, and most magnificent," says Fraser (Fraser's, *Journal of a Tour through the Himalaya Mountains* p. 189), he ever beheld, the larch, the silver, and the spruce-fir, from the bark and twigs of which resin exudes in abundance; the yew-tree, several species of oak, holly, alder, sycamore, and birch, with mulberry and chestnut-trees. Here is also found the mimosa-tree, from which is made the catechu or India-rubber: the resinous part of this fir, cut into slips, answers the common uses of the lamp. These noble forests extend over immense tracts, and would afford inexhaustible supplies of timber if they could be transported to the proper market. Fruits in great variety are also produced in this elevated region, such as apricots, peaches, and grapes, apples, pears, currants, raspberries, blackberries, and strawberries; roots, such as turnips, carrots, garlic, and onions; flowers and plants, as roses, both red and white, lilies of the valley, jessamines, butter-cups, yellow, blue, and white, cowslips, and sweet-briar, with numerous other beautiful and fragrant plants. The valleys exhibit, according to their altitude and temperature, the productions of Europe or of the tropical countries. At the height of 6000 feet appear the oak and the pine; at that of 3000 feet rattans and bamboos of enormous dimensions; in some parts the pine-apple, the orange, and the sugar-cane, grow to maturity; in others, barley, millet, and similar grains are produced. The lower part of these hills is the seat of the saul forests. The lower valleys yield rice, sown broad-cast, maize, wheat, barley, pulse of various kinds, sugar-cane, cotton, Indian madder, a large species of cardamum, besides other productions. The pastoral tribes of northern Hindoostan feed considerable flocks on the lower hills and valleys; in summer they climb the Alpine country, and browse on the herbage adjacent to the region of perpetual frost.

Rice is the great staple of agriculture throughout Hindoostan, in the plain of the Ganges as well as in southern India. It is sown at the approach of the rains, and it is gathered during the rainy season, about the end of August; the last crop is sown during the same season, and is gathered in the beginning of December. It is esteemed the best, not being equally liable with the other to decay. The diversity of soil and climate, and the several seasons of cultivation, have given rise to infinite varieties in this species of grain. When the rains fail throughout Hindoostan, which occasionally happens, the rice crops are apt to be deficient to a degree altogether unknown in the well-regulated agriculture of Europe, where the severest scarcity hardly ever rises the price of corn more than three times its usual rate. But the famines of Hindoostan leave thousands without subsistence, and fill the land with scenes of misery and death. In the great famine of 1769 it was estimated that 3,000,000 of the people perished; the air was so infected by the noxious effluvia of dead bodies that it was scarcely possible to stir abroad without perceiving it, and without hearing also the frantic cries of the victims of famine, who were seen in every stage of suffering and death; whole families expired, and villages were desolated; and when the new crop came forward in August it had no owners. Bengal has been less liable to famines since this period, but they have frequently occurred in other parts of India. Rice thrives well in the inundated

track of the Ganges, and in southern Hindoostan, especially on the low lands of the sea-coast; higher up the Ganges, wheat and barley are more generally cultivated, also in the high grounds and elevated table-lands of southern India. Other kinds of grain are cultivated, such as Indian corn; and great varieties of pulse and coarse grains, such as peas, beans, chiches, gram, vetches, and raggy, which is the most important crop raised in the dry field, and in some parts of southern India is the subsistence of all classes, in others of the poorer classes. These are important articles of cultivation, as they have each their particular season, and thrive even on poorer soils. Maize is the general produce of poor soils in hilly countries, and is commonly cultivated in the more western provinces. Millet and other grains are also cultivated, and vegetating rapidly, in every season they fill up profitably for the farmer the short intervals between the other modes of cultivation in lower Hindoostan. Sugar is everywhere cultivated, and at little expense by the Hindoo cultivator; and as the sugar of India is no longer subjected in the United Kingdom to an unequal import duty, there is reason to hope that the produce of India may compete not only with the sugars of British colonies, but those also of Cuba, Brazil, Siam, and Manilla. Though formerly unknown in Europe, sugar has been produced in India from the remotest times, and was thence transplanted into Arabia, whence it has been introduced into Europe, Africa, the West Indies, and America. It grows luxuriantly throughout all the valleys of the Ganges, and in the plains of southern India, and could be produced, with the help of European skill and capital, to meet any demand. It thrives more especially in Bahar and Benares, and in particular districts of Bengal. Opium is the peculiar and staple produce of the province of Bahar, and is also extensively cultivated in Malwah, and in other parts of Hindoostan. It is a precarious crop, producing alternately high profits and heavy losses. The liquor extracted from the poppy is collected as it exudes, and is then placed in pots, where it is dried and formed into lumps, in which process it loses from one tenth to one eighth of its weight. The opium produced in Bahar and Bengal being monopolized by the East India Company, and bought at a fixed price, is a contraband article of trade, and its cultivation is confined to certain districts. Within Bengal no one is allowed to cultivate the poppy, except for the government. In Malwah a treaty was entered into with the different rulers and chiefs, by which the monopoly was extended to that country, and all that was produced delivered to the Company, at the rate of three rupees a seer, which is two pounds. But so great was the discontent excited by this extension of the monopoly, that, at the desire of the chief, the treaties were rescinded in 1819, 1820; and the trade in opium and its cultivation is now free in that province, and everywhere throughout India, except in the Company's dominions; but as Malwah is completely surrounded by British territory, a large revenue is derived from the high duty levied on Malwah opium, in transit to Bombay for exportation to China. Malwah opium equals that of Bengal, and is brought into competition with the Company's opium in all the foreign markets, and especially in China (see appendix to the report on the East India Company's affairs, p. 15). The cotton plant has from time immemorial been one of the staple products of Hindoostan, and is indigenous from Ceylon in the south to the Himalaya Mountains. It is cultivated extensively throughout Bengal, and in the interior provinces, on the banks of the Jumna; also in the Deccan, and in southern India, whence it is imported into Bengal, and into Mirzapoor, and the district of Benares, where it is manufactured. Flax and hemp are also cultivated in several districts both in the north and in the south of India. Silk was long the exclusive product of India and China. Silk-worms are now reared

principally in the district of Burdwan, and in the vicinity of the Bhagirati and the Ganges, and for about 100 miles down their streams. Four crops of mulberry-leaves are obtained in the year, the last in December. A considerable quantity of silk, of a coarse kind, is obtained from wild silk-worms, which do not feed on the mulberry, and are found in the forests of Silhet, Assam, and the Deccan. Indigo was originally a product of India; and the plant was afterward carried to South America, whence Europe was for a long time supplied with this dye. The manufacture, on which the quality of the indigo depends, was very unskillfully conducted until the year 1783. Since this period it has been so much improved by the skill and capital of Europeans that it is now a staple article of commerce; and in Bengal the value of the produce in 1854 amounted to £1,701,206. Indigo is produced generally throughout the plain of the Ganges, and in southern India, but chiefly in Bengal. Tobacco, formerly unknown in India, and introduced from America probably about the beginning of the 17th century, is now extensively cultivated in every part, chiefly however in the northern provinces, and more rarely in the south. The tobacco grown in the Mahratta territories is most esteemed, particularly that which is produced near Bilsa, a town in Malwah. Bengal does not yield good tobacco; but the Company's territories in Guzerat, being principally of a rich black soil, are considered as peculiarly suitable to its cultivation (see letter of the Secretary to the Court of Directors, to the Secretary of the India Board, 5th September, 1828). The Hindoos having been already in the habit of inhaling the smoke of hemp-leaves and other intoxicating drugs, readily adopted tobacco as a more agreeable substitute, and it soon came into general use. Their recent knowledge of it appears from their having no name for it which is not a corruption of some European term. Pepper, though of inferior consequence, is a valuable product of southern India, especially of Malabar. It is produced from a species of vine, which is made to twine around the jack-tree. It bears fruit about the third or fourth year, amounting to from three to seven pounds' weight, and yields two crops in the year. The areca-nut and betel-leaf, universally chewed by the natives, thrive in the low grounds, where water is abundant; and cardamoms, a spice in great repute. The universal and vast consumption of vegetable oils in Hindoostan, for food, or unguents, or for the lamp, is supplied by the extensive cultivation of mustard-seed, linseed, sesamum, palma, christi, besides what is procured from the cocoa-nut. The first ripen in the cold season, the sesamum during the rains, or soon afterward.

The forests in the low plains of Hindoostan, of southern India, and those which cover the western range of the Ghauts, and more sparingly the eastern Ghauts, abound in the most valuable trees, applicable to many important uses. The extensive woods in southern India supply the teak-tree, valuable for ship-building; and in Malabar, extensive tracts of waste land have within the last few years been converted into teak plantations by the government. Saul, sissou, toon, and bamboo-trees abound; the last of which yield a medicine much used by the native doctors, and which sells for its weight in silver. There are many species of the palm-tree, with its luxuriant and spreading leaves, of which the produce is extremely useful. The cocoa-nut-tree is, in some provinces, an important article of culture. The kernel is used for food by the richer natives, either in the raw state, or dressed after various fashions; and it yields by far the finest oil in India, if the nut be fresh, and the oil quickly used. Extensive tracts, many miles in length, are planted with the cocoa-nut and betel-nut palms. Many other species of timber are found in the deep recesses of the woods, of which Dr. Buchanan, in his account of Mysore, gives a particular description, with the botan-

ical names of the different trees, and to his work we refer; observing, generally, that the woods consist of every description of timber, black, heavy, and strong, and adapted for the beams and posts of houses; other kinds are white, hard, and durable, and adapted to all the purposes for which strong materials are required; some are beautifully grained, and take a fine polish, and are well suited for furniture, or exude resins and gums of a sweet scent, that are used in temples for incense; the wood of some kindles readily into a clear light, and is used for torches (see *Journey from Madras, through Mysore, Canara, and Malabar*, vol. i., p. 25). Other kinds of wood are employed for dyeing. The sandal-wood is valuable for its perfume, and for the essential oil which it yields. It requires a strong soil, and it is 12 years before it attains the proper size for being cut. The billets of wood are prepared by being buried in the dry ground for two months, when the ants eat up all the outer wood, leaving the heart, which is the sandal. The deeper the color, the higher the perfume. The best sandal-wood of Hindoostan is now in possession of the rajah of Mysore, who succeeded to a small portion of Tippoo's dominions.

Animals.—Hindoostan, from the great extent and inequality of its surface; its stupendous and snow-clad mountains, and its vast and wooded plains, lying under a burning sun, comprehends all the most interesting forms of animal life, more especially those animals of the tropical regions remarkable for ferocity or size, which have been the subjects of scientific research as well as of popular curiosity in all ages, and which find ample cover in the deep woods and jungle-covered wastes of those tracts of the country which have been desolated by tyranny or war.

However much the following statistics of the financial concerns of the British Eastern empire may be at variance with the exaggerated ideas entertained respecting it, as well by a large proportion of the people of England as by foreigners, it will excite no surprise in the mind of any one who has ever reflected on the subject. It is due, indeed, to the directors, to state, that though they have occasionally acted on erroneous principles, they have always exerted themselves to enforce economy in every branch of their expenditure, and to impose and collect their revenues in the best and cheapest manner. But though they have succeeded in repressing many abuses, it would be idle to suppose that they should ever entirely succeed in rooting them out. How can it be imagined, that strangers sent to India, conscious that they are armed with all the strength of government, placed under no real responsibility, exempted from the salutary influence of public opinion, fearing no effectual exposure through the medium of the press, and anxious only to accumulate a fortune, should not occasionally abuse their authority? or that they should manage the complicated and difficult affairs of a vast empire, inhabited by a race of people of whose language, manners, and habits they are almost wholly ignorant, with that prudence, economy, and vigilance, without which it were idle to expect that any great surplus revenue should ever be realized?

India Company, the East.—The first commercial intercourse of the English with the East Indies, was a private adventure with three ships fitted out in 1591; only one of them reached India, and after a voyage of three years, the commander, Captain Lancaster, was brought home in another ship, the sailors having seized on his own; but his information gave rise to a capital mercantile voyage, and the Company's first charter, in December, 1600. Their stock then consisted of £72,000, and they fitted out four ships, and meeting with success, have continued to trade ever since. India stock sold at £500 for a share of £100, in 1683. A new Company was formed in 1698; and both were united in 1702. The India House was built in 1726,

and enlarged in 1799. Board of Control instituted 1784. See EAST INDIA COMPANY.

Railroads in India.—There are several railroads going forward in different parts of India, which promise to be productive of a great increase in the trade of that country, though it is more questionable whether for some years to come they will afford a very ample income to the proprietors, for the heavy cost of the construction. One of the lines first undertaken is the East Indian, extending from a navigable part of the Ganges toward Delhi. This road is already partially opened, and the report of its operations for the first six months of the year 1856, contained a return of 432,321 passengers transported, and 38,010 tons of freight. The work from Allahabad to Cawnpore was going forward successfully at the date of this report, but it had been since retarded beyond the expectations that had been entertained, by the difficulty in carrying forward the materials. The earth-work was nearly completed at that time. Allahabad is near the junction of the Jumna with the Ganges, 600 or 700 miles above Calcutta. The work was to be extended from Cawnpore to Delhi under the officers of the Company, without contractors. We have lately seen an account of the total loss of a costly locomotive, destined for this road, by being sunk in the Ganges. A portion of the Great Indian Peninsular road, beginning at Bombay, has also been opened, and a location for the extension of the line has been recently made, from Nagpore to Jubbulpore, where it will unite with the East Indian, thereby forming an entire line of inland communication following, in part, the course of the Ganges, from Bombay to Calcutta.

The Scinde Railway, another important work designed for opening the trade of the great valley of the Indus, has already made considerable progress. It will extend from Hyderabad to the port of Kurrachee, a distance of 110 miles, it being rendered necessary on account of the difficult navigation of the mouths of that river. As an appendage to this work, a more extensive one called the Punjab Railway has been lately projected, and a prospectus of it is now advertised in the London papers. It is to be 230 miles in length, beginning at Mooltan on the Indus 470 miles above Hyderabad, and running thence to Lahore and Umritsir, through a country of remarkable equality of surface. It is to form, in connection with the Scinde Railroad, and an improved system of steam navigation on the intermediate portion of the River Scinde or Indus, between Hyderabad and Mooltan, a connected line of communication from Kurrachee, which is destined to be the principal port for western India, to Lahore the capital of the Punjab. From Lahore it will be further extended 36 miles to Umritsir, the commercial capital of a very large and productive trading district, making in all, by railroad and steam navigation, 810 miles. For the Punjab railroad alone it is proposed to raise a capital of £2,500,000, of which two fifths of the shares are reserved to the shareholders in the Scinde Company, in the proportion of two shares of the former to one held of the latter. The prospectus advertised in the London papers contains the following description of the region of country through which this line of communication will pass, extending nearly the whole length of the valley of the Indus:

"A railway from Mooltan to Lahore and Umritsir will not only afford an outlet to the impeded traffic of Punjab and neighboring territories, but would of necessity greatly enhance the importance and value of the line from Kurrachee to Hyderabad. Scinde and the Punjab (including the States under control) cover an area of 130,000 square miles, with a population of nearly 25,000,000. The flower of the European and native army occupies these provinces, and numbers 70,000 men, more than 15,000 of whom are Europeans."

The following further description of this region of country, is from the *Calcutta Englishman*:

"Lahore, situated on the Ravee, is the capital of the Punjab and the seat of its political administration. The town is very extensive, and carries on a brisk internal trade. The civil station of Anarkullee, and the large military station of Meean Meer, are likewise attached to it. Umritsir, the commercial capital of the Punjab, distant 36 miles, is at least equal, if not superior, to Delhi in population and wealth. The intervening country is level, and without even a nullah of any size, and an intercourse of so great an extent is maintained between them, that the road is literally thronged day and night with every description of wheeled vehicles, horses, camels, etc., and foot passengers; in short, more resembling the street of a town than a mere communication between two cities so far apart. Umritsir is the grand entrepôt for the commerce of the cis-Sutlej States—the rich and mountainous regions eastward to Kote Kangra—the horses, fruits, and woollens of Cabul and Bokhara, the shawls and other produce of Cashmere, Yarkhand, and the mountainous country toward the north-east—in fact, of the whole Punjab and the countries encircling it, are here concentrated. Mooltan is a large town and military station on the Sutlej or Gharra, so termed after its conjunction with the Beas. It is quickly becoming an important emporium, for it is the connecting link to the trade of northern with south-western India, or rather Bombay and Europe. Kurrachee, situated at the mouth of the Indus, is fast advancing into prosperity and into notice as a sea-port; it will probably soon be known as the first in the empire, being superior to Calcutta, Madras, or even Bombay."

The distance between Calcutta and Bombay in a direct line is a little more than a thousand miles. By the indirect route which must be pursued by the Peninsular line, to find one adapted either to steam navigation or to the construction of a railroad—that is, by following the course of the Ganges, so far as the route is eligible, and from the point thus reached, by selecting the line best adapted to the construction of a railroad, taking into consideration the comparative evenness of surface, and the production, resources and population of the country to be traversed, the distance will not be less than 1600 miles, exclusive of the minor sinuosities of the route, which can not be accurately estimated until the line is definitively laid down. It is already ascertained that easterly from Nagpore, coal of an excellent quality for the making of coke at a low cost is found in abundance. Extensive as these railway routes are, it will be perceived that they bear no comparison, in point of extravagance, and hopelessness of execution, with the vast routes projected between the Mississippi and the Pacific in various directions, traversing regions uninhabited and uninhabitable, and passing over mountain ranges, which almost bid defiance to the power of the locomotive. In one case, the projected routes pass through countries already covered by an immense population, and affording valuable products adapted to become the objects of a profitable trade, and consequently capable of contributing to the support of the line throughout every part of it. In the other case, nearly the whole country to be traversed, by the most favored of the projected routes, is destitute not only of the means of affording even a partial support to the route when constructed and put in operation, but in a great measure incapable of furnishing even the timber necessary for its construction and repairs, the fuel necessary for locomotives, or provisions for the men who must be employed in running them.

The great lever, however, by which England will, in a greater ratio than ever, increase her power in the East, will be the *railroad system*. And in this policy rapid strides and important results have been already accomplished. As early as August, 1855, it was stated

in the House of Commons that the East India Company had sanctioned the construction of one road 590 miles in length, to be completed in the year 1856, with a guaranty of 5 per cent. dividend by the Company. In other words, private capitalists having subscribed the required capital, the Company therefore gave a guaranty of 5 per cent. income, upon a capital of \$20,000,000. Other roads have been projected, and are now in course of construction, with an aggregate line of over 3000 miles. From one extremity of British India to the other, the magnetic telegraph is in full operation. The intelligence carried from England to Bombay, was, as far back as April, 1855, transmitted to Calcutta by telegraph. The three grand trunk railroads are:

	Length, miles.
1. From Calcutta to Peshawur.....	1,423
2. " Calcutta to Bombay.....	1,002
3. " Bombay to Agra.....	734
Total.....	3,159

4000 miles of telegraph wire are now set up in India, and in constant use. In the construction of this immense line of wire, 70 large rivers were crossed. In one case the cable over a river measures 15,840 feet, and in another over two miles in length.

In order to carry out the views of the British government and of the East India Company especially, a standing army of 289,000 men (European and native), is maintained. It requires little foresight to show that it is in India (at present) and in China (hereafter) that the British power will for many years be developed to an extraordinary degree. With the aid of capital, now abundant in India, and with the further aid of railroads, manufacturing machinery, steamships and steamboats, the magnetic telegraph, and cheap labor, the commercial and political power of Great Britain will soon overshadow all others. The subject furnishes points of inquiry and consideration, which should be duly weighed by the statesman, the merchant, and the philanthropist.

We have all looked with astonishment upon the vast commercial changes that have transpired in the world within the past 20 or 30 years. Science, genius, enterprise, and capital are yet at work transforming, modifying, creating. America has witnessed great transformations within that period. It would seem that Asia is likely to undergo equally important changes, through the means of the British government and its thousand agents. There is no reason why the United States, availing themselves of the newly-enlarged field of operations in the East, should not find a profitable market for their manufactures, and further employment for their shipping.

Metals.—From the wild and inaccessible nature of the country in many parts of Hindoostan, its metallic products are but imperfectly known. It is found to produce all the metallic ores, as well as diamonds and precious stones, and other mineral substances. Gold is generally found in the sands of the mountain streams, and is extracted by washing. The head streams of the Ganges bring along with them particles of gold, which in Rohilcund are collected by a particular caste of people. It is found in various parts of Mysore, particularly nine miles east of Boodicootta, where the country is impregnated with it; also in the Nialgherry Mountains; and in great quantities in all that tract of country that lies west; and in the adjoining Koondanad and Ghaut Mountains. This whole tract, including the mountains, and comprising a space of 2000 miles, contains gold. Unrefined gold is regularly exchanged by many of the mountain tribes of the north for the produce of the plains. It is estimated that about 1000 men are continually employed in collecting this precious metal. Copper is produced in the province of Delhi, which the natives collect either on the surface or with very slight excavations; also in the Rajpoot principality of Jeypoor in the province of Ajmeer,

and in other parts of the same province, there are copper mines, and in the Carnatic, about 40 miles north-east from Cuddapah. The metal is found in layers about two inches, and occasionally two feet thick; they are coated with ochre, and are in general flat, as if they had undergone compression. The ore exists in nearly a metallic state, without any admixture of sulphur, arsenic, or any other substance that requires separation. The best ores yield 50, and the worst 6 per cent. of pure metal. The granitic mountains of Nepal and northern Hindoostan contain much iron, lead, and copper, with a little gold in the river courses. The copper mines are quite superficial, the ore being dug from trenches entirely open above, so that the work is laid aside in the rainy season. Iron ore is found in many parts of Hindoostan. There are mines of iron in Lahore and in Ajmeer. In Orissa many of the natives are iron smelters, and most of the iron sent from Balasore to Calcutta is produced in this district. In Bejapoor the working of iron furnishes employment to many of the inhabitants, who extract it by a very rude process. At Porto Novo, in the British district of South Arcot, in the presidency of Madras, extensive iron-works have been erected by a joint-stock association called the East India Iron Company; to whom also belong the iron foundry works at Beypoor, in Malabar, on the opposite coast of the peninsula. The ore smelted at these establishments is found in great abundance and of excellent quality in their respective vicinities. The Mysore country abounds in iron. There are also forges for manufacturing steel, which are minutely described by Dr. Buchanan in his account of the Mysore country.* In Coimbatore and in Malabar the iron mines give employment to a considerable number of persons. The process and machinery for extracting the iron are very imperfect. Iron mines were formerly worked in the district of Bogliipoor, but they have been long neglected. Rich iron ores are abundant in Cutch. The ore is gathered in baskets from the surface of the earth, and yields 22 per cent. of iron; and the steel which is made from this ore is the finest in the world. Lead is produced in various parts; also antimony, plumbago, sulphur, alum; and there are inexhaustible supplies of coal, though the mines are not worked with any effect. Coal is raised in Burdwan in considerable quantities and of a fine quality. Saltpetre is produced in Bengal and Bahar, though its manufacture does not go beyond the eastern limits of the latter province. It might, however, be attended with success in Bengal, where the tendency of the soil to its production is very great; and there might be manufactories of salt in almost every part of the country, but they are restricted by the Company's monopoly. In the Mysore plains the wells are salt, and the ground is frequently covered with a saline efflorescence. A range of hills, extending from the Indus to the Hydaspes, yields the famous rock-salt of Lahore, of which they are almost entirely composed.† Many quarries are found in the hilly districts, which produce fine stone, that is cut by the inhabitants into pillars, flags, statues, and used for other ornamental purposes. Dr. Buchanan saw several fine-grained specimens of granite, also a black stone used in the construction of Hyder's monument, and a beautiful green stone which takes on a marble polish. The hills of Guzerat contain marbles exhibiting many colors and qualities; and marbles are seen in the various tombs and monuments of ancient art still remaining in the country, finely ground and of different colors, white and yellow with red veins, and green clouded with yellow and black, of which the quarries have never been discovered.

Diamonds are no longer found in the celebrated mines of Golconda, but they are still gathered in the bed of the Krishna, and in the province of Gundwana. Near the confluence of the Hebe and the Mahanuddy, 13 miles beyond the town of Sumbulpoor, after the rains, the natives find diamonds in the red earth washed down from the mountains. The matrix containing them is a clay which has a red appearance like burned bricks. There are diamond mines in the south of India, about 7 miles north-east of Cudhapah, on both banks of the Pennar River. These mines have been worked for several hundred years, and occasionally yield large diamonds, which are either found in the alluvial soil, or are recognized by their sparkling among the gravel after it is washed and spread out, or in rocks of the latest formation. The grounds are leased on behalf of the government to private speculators at a moderate rent. In Bundelcund, also, the table-land which surrounds Pannah, wherever the ground is of a gravelly nature, produces diamonds. The soil is from two to eight cubits deep, and diamonds are found intermixed with small pebbles, though not adhering to them. A very few diamonds in the course of a year repay the labors of the workmen. The diamonds found are mostly under the value of 500 rupees, or £50, though some reach the value of from 500 to 1000 rupees. They are weighed and sold to the merchants residing at Pannah, and are by them carried to all parts of the country. The workmen are allowed three fourths, two thirds, or a half the diamonds they find, according to their size, and any man is at liberty to dig; but the business is less prosperous than formerly, and the workmen are poor. The diamond grounds are strictly guarded against the contraband trader, and the least delinquency draws down the prompt and barbarous vengeance of the rajah. These are supposed to be the diamond mines mentioned by Ptolemy. Their annual produce was estimated, in the reign of Achar, at eight lacs of rupees. In 1750 it had fallen off to one half; the amount, comparatively insignificant, is divided between the rajahs of Pannah, Banda, and Chirkaree.

The other varieties of precious stones found in India are the ruby from the table-land of Mysore, the beryl, the topaz, the chrysolite, garnet, cat's eye, etc. There are cornelian mines in the province of Guzerat, in the wildest parts of the jungle. They consist of numerous shafts worked down perpendicularly, about four feet wide, and several of them to the depth of fifty feet. Some of them extend at the bottom in a horizontal direction, though not to any distance; the heavy rains cause the banks to fall in, so that new openings are always made at the end of the rainy season. The nodules weigh from a few ounces to two or even three pounds, and lie close to each other in abundance, not in distinct strata, but scattered about. They are of various colors when they are found—of a blackish olive, like common dark flints; others of a lighter hue, with a slight milky tinge; though it is quite uncertain what appearance they will assume after the process of turning. They are carried to Cambay, where they are cut, polished, and formed into the fine ornaments for which that city is so highly celebrated. Beautiful jaspers and agates are also found in this district, and in other parts of India.

Manufactures.—In every country the nature and quality of the manufactures must depend on the condition of the consumers, and among the despotic States of Asia these naturally consist of two classes: 1st, of the great and powerful, in whose hands the property of the country is accumulated, and who are comparatively few; and, 2dly, of the mass of the people, oppressed under native rule, and sunk in poverty. Such, accordingly, has been from time immemorial the state of Hindoostan; and its manufactures, which are necessarily adapted to the use of these two classes, have always consisted of exquisitely fine fabrics of cotton,

* *Journey from Madras*, vol. 1., pp. 170, 180; vol. II., p. 139.

† See the observations of Lieutenant Burnes on the commercial relations of the Punjab.

for the use of the imperial court or of the rajahs and princes of the country, or of coarse stuffs for the common people; and to such perfection have they attained, that the modern art of Europe, with all the aid of its wonderful machinery, has never yet rivaled in beauty the product of the Indian loom. Yet the Hindoo workman has no advantage from capital, from machinery, or from the division of labor; he prepares the raw material with his own skillful hand, in all the various stages of its manufacture; his loom and all his implements are of the rudest construction; and yet, by patience, perseverance, and unusual skill, he produces an article which is prized all over the world for its inimitable richness and beauty, as well as for its durability. The native artisan distinguishes at once these fine fabrics from all counterfeits, by the eye, the touch, and the smell. In the district of Dacca are chiefly fabricated plain muslins, variously denominated, according to the closeness or fineness of the texture; also flowered, striped, or checkered muslins, denominated from their patterns; and the thinnest sort of muslins, for the manufacture of which the province is much celebrated, as is Coromandel in southern India for its calicoes and other piece-goods, of the most brilliant and durable colors. Other kinds more closely woven are fabricated in the western parts of Bengal; and another sort, of a more rigid texture, in every district. Coarse muslins, in the shape of turbans, handkerchiefs, etc., are made in all parts of Hindoostan; and in its northern provinces, plain and flowered muslins, but of inferior quality to the beautiful fabrics of Dacca. In Moultan are manufactured silks which possess a strength of texture and brilliancy of hue that have secured for them a preference in the Indian market. They are woven into shawls and scarfs, which are in great demand, and which the Indian manufacturer in other parts has never been able to rival, either in color or durability. Carpets are also manufactured in this province, though they do not equal those of Persia. Various articles of calico are made, which still retain their Indian denominations, as khasahs, which are manufactured north and east of the Ganges; cloths of nearly the same quality are made near Tanda in Oude. Near Luckipoor, on the western frontier of Benares, in the neighborhood of Allahabad, and also in the province of Bahar baftaes are manufactured; sanaes in Orissa, and in the district of Midnapoor; and a similar cloth under the same denomination in the eastern parts of the province of Benares; woven silk and taffeta, both plain and flowered, in the neighborhood of Moorsheadabad; tissues, brocades, and ornamented gauzes, at Benares; plain gauzes for domestic use in the west and south of Bengal; and at Moulda, Boligpoor, and at several towns in the district of Burdwan, mixed goods of silk and cotton. Sackcloth is manufactured from packthread in many places, especially in the northern provinces, for the clothing of the mountaineers. Cotton is made into canvas in the neighborhood of Chittagong, Patna, and other places; and blankets everywhere for common use. A coarse cotton cloth dyed red with cheap materials is very generally used, and is chiefly manufactured in the country between the Jumna and the Ganges. Fine and coarse calicoes are dyed with permanent and fugitive colors for common use in the province of Benares, the city of Patna, and the neighborhood of Calcutta. This art appears to have had its origin in India, and to have been there perfected to a degree never surpassed by Europeans. Dainties of various kinds, and damask linen, are made at Dacca, Patna, Tanda, and various other places.

In Mysore, near Bangalore, silk is manufactured into different articles of dress, into strong cloths, which men, women, or boys wrap round them, and into turban pieces. These cloths are of a rich fabric, variously figured, and the pattern, if ordered, is elegantly wrought in gold thread. Turbans are made of cotton

and silk. Thin white muslins with silk borders ornamented with gold and silver, and plain green muslins, with silk borders, are manufactured for female dresses; also striped and checkered muslins; cloth like the khasahs of Bengal, for wrapping round the shoulders of men, sometimes with striped or silver borders. Handkerchiefs with red borders, a coarse thick white cotton cloth with red borders, and turbans ornamented with silver and gold thread at the ends, are also made in this district; and the dyeing of cotton cloth, cotton thread, and silk, is carried on by a set of people who act as tailors, cloth-printers, and dyers. Tanneries are established, and manufactories of oil. At Chennapattana there are manufactories of glass-ware and of glass rings, universally worn as bracelets by the women of the Deccan. Steel wire is also made here for the strings of musical instruments. At Vizigapatam, in the northern Circars, the inhabitants are very expert in carving curious little boxes of ivory and bone. Throughout southern India manufactories of cotton silk are generally established. In the northern Circars the principal part of the East India Company's investment of piece-goods was formerly provided. This country, extending about 500 miles along the coast of Coromandel, from the River Kistnah to the borders of Cuttack, has from very early times been the seat of an important and extensive manufacture of cotton piece-goods, of which the description of calicoes known as Madras long cloths and salempores are the chief, and, with Masulipatam dyed handkerchiefs, and other kinds of goods for the African and West India trade, have, until lately, been in great demand. Masulipatam goods have, however, for some years been entirely superseded by the manufactures of Manchester and Glasgow; and in all appearance the northern Circars will at no distant period of time be deprived of the manufactures of white calicoes also. A great change has indeed been brought about in the manufactures of India by the introduction of British goods, which, in many branches, have supplanted those of the country; the poor Hindoo, notwithstanding the low rate at which he works, is thus undersold in his own market by the manufacturers of Manchester and Glasgow; and this competition of British goods nearly ruined the native manufacturers of India, deprived the workmen of employment, and reduced them to great distress; so that the directors remark concerning the Indian trade, that "it exhibits the picture of a commercial revolution, productive of much present suffering to numerous classes in India, and hardly to be paralleled in the history of commerce."

Commerce.—Hindoostan, from its great extent, and the diversity of its soil and climate, supplies the materials of an extensive commerce. Its internal trade is great, while its rare and precious products are exported to the remotest regions of the world. An extensive commerce takes place between Bengal and the other maritime districts, and the western provinces of Hindoostan, consisting in the exportation of grain from the corn districts, in exchange for salt, a great staple; for betel-nut, sugar, raw silk, silk and piece goods. From the native States of central India Malwah opium is sent down to Bombay for exportation to China. In Bengal the culture and manufacture of opium are conducted under a State monopoly, and the produce is transmitted to Calcutta, where it is disposed of by public sale. The holy city of Benares is a great mart of trade, in which are exchanged the shawls of the north for the diamonds of the south, and for the muslins of Dacca and the eastern provinces: and it has besides, very considerable silk, cotton, and fine woolen manufactures of its own, the produce of which is exchanged for other commodities. Through the northern provinces of Delhi and Lahore a great trade is carried on between the hill countries and the plains. The inconsiderable town of Hurdwar or Hardiwara, being a celebrated place of Hindoo pilgrimage, is a

great commercial emporium, to which multitudes resort for the purposes of trade, as well as from piety. This great annual concourse takes place in the spring, when the produce of the northern and western countries is exchanged for the manufactures of the lower provinces. The principal articles brought here for sale from Cabul, Candahar, Moultan, and the Punjaub, are horses, mules, camels; some of these from Balk, Bokhara, and the countries on the northern side of the Hindoo Coosh Mountains; a particular species of tobacco, antimony, assafetida, dried fruits, such as apricots, figs, prunes, raisins, almonds, pistachio nuts, and pomegranates; from Cashmere and Amritsir, shawls, dootas, and pautoos; spotted turbans, looking-glasses, toys, with various manufactures in brass and ivory from Jeypoor; shields from Rohilcund, Lucknow, and Silhet; bows and arrows from Moultan and the Doab; rock-salt from Lahore; baftas and piece-goods from Rahn, a large city in the Punjaub. The country of Marwar also supplies many camels, and a species of flannel called loo. In exchange are brought from the British provinces Kharwa muslins, mushroo or sarsnet, and woolen cloths, the coarsest of which only find a market. In this fair, Dutch and Venetian coins are current; and some toys of European manufacture were seen exposed to sale by Mr. Webb. The northern merchants by whom it is frequented assemble at Amritsir in caravans about the end of February, and pursue their route in an easterly direction through the territories of the protected Seikh powers. Still further to the north and west the provinces of Lahore and Moultan export to the countries to the west of the Indus, sugar, rice, indigo, wheat, and white cotton cloths, hides, etc. The imports are swords, horses, fruit, lead, and spices; and into all these countries European goods are imported from the lower provinces. The southern provinces export to Bengal, pepper, betel-nut, sandal-wood, and cardamums, teak timber, etc.; while they receive in return salt and rice, cotton cloths, and articles of European manufacture.

A very considerable coasting trade is carried on between the different parts of Hindoostan. Bengal exports to Madras and the coast of Coromandel, grains of different descriptions, sugar, saltpetre, molasses, ginger, long pepper, oil, silk wrought and unwrought, muslins, spirits, and provisions. The returns are salt, red wood, fine long cloth, izarees, and chintzes. From the Malabar coast the imports are sandal-wood, coir rope, pepper, cardamums; and the returns are generally in the annual supplies which Bombay receives from Bengal. From Bombay are brought teak timber, elephant's teeth, lac, etc.

From the reputed wealth and precious produce of India foreign nations were always desirous to participate in its trade. Prior to Alexander's expedition to the East it was scarcely known to the Greeks, nor is it certain that they had ever seen its productions. But we know that these were brought to Rome, especially silk, which so allured the vanity of the Roman ladies that it sold for its weight in gold. Other valuable commodities of India, such as calicoes, muslins, aromatics, ivory, diamonds, pearls, and other gems, precious aromatics, the pepper of Malabar, turtle shell, etc., and some dry sugar and indigo, were also imported into Alexandria, the chief emporium of eastern commerce, and were naturally attracted to the great metropolis of the ancient world. This trade was carried on from Myos Hormos, the chief port on the Red Sea, whence, after the conquest of Egypt by the Romans, the annual fleets, sometimes of 120 vessels, set sail, and, under the propitious influence of the south-west monsoon, boldly stretched across the Indian Ocean for the western coast of Hindoostan, which they reached in about 40 days; and afterward extended their voyage round Cape Comorin to the coast of Coromandel and the mouths of the Ganges. The high

price received for these eastern luxuries in Rome encouraged the merchants to provide larger vessels, and a band of archers to defend them against the pirates, who then, and until very lately that they were extirpated by British ships of war, infested the western shores of India. The commodities of the East being landed at Myos Hormos, were carried on camels to Coptos, the seat of a flourishing trade, and thence by sea to the Nile, whence they reached Alexandria by water carriage, and were re-shipped to the different ports on the Mediterranean. The produce of India was also brought to Europe by other routes—namely, by the way of Palmyra, then a flourishing city, and thence to Rome and other western countries, through the ports of Syria: or across the Himalaya Mountains to the Oxus, thence to the Caspian, and afterward to the Black Sea, and finally to its ulterior markets in Europe. But though there was a demand in Europe for the produce of India, there was no demand in India for the produce of Europe; and bullion was the only article that could be sent out in exchange. The annual drain of gold from Rome and its provinces for Indian goods was estimated by Pliny at 500 sesteritia, equal to about £400,000. In the convulsions which followed the decline of the Roman empire, the trade of the East was successively engrossed by the Persians and Arabians. The latter, in the year 636, built the city of Bassora, which soon grew into a great commercial mart; and to this place, and to Ormus, long celebrated for its vast riches and its trade, the spiceries and merchandise of India were brought, and distributed through the various ports of the Mediterranean. After the expulsion of the crusaders from Syria and Egypt, Alexandria again became the chief entrepôt of eastern produce, whence it was carried to Italy by the Venetians and others, and distributed throughout Europe. But the discovery of a passage to India in 1495 by the Cape of Good Hope changed the course of this trade, which now entirely left the Italians, and was engrossed by the Portuguese for nearly a century without any molestation from European rivals. At length the Dutch and the English became their competitors, and established joint-stock companies, with the exclusive privilege of the eastern trade. But their anticipations of profit were not realized. The great distance of Europe from India, and the want of an equivalent for its produce, precluded any extensive intercourse; the trade accordingly bore a very small proportion to the trade of the country; and being besides cramped by monopolies, it never attained its natural growth. In 1773 the average exports of Britain to India amounted to about £489,000 a year; in 1793, on a like average, to about a million a year; and it does not appear that a greater trade was carried on with India from any other part of Europe. The commerce of nations is limited to the surplus produce which they can mutually exchange; and, from the great distance between India and Europe, this surplus produce was long confined to those few articles which, containing a great value in small bulk, could bear the expense of a long voyage. The demand was also altogether on the side of Europe, and its trade with India consisted merely in the purchase, with bullion, of a small quantity of precious articles for the consumption of the rich. The progressive improvement of industry in Europe, together with the entire opening of the trade to India and China since the year 1834, has occasioned not only a greater exportation of British goods, but a change also in the nature of the trade. It is not so much the produce of the labor as of the climate and soil of India, which no ingenuity can supply, that is in demand in Britain; and, accordingly, while the import of Indian manufactures has fallen off, that of the raw material, and many varieties of vegetable produce, has increased. Thus the importation of cotton piece-goods—namely, white calicoes and muslins—which amounted in 1814 to 1,266,608 pieces had de-

creased in 1853 to 428,294 pieces; while within the same period the importation of cotton wool had increased from 2,850,318 lbs. to 181,369,994 lbs., and the exportation of cotton manufactures in a similar ratio. Even the incomparable muslins of Dacca are in less demand since the introduction of British goods. Thus, in the progress of the trade between India and Europe, the former country, notwithstanding its boasted wealth and superior industry, has taken the lowest place, exporting her rude produce for the manufactures of the richer country. This is the nature of the trade carried on between Britain and America and the countries in the north of Europe, and is a sure index to the respective progress of the two countries in wealth and improvement. Those countries which can not manufacture their own rude produce send it to Britain, which abounds in capital, and still more in art and industry; and both countries are benefited, the poorer country exchanging its surplus produce for a supply of manufactures of which it is in want, and the richer country the produce of its overflowing capital for a supply of the raw material which its own soil does not afford. This is now the relative condition of Great Britain and India. The former having outstripped the latter country in industry and wealth, sends out a supply of cheaper goods than the native workman can furnish; and so prodigious have been the improvements in machinery, that the raw material of cotton is imported from India, and being manufactured in

Britain, is re-exported and sold at a cheaper rate than it can be made at home, though loaded with the expense of a double voyage across half the globe; and thus it has become an important staple in the trade of Great Britain with the East. A notion was long and successfully propagated by the advocates of the monopoly, that the Hindoos, from their poverty and their simple habits, would never become extensive consumers of European goods, and that the demand was amply supplied by the exports of the East India Company. Evidence to this effect was given before the committee of the House of Commons in 1810 by Sir Thomas Munro and other eminent servants of the Company. But such statements have been completely refuted by the rapidly increasing exportation of British goods to India since the complete opening of the trade in 1834. This will appear from the following table, showing the exports from Hindoostan for a period of 18 years:

VALUE OF EXPORTS FROM GREAT BRITAIN TO HINDOOSTAN, EXCLUSIVE OF BULLION.

Years.	Exports.	Years.	Exports.
1835.....	£3,135,410	1844.....	£7,952,179
1836.....	3,890,504	1845.....	6,477,148
1837.....	3,210,663	1846.....	6,420,404
1838.....	3,505,930	1847.....	5,790,228
1839.....	4,239,489	1848.....	5,512,110
1840.....	6,014,899	1849.....	7,578,980
1841.....	5,439,564	1850.....	8,827,992
1842.....	5,854,901	1851.....	9,226,729
1843.....	6,347,349	1852.....	7,285,073

IMPORTS OF HINDOOSTAN.

YEARS.	MERCHANDISE.						TREASURE.			
	Bengal.	Madras.	Bombay.	TOTAL.		Total merchandise.	Bengal.	Madras.	Bombay.	Total.
				United Kingdom.	Other countries.					
	£	£	£	£	£	£	£	£	£	£
1834-35	1,999,180	503,290	1,758,685	2,682,221	1,578,834	4,261,106	646,224	153,115	1,093,688	1,893,023
1839-40	3,341,591	683,307	1,806,337	4,289,489	1,541,747	5,831,236	1,226,796	112,406	606,071	1,945,264
1844-45	5,983,990	1,046,894	3,770,181	7,952,179	2,801,886	10,754,065	1,581,365	188,561	1,982,545	3,752,471
1849-50	5,283,170	906,004	4,110,718	7,578,980	2,720,907	10,299,888	1,214,865	121,437	2,060,505	3,396,807
1850-51	6,115,201	897,823	4,545,764	8,327,992	3,230,795	11,558,788	1,189,494	260,110	2,362,214	3,811,808
1851-52	7,087,406	906,485	4,246,647	9,226,729	3,018,760	12,240,490	2,306,470	297,398	2,448,190	5,052,059
1852-53	4,993,674	840,531	4,236,655	7,235,078	2,835,783	10,070,861	3,393,987	576,554	2,860,536	6,881,377

EXPORTS OF HINDOOSTAN.

YEARS.	MERCHANDISE.						TREASURE.			
	Bengal.	Madras.	Bombay.	TOTAL.		Total merchandise.	Bengal.	Madras.	Bombay.	Total.
				United Kingdom.	Other countries.					
	£	£	£	£	£	£	£	£	£	£
1834-35	4,092,043	886,107	3,015,263	8,056,973	4,936,447	7,993,420	66,554	108,877	21,808	194,740
1839-40	6,800,925	1,223,487	2,333,352	5,969,951	4,892,709	10,862,745	200,017	127,446	143,059	470,523
1844-45	9,822,197	1,641,462	5,126,552	7,240,619	9,349,592	16,590,212	396,543	65,053	645,243	1,106,540
1849-50	10,148,038	1,272,834	5,391,376	7,026,470	10,235,323	13,712,399	874,209	72,637	544,400	971,244
1850-51	9,997,527	1,566,976	6,399,645	8,104,016	10,060,133	18,164,149	276,329	104,140	160,813	541,289
1851-52	10,423,970	1,658,308	7,796,474	7,188,338	12,740,517	19,879,253	250,538	215,768	452,732	919,038
1852-53	10,783,554	2,121,613	7,604,464	8,428,295	12,086,338	20,464,633	476,375	36,332	542,472	1,055,229

The goods exported, as they are enumerated by Mr. Rickards in his valuable work on India, consist of all the staple manufactures of Britain. "Woolens and cottons," he mentions, "of every variety and value; manufactured silks; hardware of all descriptions; iron, copper, lead, tin, and spelta, in large quantities; marine and military stores; machinery for various uses; glass-ware of the metal specimens, down to articles of the commonest use; china-ware or porcelain, the same; jewelry of all sorts; gold and silver plate and ornaments; clocks, watches, furniture, carriages, harness, haberdashery, hosiery, stationery, books; in short, every article of luxury, comfort, or convenience, which British industry can produce." According also to all the most correct observers of Indian manners, the taste for European fashions, luxuries, and comforts, is rapidly extending among the Hindoos. Bishop Heber, in his interesting journal of a tour through India, strongly confirms this fact. "The wealthy natives," he observes, "now all affect to have their houses decorated with Corinthian pillars, and filled with English furniture; they drive the best horses and the most dashing carriages in Calcutta. Many of them speak English fluently, and are toler-

ably read in English literature; and the children of one of our friends I saw one day dressed in jackets and trousers, with round hats, shoes, and stockings." At Benares he found "English hardware, swords, shields, and spears, from Lucknow and Monghyr; and those European luxuries and elegancies, which are daily becoming more popular in India, circulate from hence through Bundelcund, Gorruckpoor, Nepal, and other tracts which are removed from the main artery of the Ganges." At Nussereabad, in the province of Berar, the same traveler mentions that "English cotton cloths, both white and printed, are to be met with commonly in wear among the people of the country, and may, I learn to my surprise, be bought best and cheapest, as well as all kinds of hardware, crockery, writing desks, etc., at Pallee, a large town and celebrated mart in Marwar, on the edge of the desert, several days' journey west of Joudpoor, where, till very lately, no European was ever known to have penetrated." In short, it appears that British and other European manufactures, from their quality and cheapness, are everywhere in demand. They penetrate into the remotest districts of Asia; and now that the termination of the East India Company's

monopoly, which took place in 1834; has laid open Hindoostan to the capital and enterprise of Britain, experience proves that an equal demand for them may be anticipated in that country. The preceding tables contain a view of the extent and value of the trade of India to all parts of the world. The excess of exports over imports arises from the necessity of making annual remittances to Great Britain to defray the interest of debt, and to meet the expenditure of the home government.

ACCOUNT OF THE PRINCIPAL IMPORTS INTO GREAT BRITAIN FROM INDIA IN THREE YEARS, FROM 1851-52 TO 1852-53.

Articles.	Quantities.		Value in sterling.	
	1851-52.	1852-53.	1851-52.	1852-53.
Coffee.....lbs.	6,824,435	4,244,845	58,429	61,029
Cotton, raw.....	81,104,223	181,360,994	1,171,250	2,525,186
Grain.....cwt.	624,167	1,157,985	105,385	177,459
Indigo.....lbs.	8,193,236	6,773,160	1,444,705	1,186,887
Ivory.....cwt.	5,149	8,375	85,949	61,078
Lac.....	30,448	52,543	58,041	104,043
Pepper.....lbs.	1,918,973	1,208,945	16,385	10,479
Piece-goods				
Cotton.....pieces	208,723	428,550	71,071	186,622
Silk.....	403,804	502,947	224,830	267,855
Shawls.....	7,496	11,211	113,848	175,410
Rum.....gallons	224,463	171,994	10,814	8,447
Silk, raw.....lbs.	1,437,663	1,381,203	680,537	664,454
Saltpetre.....cwt.	254,670	389,444	196,848	253,787
Sugar.....	1,506,051	1,356,630	1,659,153	1,605,321
Wool.....lbs.	7,056,718	12,000,999	100,606	171,169
Miscellaneous			1,111,108	1,070,069
Total merchandise.....			7,188,889	8,428,295
" treasure.....			7,051	123,919
Grand total.....			7,145,940	8,557,214

ACCOUNT OF THE QUANTITIES AND DECLARED VALUE OF THE PRINCIPAL ARTICLES EXPORTED FROM GREAT BRITAIN TO INDIA IN THREE YEARS, FROM 1851-52 TO 1852-53.

Articles.	Quantities.		Value in sterling.	
	1851-52.	1852-53.	1851-52.	1852-53.
Apparel.....			250,931	256,213
Books, stationery, etc.			118,712	113,601
Cotton, twist and yarn.			1,373,949	1,102,500
" piece-goods.....			4,662,086	3,578,349
Fruits.....			949	121
Jewelry.....			56,934	28,564
Malt liquor.....			143,947	151,570
Machinery.....			11,541	23,126
Metals, manufactured.....			230,105	182,944
Copper.....cwt.	44,004	24,796	215,342	114,631
Iron.....	638,722	339,795	267,462	140,005
Lead.....			27,329	17,992
Spelter.....	58,758	9,070	55,798	6,748
Tin.....			6,955	1,608
Salt.....	1,158,983	837,946	552,366	399,362
Silken goods.....			31,495	38,504
Spices.....				
Spirits.....gallons	96,863	69,526	49,648	39,482
Tea.....				
Tobacco, segars.....			913	534
Timber.....			1,086	1,252
Woolen goods.....			200,435	114,794
Wines.....gallons	255,125	175,101	200,658	144,761
Miscellaneous.....			764,204	781,317
Total merchandise.....			9,226,729	7,235,078
" treasure.....			1,041,015	2,340,947
Grand total.....			10,267,744	9,576,025

The following table shows the several territories which have been annexed, or have been proposed to be annexed, to the Indian possessions of Great Britain since the year 1848:

Territories annexed.	Date of annexation.	Reasons.	Area.	Population.	Gross Revenue.	Nett Revenue.
			Square miles.		Rupees.	Rupees.
Jeltpore (Bundelcund).....	1849	Failure of heirs.....	165	16,000	64,180	Not known.
Sumbulpore (south-west frontier Bengal).....	1849	Failure of heirs.....	4,693	274,000	93,000	Not known.
Bughat (Cis-Sutlej Hill States).....	1850	Failure of heirs.....	30	3,420	7,000	Not known.
Part of Sikkim (north-eastern India).....	1850	Insult to the British Government in seizing the person of its representative.....	1,670	61,766	32,037	
Oodeypore (south-west frontier of Bengal).....	1852	Failure of heirs.....	2,306	133,000	16,480	Not known
Pegu.....	1852	Conquered from the Burmese during the last war.....	20,000	1,000,000	Not known.	Not known
Territory resumed from Meer Ali Morad, one of the Ameers of Scinde.....	1852	Forgery of a treaty, whereby he acquired certain districts which belonged to the British Government.....	5,412	Not known.	483,653	261,043
County of Tularam Sonaputer in northern Cachar.....	1853	Misconduct and breach of engagement with the British Government.....	2,160	5,015	1,208	1,017
Nagpore Territory (Ihansl)....	1854	Failure of heirs.....	80,000	4,000,000	4,000,000	Not known.
Bundelcund.....	1854	Failure of heirs.....	2,532	200,000	613,889	Not known.
Boodawal (Candeish).....	1855	Failure of heirs.....		910	2,727	Not known

The cases in which annexation has been proposed by the government in India, are—Kerowlee (Rajpootana), in 1852, 1800 square miles, having a revenue of 511,402 rupees; Adjy ghur (Bundelcund), in 1855, 340 square miles, 45,000 inhabitants, and a revenue of 175,000 rupees; Inchulkurunjie (Colapore), in 1856, 800 square miles, 43,547 inhabitants, with a revenue of 15,000 rupees; Tanjore Fort and ground adjacent in 1856. See *Annals of British Legislation*, by LEONE

LEVI, July, 1856; *Ency. Brit.*, eighth edition; *Com. Rel. U. S.*, 1856-7.

Revenues of British India 1849-1855.—An abstract statement of the revenues and charges of India, including the charges disbursed in England, for the years 1849-50 to 1854-55 (the last year partly estimated), showing the surplus or deficit in each year converted into sterling money, at the established rate of two shillings the sicca rupee:

Years.	Gross Revenue.	Allowances in accordance with treaties.	Net Revenues.	Charges of collection.	Civil, judicial, military, and marine charges.	Total charges in India.	Charges disbursed in England.	Total charges.	Surplus.	Deficit.
	£	£	£	£	£	£	£	£	£	£
1849-50	25,698,046	2,300,207	23,388,839	3,242,236	17,041,329	20,233,565	2,750,937	23,034,502	354,387	....
1850-51	25,833,150	2,532,083	23,301,067	3,360,015	16,808,000	20,168,015	2,717,186	22,885,201	415,866	....
1851-52	26,092,718	2,447,565	23,645,153	3,817,637	16,789,854	20,607,511	2,506,877	23,113,888	531,265	....
1852-53	26,821,038	2,365,603	24,455,435	4,104,156	17,229,534	21,333,690	2,697,483	24,031,178	424,257	....
1853-54	26,375,197	2,426,131	23,949,066	4,243,936	15,486,908	22,730,94	3,262,289	25,998,188	....	2,044,117
1854-55	26,654,071	2,412,598	24,241,473	4,507,466	19,258,875	23,766,341	3,018,847	26,785,188	....	2,543,710

The British possessions in India are intermixed with the dominions of various native governments, with which political relations, varying in nature and degree, are maintained. The following table exhibits the rel-

ative area and population of the presidencies of Bengal, Madras, and Bombay, and those also of the native States of Hindoostan, and also giving the area and population of the separate provinces of the presidencies.

**AREA AND POPULATION OF THE BRITISH PRESIDENCIES AND
THE NATIVE STATES OF INDIA.**

British Presidencies.	Divisions.	Area in square miles.	Population.
Bengal	Lower Provinces.....	119,633	37,262,168
	Saugur and Nerbudda Territories.....	15,988	1,929,587
	Jaloun.....	1,878	176,297
	British Mhairwarrah.....	282	87,715
	Umballah, Loodianah, and Territory lately belonging to Sikh chiefs.....	4,559	2,311,969
	North-eastern frontier, including Assam, etc.	29,900	1,180,985
	Arracan	15,164	321,522
	South-west frontier, including Sumbulpore, Chota Nagpore, etc.	80,559	2,627,456
	Nagpore or Berar.....	76,432	4,650,000
	The Panjab and Kooloo Territory.....	78,447	9,153,209
	Tenasserim Provinces.....	29,168	115,431
	Jhansi.....	2,532	200,000
	The Sunderbunds, etc.	6,500	Unknown.
	North-western Provinces, including Delhi, Agra, Benares, etc.	72,052	30,271,885
	Butty Territory, Deyrah Dhoon, Kumaon, Gurhwal, etc.....	13,599	600,881
Madras.....	Total.....	496,118	90,889,050
	Regulation Provinces.....	116,245	19,847,305
	Non-Regulation Districts.....	19,444	2,454,392
Bombay.....	Total.....	135,692	22,801,697
	Regulation Provinces.....	57,723	9,015,584
	Non-Regulation Districts.....	62,342	2,098,538
The eastern settlements of Singapore, Prince of Wales' Isl'd. and Malacca.....	Total.....	120,065	11,109,067
	.....	1,575	202,540
Native States within the Presidency of Bengal.....	Oude, Hyderabad, Bhopal, Bhurtpore, Seindia, and Holkar's Dominions, etc.....	503,554	38,259,362
	Do. Presidency of Madras.....	51,802	4,752,975
Do. Presidency of Bombay.....	Guzerat, Cutch, Colapore, etc.....	60,575	4,460,870
	French (Pondicherry, etc.).....	188	171,217
Foreign European possessions.....	Portuguese (Goa).....	1,066	813,262

ABSTRACT OF THE FOREGOING.

		Area in square miles.	Population.
British Possessions....	Bengal.....	496,118	90,889,050
	Madras.....	135,692	22,801,697
	Bombay.....	120,065	11,109,067
	Eastn. Settlements.....	1,575	202,540
	Bengal.....	503,554	38,259,362
Native States.....	Madras.....	51,802	4,752,975
	Bombay.....	60,575	4,460,870
	French.....	188	171,217
Foreign European States.....	Portuguese.....	1,066	813,262
Total of India.....		1,870,635	172,410,040

Notwithstanding the ravages committed by incessant wars and revolutions, as well as by famine and pestilence, their usual concomitants, India has from the earliest times been a densely-peopled country. In different states of society, the law of the increase of mankind will vary according to their relative circumstances and position; and the same, or nearly the same, principle will be found to apply to those classes who are placed in the opposite extremities of the scale. Among the people who are possessed of affluence, or the means of commanding the necessaries and comforts of life, the exercise of moral restraint is unnecessary; among those who are reduced to a mere physical subsistence, without the possibility, and consequently without the desire, of improving their condition, it will be disregarded; and hence the same

results will follow from causes in their own nature diametrically opposite. But in India the great mass of the population have for ages been placed in a situation which excludes all idea of improvement; and religion has lent its powerful aid to obstruct the operation of those natural causes which, in other countries, have served to ameliorate the condition of the people. It may, however, be permitted to hope, that though India always has been, it will not always be, what it now is; that the extension of commerce, under the protection of a vigorous and impartial government, will awaken new ideas in the minds of the people; that security to person and property will give a strong stimulus to industry; that the habitual contact with a higher and more rational form of civilization will serve to mitigate their prejudices, and, in time, to destroy the influence of a debasing superstition; and that, in proportion as their wants are multiplied, their efforts to ameliorate their condition will be increased.

Calcutta is the principal city of the province of Bengal, the capital of the British dominions in India, and, with the exception, perhaps, of Canton, the greatest emporium to the eastward of the Cape of Good Hope. Its citadel is in latitude $22^{\circ} 34' 49''$ N., longitude $88^{\circ} 27' 16''$ E. It is about 100 miles from the sea, being situated on the eastern bank of the western branch of the Ganges, denominated by Europeans the Hooghly River, which is the only arm of the Ganges navigable to any considerable distance by large ships. At high water, the river opposite to the town is about a mile in breadth; but, during the ebb, the side opposite to Calcutta, exposes a long range of dry sand-banks. Owing to the length and intricacy of the navigation from the sea, it can not be undertaken without a pilot; so that, even if it did not exceed our limits, it would be useless to attempt any description of it in this place. The principal merchants and traders consist of British and other Europeans, Portuguese, born in India, Armenians, Jews, Persians, from the coast of the Persian Gulf, commonly called Parsees, Moguls, Mohammedans of Hindoostan, and Hindoos; the latter usually either of the Brahminical or mercantile castes, and natives of Bengal. The native Portuguese and Armenian merchants have of late greatly declined in wealth and importance. On the other hand, the Persian merchants have increased in numbers and wealth, several of them being worth £250,000 sterling. The large fortunes of the Hindoo merchants have been much broken down of late years by litigation in the courts, and naturally through the law of equal coparcenary among brothers. To counterbalance this, there has been, since the opening of the free trade in 1814, a vast augmentation of the number of inferior merchants, worth from £20,000 to £50,000 sterling. There are but few Hindoo merchants at present whose wealth exceeds £200,000 sterling. See CALCUTTA.

The sales of opium the last five years at Calcutta alone stand thus:

	Chests sold.	Proceeds realized by sale. Rupees.
1840-50.....	35,333	35,482,079
18 0-51.....	34,409	32,250,839
1852.....	33,561	37,245,185
1853.....	39,463	38,348,038
1854.....	43,819	36,727,534

The price paid to the cultivator is about 240 rupees a chest, the rupee being worth 46 to 50 cents.

This revenue from opium amounts to one seventh of the total income of the empire. Of the £4,000,000 which it represents, £1,000,000 in round numbers is produced by a duty levied in Bombay, and £3,000,000 by the monthly sale of opium in Calcutta. For some years past the average production in Bengal has been 36,000 chests, and the average price of each chest 1050 rupees, or 300 per cent. advance. Two or three years ago, however, the government removed certain restrictions on cultivation. Any body might grow it, to any extent he pleased, though he must still sell it at a

fixed price, settled beforehand, and never altered to the opium agent. The profit on this price is so great that the peasants will cultivate it wherever it will grow. The result was an increase of production, which increased the sales to about 56,000 chests.

Opium fell: the chests which had brought 1050 rupees sold for 630 rupees, and the difference in quantity no longer compensates for the difference in price. The taste of opium, like the taste of tobacco, never leaves its votaries.

ABSTRACT VIEW OF THE EXTERNAL COMMERCE OF BENGAL.

Countries.	IMPORTS, 1851—52.			EXPORTS, 1851—52.		
	Merchandise.	Treasure.	Total.	Merchandise.	Treasure.	Total.
	Rupees.	Rupees.	Rupees.	Rupees.	Rupees.	Rupees.
Great Britain.....	5,59,79,282	91,74,544	6,51,53,826	4,78,20,145	78,058	4,78,98,198
France.....	9,88,081	4,25,850	18,68,881	48,07,431	....	48,07,431
North America.....	9,99,658	2,22,090	12,21,748	76,84,224	....	76,84,224
Madras Coast.....	9,24,338	18,08,553	27,32,891	12,52,690	1,47,924	14,00,614
Ceylon.....	80,681	1,30,225	1,60,906	1,50,240	57,100	2,07,340
Maldives and Laccadives.....	1,36,292	....	1,36,292	60,632	....	60,632
Malabar Coast.....	17,75,800	8,47,380	21,23,180	29,71,501	....	29,71,501
Arabian and Persian Gulfs.....	7,29,205	1,50,722	9,09,927	12,51,597	....	12,51,597
Singapore.....	14,69,431	16,25,031	30,94,462	44,04,187	540	44,04,677
Penang and Malacca.....	6,12,629	1,34,681	7,47,260	5,44,759	7,148	5,51,907
China.....	16,00,846	89,12,898	1,05,18,244	3,22,17,277	....	3,22,17,277
New Holland.....	12,66,255	16,452	12,82,707	3,16,544	....	3,16,544
Java and Sumatra.....	37,152	2,497	39,649	68,971	....	68,971
Pegu.....	5,34,963	3,51,063	8,86,026	14,48,888	15,96,174	30,40,067
Mauritius.....	22,928	8,61,993	8,84,816	15,95,297	56,370	16,51,667
Bourbon.....	20,058	7,38,905	7,58,963	6,06,865	....	6,06,865
Cape and St. Helena.....	35,675	35,850	71,525	2,68,585	2,500	2,71,085
Hamburg.....	1,49,014	....	1,49,014	2,27,950	....	2,27,950
Cadiz.....	1,18,996	....	1,18,996	....	....	....
Amsterdam.....	1,568	....	1,568	....	....	....
Trieste.....	....	....	....	83,063	....	83,063
Genoa.....	35,956	....	35,956	4,21,838	....	4,21,838
Other places.....	96,602	....	96,602	2,66,278	....	2,66,278
Total, Company's rupees	6,75,14,750	2,49,63,154	9,24,77,934	10,84,63,897	19,45,809	11,04,09,706

The other principal ports are—Bombay, a sea-port on the western coast of British India, lat 18° 56' N., long. 72° 57' E. It is situated at the south-easterly extremity of a small island of same name, separated from the main land by an arm of the sea, forming, with the contiguous islands of Colabah, Salsette, Butchers' and Curiaigh, one of the best harbors in India. The entrance is nearly three miles wide, and has a depth of from 35 to 40 feet.

Madras is the second British Indian presidency, and principal port on the western coast of the Bay of Bengal. It is without port or harbor, lying close to an open roadstead, and the shore having a constant surf. A rapid current runs along the coast, and typhoons are common. Large ships anchor about two miles from shore, in the roads, in from 40 to 60 feet of water, and lighters are used to load and unload freight.

Singapore, a British settlement on an island of the same name, at the eastern extremity of Malacca, lat. 1° 17' 22' N., long. 103° 51' 45' E.

United States and the East Indies.—The commercial intercourse of the United States with the territories of the East India Company is regulated by the different local governments thereof, under the supreme control and approval of the Governor-General of India in council. The regulations prescribed by these authorities are not of a permanent character, being liable to modifications and changes whenever, in their opinion, such become necessary. To present, however, the true basis upon which this intercourse rests, it will be necessary to refer briefly to the treaty stipulations subsisting between the governments of the United States and Great Britain; premising, that prior to the convention of London, signed on the 3d of July, 1815, between the United States and Great Britain, the commercial intercourse of the former with the East India possessions was regulated, as was that of other foreign nations, by a general clause in the Company's charter, providing that "vessels of countries in amity with Great Britain may import into, and export from, the British possessions in India, such goods and commodities as may be specified in rules to be prescribed by the East India Company; provided that such rules shall not be inconsistent with any treaty now [then] made, or which may be made between Great Britain and any foreign State in amity with her, or with any act of Parliament for regulating the affairs of India." By the convention above referred to, and the subsequent

convention of October, 1818, continuing the former, it was stipulated:

1st. That vessels of the United States shall be admitted and hospitably received at the principal settlements of the British dominions in the East Indies, viz.: Calcutta, Madras, Bombay, and Prince of Wales' Island; and the citizens of the United States may freely trade between the said settlements and the United States, in all articles of which the importation and exportation, respectively, to and from the said territories, shall not be entirely prohibited; and, 2d, it was provided, that the citizens of the United States shall pay for their vessels, when admitted, no higher or other duty or charges than shall be payable on the vessels of the most favored European nation. And they shall pay no higher or other duties or charges on the importation or exportation of the cargoes of said vessels than shall be payable on the same article when imported or exported in the vessels of the most favored nation; and, 3d, It was expressly agreed, that the vessels of the United States shall not carry any article from the said settlements to any port or place, except to some port or place in the United States of America, where the same shall be unladen.

This convention is still in force, and regulates the commercial intercourse of the United States with the East India possessions, except as to paragraph 3, which has been superseded by the repeal of the British navigation laws in 1849; the effect of which has been to open the ports of Great Britain, and of all her colonial possessions abroad, to "goods of any sort, in a ship of any country, from any part of the world." By an act of the imperial Parliament, entitled 13 Victoria, chap. xxix., secs. 3, 4, 5, 6, the Governor-General of the East India possessions was clothed with full powers to admit, whenever he should deem it advisable so to do, to the coasting trade in the East Indies, the vessels of all foreign nations. This privilege is now enjoyed by every flag. With these two exceptions, the convention of 1818 is still in full force, and constitutes the only guaranty which the United States possesses of equal privileges with the most favored nation in its intercourse and commerce with the East India possessions. Notwithstanding the express stipulations contained in the treaty above referred to, that the East India Company should prescribe no regulations "inconsistent with any treaty now made, or which may be made, by Great Britain, with any nation in amity

with her," it has, on more than one occasion, been represented to the Department of State that the officers of this Company do not consider themselves bound by the commercial treaties which exist between the United States and England." The dispatch from which the foregoing extract is taken further says, that "the speedy settlement of this question is deemed of paramount importance to the commercial interests of the United States." No case, however, having been presented to the Department, beyond the naked asser-

tion of the *quasi* independent sovereignty by the officers of the East India Company, the necessity has not yet arisen for an examination of the grounds upon which this claim is based. As the question may, however, hereafter embarrass the commercial relations of the United States with this portion of her Britannic majesty's possessions, it has been deemed proper to present the facts in relation to it, which have come to the knowledge of the Department. See *Commercial Relations U. S.*

COMMERCE OF THE UNITED STATES WITH THE BRITISH EAST INDIES, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.		Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	\$32,089	\$1,984,190	\$1,966,279	\$1,580,799	\$1,584,949	....	8,027	....
1822.....	67,979	1,963,865	2,086,844	3,272,217	1,980,876	....	3,347	....
1823.....	10,642	807,783	818,880	3,265,961	283,052	....	895	....
1824.....	34,354	927,716	962,070	441,867	782,386	....	2,520	....
1825.....	206,450	784,029	991,079	1,756,484	665,523	....	4,124	....
1826.....	24,226	418,402	442,268	2,510,606	354,557	....	2,030	....
1827.....	32,717	1,018,738	1,051,450	569,056	872,183	....	2,430	....
1828.....	54,199	795,682	849,881	1,542,786	650,080	....	8,441	....
1829.....	69,070	477,629	546,699	1,229,569	297,301	....	8,050	....
1830.....	93,781	558,126	646,557	1,373,297	160,641	\$500	4,029	....
Total....	\$625,457	\$9,185,550	\$9,811,307	\$17,492,592	\$7,881,043	\$500	29,298	....
Sept. 30, 1831.....	\$182,442	\$675,890	\$807,632	\$1,544,273	\$496,027	\$82	0,481	....
1832.....	199,218	339,295	528,453	2,538,938	212,886	11,000	5,916	....
1833.....	186,156	183,483	324,999	1,822,039	80,910	2,700	6,785	....
1834.....	199,602	206,941	406,543	2,293,012	147,825	872	5,555	....
1835.....	364,417	389,641	754,058	1,697,898	529,123	....	10,889	....
1836.....	239,315	435,461	724,776	2,954,476	351,925	....	10,520	....
1837.....	120,591	82,967	203,558	3,041,842	138,550	1,290	3,487	....
1838.....	320,505	258,402	578,907	675,531	279,921	....	8,384	....
1839.....	246,845	387,597	594,442	2,135,152	391,725	....	10,557	....
1840.....	280,404	351,791	632,195	1,932,461	815,007	1,597	5,742	....
Total....	\$2,279,495	\$3,266,263	\$5,545,763	\$20,665,637	\$2,758,699	\$17,541	73,816	....
Sept. 30, 1841.....	\$532,334	\$430,867	\$968,201	\$1,236,641	\$378,650	\$40	12,647	....
1842.....	399,979	238,825	638,504	1,530,364	202,560	2,951	9,079	1,129
9 mos. 1843.....	237,576	140,136	377,712	689,777	87,339	....	5,415	....
June 30, 1844.....	398,419	337,558	675,966	882,792	274,107	60	10,479	....
1845.....	297,381	184,067	491,398	1,276,534	76,163	....	10,814	....
1846.....	270,600	99,772	370,372	1,361,345	73,920	1,479	10,979	706
1847.....	237,733	135,454	373,237	1,646,457	100,132	2,300	12,294	....
1848.....	510,234	156,715	666,999	2,069,632	56,293	....	15,354	642
1849.....	592,962	76,562	409,524	2,086,254	249	....	21,020	327
1850.....	802,613	156,846	659,459	2,685,016	35,400	....	29,389	2,183
Total....	\$3,659,875	\$1,951,797	\$5,611,672	\$15,414,812	\$1,235,323	\$6,820	136,970	4,942
June 30, 1851.....	\$512,906	\$173,484	\$688,390	\$3,336,335	\$80,571	....	49,216	2,964
1852.....	505,133	39,360	604,493	4,225,041	550	....	52,763	7,780
1853.....	508,356	63,542	567,398	3,531,726	45,727	....	50,461	6,309
1854.....	567,193	69,219	636,412	5,375,321	29,721	....	45,812	535
1855.....	714,119	198,144	912,263	5,457,375	65,424	....	50,729	4,742
1856.....	691,998	73,631	767,629	7,005,911	30,700	....	68,255	9,432

The whole number of arrivals in the United States from the East Indies during the year 1856 were 226. In 1855, 168. At Boston, 133; New York, 82; Salem, 7; Philadelphia, 2; Providence, 1; Savannah, 1.

At Boston, in 1856, 133. In 1855, 100. From Calcutta, 77; Manilla, 22; Cape Town, 9; Singapore, 4; Padang, 4; Penang, 2; Batavia, 2; Mauritius via London, 1; Foo Chow Fow, 2; Whampoa, 1; Hong Kong via New York, 1; Padang via New York, 1; Singapore via Rotterdam, 1; Canton, 1; Canton via London, 1; Sumatra, 1; Shanghai via New York, 1; Calcutta via London, 1.

At New York, in 1856, 82 (of which 50 belonged to Boston and ports east of New York). In 1855, 59. From Manilla, 15; Shanghai, 14; Singapore, 12; Foo Chow Fow, 9; Calcutta, 9; Hong Kong, 6; Whampoa, 5; Penang, 5; Canton, 4; Calcutta via London, 1; Foo Chow Fow via Havana, 1; Swatow via Havana, 1.

At Salem, in 1856, 7. In 1855, 6. From Zanzibar, 5; Penang, 1; Manilla, 1.

At Philadelphia, in 1856, 2. In 1855, 4. From Calcutta, 1; Calcutta via London, 1.

At Providence, 1 from Zanzibar.

At Savannah, 1 from Calcutta via Liverpool.

Clearances.—The whole number of clearances in the United States for the East Indies were 161. In 1855, 172. At Boston, 96; New York, 40; Salem, 8; New

Orleans, 6; Providence, 3; Philadelphia, 2; Baltimore, 2; Mobile, 2; Portland, 1; Newburyport, 1.

At Boston, in 1856, 96. In 1855, 75. For Calcutta, 28; Batavia, 10; Cape Town, 14; Manilla, 6; Bombay, 5; Hong Kong, 4; Calcutta via Buenos Ayres, 5; Madras and Calcutta, 3; Akyab, 3; Madras, 3; Sumatra, 2; Singapore, 4; Calcutta via London, 2; Calcutta via Liverpool, 1; Zanzibar via Providence, 1; Padang, 1; Columbo, 1; Whampoa, 1.

At New York, in 1856, 40 (of which 24 traded from Boston and ports east of New York). In 1855, 50. For Hong Kong, 9; Calcutta, 5; Shanghai, 4; Cape Town, 3; Canton, 8; Batavia, 2; Calcutta, via Buenos Ayres, 3; Sumatra, 2; Bombay, 2; Mauritius, 1; Singapore, 1; Anjer, 1; Akyab, 1; Siam, 1; Padang, 1.

At Salem, in 1856, 9. In 1855, 8. For Zanzibar, 7; Batavia, 1; Penang, 1.

At New Orleans, 6. Last year, 24. For Calcutta via Liverpool, 5; Bombay via Liverpool, 1.

At Providence, 3 for Zanzibar. Last year, 1.

At Philadelphia, 2. Last year, 4. For Calcutta, 1; Manilla, 1.

At Baltimore, 2 for Cape Town. Last year, 3.

At Mobile, 2 for Calcutta. Last year, 0.

At Newburyport, 1 for Calcutta. Last year, 0.

At Portland, 1 for Calcutta via Buenos Ayres. Last year, 1. See *Annals Brit. Leg.*, July, 1856, p. 25, "Territories Annexed."

The British East India possessions embrace an almost boundless extent of territory, extending from the Himalaya range of mountains on the north to the ocean, including nearly the whole of the peninsula of Hindoostan, the island of Ceylon, and that portion of Burmah lying between 20° of north latitude and the Bay of Bengal. These vast possessions are supposed to contain a population of 152,000,000 of souls. The East India Company's possessions comprise the several presidencies of, 1st, the Bengal presidency; 2d, the Bombay presidency; 3d, the Madras presidency; 4th, the Agra presidency; and the several dependencies of each of these presidencies.

Bengal.—The commerce of the United States with the East Indies is principally confined to the presidencies of Bengal and Bombay, and to a few of their dependencies. The leading exports from the East India possessions to the United States are wool, oil-seeds, hides, medicinal drugs, sandal-woods, gums, spices, horns, indigo, ivory, coir, saltpetre. The principal exports from the United States to the East Indies are, tobacco, naval stores, provisions, ice, and miscellaneous merchandise, copper, pitch, tar, rosin, pine-boards, and spars. Number of American vessels entered the port of Calcutta in 1852, 65; tonnage, 34,849. Number of vessels cleared from Calcutta in the same year, 101; tonnage, 59,340. In 1853, 109 vessels from the United States entered this port. See CALCUTTA, BENGAL, and GREAT BRITAIN.

Imports from Calcutta, 1851–1853, \$9,676,072; value of exports during the same period, \$1,490,399; apparent balance against the United States, \$8,185,673. This heavy balance apparently against the United States is accounted for by the large discriminating duties on all its manufactures, in favor of similar merchandise imported from the mother country. American vessels usually enter the ports of Calcutta and Bengal in ballast, for the purpose of taking in a home-ward cargo.

Bombay.—Exports from Bombay the same as from Calcutta. The same description of merchandise is imported from the United States. The following market prices at Bombay will show that the articles specified might enter advantageously into American exports, not only to that port, but to the other ports in the East Indies: Copper sheathing sells at 55 rupees, or \$27 25 per cwt.; duty, 10 per cent; annual imports, 400 tons. Copper bolts sell at 50 rupees, or \$25 per cwt., duty, 10 per cent; annual imports, 700 tons. Pitch, 4 rupees = \$1 50 per barrel; annual imports, 1000 barrels; duty 10 per cent. Tar, 4 rupees = \$2 per barrel; annual imports, 620 barrels; duty, 10 per cent. Tonnage duty in Bombay, 1–16 rupee, or nearly 8 cents per ton. Light-house dues on ships from 15–20 rupees = from \$7 50 to \$10, according to the nature of the cargo and time of the year. The rupee is valued by Pope at 46 cents: consular returns from Bombay value it at 50 cents.

Pilotage is regulated by the season, and is as follows:

Vessels of	From Sept. to June.	From June to Sept.
Tons.	Ruppes. Dollars.	Ruppes. Dollars.
100—800.....	50 = 25 00	75 = 37 25
200—400.....	55 = 27 25	80 = 40 00
400—600.....	60 = 30 00	85 = 42 25
500—500.....	65 = 32 25	90 = 45 00
600—700.....	70 = 35 00	95 = 47 25
700—800.....	75 = 37 25	100 = 50 00
800—900.....	80 = 40 00	105 = 52 25
900—1,000.....	85 = 42 25	110 = 55 00
1,000—1,100.....	120 = 60 00	145 = 72 25
1,100—1,200.....	130 = 65 00	155 = 77 25
1,200—1,300.....	140 = 70 00	165 = 82 25
1,300—1,400.....	150 = 75 00	175 = 87 25
1,400—1,500.....	160 = 80 00	185 = 92 25
1,500—1,600.....	170 = 85 00	195 = 97 25

The above rates are regulated by the local government of the Company's possessions, and the pilots are regularly licensed. See articles BOMBAY and EAST INDIA COMPANY.

The following table exhibits the trade of the United States with the East Indies generally:

Exports to East Indies:	1853.	1854.
Domestic manufactures.....	\$503,556	\$567,193
Foreign.....	63,542	69,219
Total.....	567,398	636,412
Imports from.....	8,561,726	5,878,321
Excess of imports over exports.	8,014,328	4,741,909

For Commerce, etc., of East India, see *Ed. Rev.*, xlviii., 312, 336, lxxii., 181, lxx., 157 (MACAULAY), xxix., 335; *Chr. Exam.*, xlviii. (E. PEABODY); *Westm. Rev.*, ii. 326; *For. Quar.*, xxiii., 93 ("British Usurpation"), xxxv., 382, xxxvi., 306.

Indian Ocean, Indicum Mare, a vast oceanic basin, separated from the Pacific on the east by the Asiatic Archipelago and Australia, bounded on the south by a line drawn from the Cape of Good Hope to Bass' Strait, divided from the Atlantic by Africa on the west, and inclosed by the countries of Asia on the north. It communicates with the Chinese Sea by the Strait of Malacca, Sunda Strait, and the Strait of Flores. Principal inlets, the Bay of Bengal, the Sea of Oman, the Persian Gulf, and the Red Sea. Chief straits, the Channel of Mozambique, and Palk's Strait. The most important islands are Madagascar, Mauritius, Bourbon, the Comoro Islands, Seychelles, and Socotra, belonging to Africa; the Laccadives, Maldives, Ceylon, the Andaman and Nicobar Islands, to Asia. Its principal affluents are, in Asia, the Saluen, Irrawadi, Brahmaputra, Ganges, Godavery, Kistna, Nerbudda, Indus, and the Shat-el-Arab, formed by the junction of the Tigris and Euphrates; in Africa, the Zambeze. The chief sea-ports are, Calcutta and Bombay in India; Malacca, in the Asiatic Archipelago; Aden, Mocha, and Muscat, in Arabia; Zanzibar, etc., in Africa. Steam-packets are established between the principal ports. The monsoons, or periodical winds, prevail in the north part of the ocean, blowing from the south-west between April and October, and south-east from October to April. Tempests are general at the periods of change, and between lat. 5° and 40° S. violent hurricanes frequently occur.

Indiana, one of the United States of North America, is bounded east by the State of Ohio, south by the River Ohio, which separates it from Kentucky, west by Illinois, from which it is partly separated by the Wabash River, and north by Michigan and Lake Michigan. It lies between 37° 51' and 40° 46' N. lat., and 85° 49' and 88° 2' W. long. Extreme length from north to south, 276 miles; greatest breadth, 175 miles. Area, 33,809 square miles.

Indiana may be generally characterized as a great plain, inclining toward the south-west. A range of hills extends along the Ohio from the mouth of the Great Miami to Blue River, and the shore of Lake Michigan is lined by large sandy hills, which rise to a height of 200 feet. In some other parts are to be found "knobs," but these are seldom of great extent or elevation. The surface of the country naturally divides itself into several extensive river valleys. The valley of the Ohio, comprising an area of about 5500 square miles, is a limestone tract, and was originally covered with forests. About one third of it is rugged and broken, so as to be unfit for cultivation. The White River Valley, extending through the centre of the State, from the Wabash to the Ohio, contains about 9000 square miles. This district is almost uniformly level, and richly wooded, except in the west, where there are some ranges of low rugged hills, and several patches of prairie ground. The soil is of the richest kind. The Wabash Valley is much larger than the others, and contains upward of 12,000 square miles. The eastern portion equals the White River Valley in fertility, but the other parts are not so productive. The northern part of the State, watered by the St. Joseph and the Kankakee Rivers, is somewhat more

swampy than the Wabash Valley; and a large tract, comprising the sand-hills on Lake Michigan, is covered only with stunted pines and burr oaks.

The State is well watered by numerous beautiful streams and rivers, but with the exception of the Ohio and Wabash, few of them are navigable. The Wabash is the largest river that has its course mainly within the State, and, together with its branches, drains three fourths of the entire surface. It rises in the west of Ohio, and flows first in a north-west direction, and then south-west till it meets the boundary of Illinois, which it follows southward for more than 100 miles, till it falls into the Ohio, after a course of upward of 500 miles; for 400 of which it is navigable for steamboats at high water. The Ohio forms the entire southern boundary of the State. The other principal rivers of Indiana are tributaries of the Wabash. The White River, the most important of these, is formed by the West and East Forks—two rivers, respectively about 300 and 200 miles long—which unite about 100 miles above its confluence with the Wabash. The Miami is formed by the St. Joseph and St. Mary in the north-east, and falls into the Ohio. The Upper St. Joseph, with its tributaries, passes through the northern counties, and falls into Lake Michigan.

Indiana resembles the other western States north of the Ohio in climate. They are generally milder than those on the Atlantic coasts, but very subject to sudden changes. The winter is very severe in the northern parts, but more genial in the southern. Except in the neighborhood of wet prairies and swamps, the climate is everywhere healthy. Dr. Owen, speaking of the geological position of Indiana, remarks, that "it possesses all the elements of extraordinary fertility." The richest soil is that of the river bottoms, where it is very deep and exceedingly fertile. The most productive are those inclosed by the river hills, which run parallel to the Ohio and other rivers. The extensive valley of the Wabash is a tract of this description. Behind the river hills, a table-land spreads out, forming what may be called the interior of the country, and here, instead of the bottom-lands, or river valleys, there are vast prairies. The soil of these is not so luxuriant, but is such as amply to repay the expense of culture. Even the wet and marshy parts of the State admit of being brought under cultivation. Indiana ranks fourth of the States of the Union in the absolute amount of Indian corn raised. It also produces large quantities of wheat, oats, and Irish potatoes, as well as a fair proportion of the other productions common to the western States.

The number of farms in Indiana under cultivation in 1850 comprised 93,896 acres, and the extent of improved land was 5,046,543 acres; of unimproved, 7,746,879 acres. The value of the farms returned was \$135,000,000. The orchard produce was estimated at \$822,000, and market-garden products, \$71,000.

The chief minerals of Indiana are coal, iron, lime, marble, freestone, and some copper. Of these the first is by far the most important. It has been estimated that the coal beds of Indiana cover 7700 square miles, and are capable of yielding 50,000,000 bushels to the square mile. One coal deposit commences in Perry county, and extends north-west into the county of Vermilion upward of 150 miles.

The manufacturing capital of Indiana in 1850 amounted to \$7,941,602. The value of raw material, etc., consumed in the year had been \$10,214,337. The products were valued at \$18,922,651. There were on June 1, 1850, 4526 industrial establishments, producing annually to the value of \$500 and upward. Of these, 2 were cotton factories, 23 woolen factories, 19 iron works, and 368 tanneries.

Indiana has no direct foreign commerce, but it has a considerable transit trade, and exports large quantities of agricultural produce. The facilities for internal communication are great, and rapidly increasing.

The principal canals are the Wabash and Erie Canal between Evansville, on the Ohio, and Toledo, on Lake Erie, 467 miles, of which 379 miles are in Indiana; and the White Water Canal, 68 miles long, uniting Lawrenceburg, on the Ohio, with Hagerstown. In 1853 the State had 755 miles of railroad completed, and 979 in course of construction. The principal railroads centre in Indianapolis, and radiate from that city in all directions. See DE BOW'S *Rev.*, i., 512, vii., 246; *Bankers' Mag.*, iii., 164; HUNT'S *Mer. Mag.* xxi., 147.

Indian Ink. A species of ink used in Europe for the lines and shadows of drawings. It is principally manufactured in China, and there used for writing. From the experiments of Dr. Lewis, it appears to be a compound of fine lampblack and animal glue. See **INK**.

India-rubber. Also called caoutchouc, first brought to Europe from South America. Several plants produce various kinds of elastic gum; but that in commerce is chiefly the juice of the *Siphonia Elastica*, or syringe-tree. Incisions in the bark of this tree give vent to a liquid which forms India-rubber. No substance is yet known which is so pliable, and at the same time so exceedingly elastic; it oozes out under the form of a vegetable milk, from incisions made in the tree, and is gathered chiefly in the time of rain, because it flows then most abundantly.—*M. Macquer*.

The most astonishing and useful discovery of the 19th century, after the practical application of steam and electricity, is the employment of India-rubber for manufacturing purposes. The first knowledge of it is due to La Condamine, a French philosopher, who in 1730 was sent by his government to Peru to measure an arc of the meridian. The tree which produces rubber or *caoutchouc* (as it is called by the natives of South America), is found in the tropics of both hemispheres. It rises to the height of 50 or 60 feet, without branches, and is crowned or tufted with glossy foliage. The leaves are a deep green, thick and glossy; six or seven inches in length; the bark is smooth, and the fruit consists of white almonds, of an agreeable flavor, much liked by the natives. In order to obtain this substance, the natives of the valley of the Amazon make a longitudinal gash in the bark of the tree with a narrow hatchet; a thick, white and oily liquid (a sort of vegetable milk) flows out, a wedge of wood is inserted to keep the gash open, and a small clay cup is stuck to the tree beneath the gash. In four or five hours the milk ceases to run, and each wound has yielded from three to five table-spoonfuls. The "se-ringero," or rubber gatherer, then empties the contents of the cups into an earthen vessel and commences the operation of forming it into shapes and smoking it. This must be done at once as the milk soon coagulates. A fire is made on the ground, of nuts of the wassou palm tree, over which is placed, inverted, an earthen pot with a hole in the bottom whence issues a jet of pungent smoke. Molds are made either of clay or wood, which are dipped into the milk, and then passed slowly through the hot smoke. When the required thickness is obtained, the molds are cut or washed out. Smoking changes the color of the rubber very little, but by exposure to the sun and atmosphere it becomes brown, and in time black. The superiority of the rubber imported from the valley of the Amazon is said to be owing to the peculiar properties of the smoke of this nut, no other smoke producing a similar effect upon the gum. A belt of forest trees extends 10 degrees each side of the equator, which yield India-rubber of various kinds; so the supply is literally inexhaustible. The gum from India and the Pacific coast of South America is obtained by allowing the sap to flow down the side of the tree, and is then gathered with the loose bark and dirt into *ceroons* or bundles for shipment. For a long time this substance was valued simply as an object of curiosity, to be preserved

in collections of natural history, and its first practical application was as an eraser of pencil marks.

STATEMENT SHOWING THE EXPORTS OF INDIA-RUBBER FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

WHITHER EXPORTED.	DOMESTIC MANUFACTURES OF INDIA-RUBBER.			FOREIGN INDIA-RUBBER.	
	India-rubber shoes.		Other manufactures of.	Manuf.	Unmanufactured.
	Pairs.	Dollars.		Dollars.	Dollars.
Russia on the Baltic and North Seas...	...	...	750	...	...
Danish West Indies...	8,856	2,608	569	...	...
Hamburg...	422,660	257,539	182,788	10,118	4,448
Bremen...	43,000	80,506	83,187	...	...
Other German ports...	800	210	...	...	...
Holland...	4,480	8,900	8,096	...	...
Belgium...	9,708	6,440	25,168	...	...
England...	187,161	82,841	168,848	8,949	10,687
Scotland...	700	432	2,300	...	...
Gibraltar...	1,248	1,194	449	...	...
Malta...	...	...	78	...	...
Canada...	3,892	8,241	9,911	185	26,547
Other Br. N. Am. pos.	27,213	19,198	7,663	4,127	...
British Honduras...	288	230	123	...	...
British Guiana...	157	140	8	...	...
British pos. in Africa...	...	...	8,529	...	...
British Australia...	...	...	2,342	...	...
France on the Atlantic...	10,000	6,462	85,151	...	79,020
France on the Med...	500	84	1,052	...	100
French N. Amer. pos.	94	42	...	...	...
Spain on the Atlantic...	...	...	120	...	...
Cuba...	...	...	8,180	...	...
Porto Rico...	278	204	558	...	...
Portugal...	...	...	89	...	...
Turkey in Europe...	7,500	5,000	11,619	...	...
Hayti...	...	...	10,834	...	...
Mexico...	2,102	1,378	22,984	...	...
Central Republic...	...	...	2,872	...	...
New Granada...	1,168	592	2,158	...	...
Venezuela...	428	294	189	...	...
Brazil...	7,045	4,966	11,870	...	...
Buenos Ayres...	1,714	1,088	7,595	...	...
Chili...	...	...	4,179	...	...
Peru...	800	207	5,592	...	...
Total...	685,920	427,986	665,602	18,379	120,802

STATEMENT SHOWING THE IMPORTS OF INDIA-RUBBER INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whence Imported.	Manufactured.	Unmanufactured.
	Dollars.	Dollars.
Danish West Indies...	...	4
Hamburg...	88	2,548
Bremen...	922	...
Holland...	...	9,047
Dutch West Indies...	...	...
Dutch East Indies...	...	41,800
England...	82,982	37,469
Canada...	1,690	...
Other British North American pos...	...	761
British West Indies...	...	1,174
British Honduras...	...	123
British possessions in Africa...	...	3,753
British East Indies...	...	89,494
France on the Atlantic...	12,164	461
Other ports in Africa...	...	5,878
Hayti...	...	344
Mexico...	...	777
Central Republic...	...	230
New Granada...	...	70,274
Venezuela...	...	11
Brazil...	...	771,826
Chili...	...	10,045
Peru...	...	47
Total...	97,796	1,045,576

About the year 1821, Charles Macintosh of England, having learned how to dissolve the gum in spirits of turpentine, commenced manufacturing the goods which now bear his name, by spreading the gum so dissolved between two layers of cloth. The rude overshoes made by the natives in South America from the natural gum, were beginning to be worn, and in 1823, 500 pairs of shoes were imported into Boston. At a later date gum-elastic became the subject of scientific investigation and many persons commenced experimenting with it. In 1832, the considerable manufacture of it was commenced in Massachusetts, by John Haskins and Edwin M. Chaffee, who, in connection with others,

started the celebrated Roxbury India-rubber Company, which was shortly after incorporated with a capital of \$400,000. For this Company Mr. Chaffee invented the famous mammoth machine for spreading rubber without a solvent—the machine itself costing nearly \$30,000. Similar machines are now required by all manufacturers of rubber goods. The apparent prosperity of this Company induced the starting of factories in Boston, Chelsea, Woburn and Framingham, Mass., New York city, Staten Island, and Troy, N. Y., with capitals of from \$50,000 to \$500,000. These Companies made their goods by dissolving the rubber in camphene or other solvents, then mixing lampblack with it, and while in the form of paste spreading it on cloth from which coats, etc., are made. The goods were then dried in the sun or in a warm room until the solvent evaporated, leaving a coating of rubber. See GUTTA PERCHA.

Indies, Dutch. See JAYA.

Indigo (Fr. *Indigo*; Ger. *Indigo*; Sans. *Nili*; Arab. *Neel*; Malay, *Taroom*), the drug which yields the beautiful blue dye known by that name. It is obtained by the maceration in water of certain tropical plants; but the indigo of commerce is almost entirely obtained from leguminous plants of the genus *Indigofera*; that cultivated in India being the *Indigofera tinctoria*; and that in America the *Indigofera anil*. The Indian plant has pinnate leaves and a slender ligneous stem; and when successfully cultivated, rises to the height of three, five, and even six feet. Before the American colonies were established, all the indigo used in Europe came from the East Indies; and until the discovery of a passage round the Cape of Good Hope, it was conveyed, like other Indian products, partly through the Persian Gulf, and partly by land to Babylon, or through Arabia and up the Red Sea to Egypt. The real nature of indigo was so little known in Europe, that it was classed among the minerals, as appears by letters-patent for erecting works to obtain it from mines in the principality of Halberstadt, dated December 23, 1705; yet what Vitruvius and Pliny call *indicum* is supposed to have been our indigo.—BECKMANN. The first mention of indigo occurs in English statutes in 1581. The first brought to Europe was procured from Mexico. Its cultivation was begun in Carolina, in 1747. It appears pretty certain that the culture of the indigo plant, and the preparation of the drug have been practiced in India from a very remote epoch. It has been questioned, indeed, whether the *indicum* mentioned by Pliny (*Hist. Nat. lib.*, xxxv., c. 6), was indigo, but, as it would seem, without any good reason. Pliny states that it was brought from India; that when diluted it produced an admirable mixture of blue and purple color (*in diluendo misturam purpure corvuleque mirabilem reddit*); and he gives tests by which the genuine drug might be discriminated with sufficient precision. It is true that Pliny is egregiously mistaken as to the mode in which the drug was produced; but there are many examples in modern as well as ancient times, to prove that the possession of an article brought from a distance implies no accurate knowledge of its nature, or of the processes followed in its manufacture. Beckmann (*Hist. of Inventions*, vol. iv., art. INDIGO), and Dr. Bancroft (*Permanent Colors*, vol. i., pp. 241, 252), have each investigated this subject with great learning and sagacity; and agree in the conclusion that the *indicum* of Pliny was real indigo, and not, as has been supposed, a drug prepared from the *isatis* or woad. At all events, there can be no question that indigo was imported into modern Europe, by way of Alexandria, previously to the discovery of the route to India by the Cape of Good Hope. When first introduced, it was customary to mix a little of it with woad to heighten and improve the color of the latter; but, by degrees, the quantity of indigo was increased; and woad was, at last, entirely superseded. It is worth while, however, to

remark, that indigo did not make its way into general use without encountering much opposition. The growers of woad prevailed on several governments to prohibit the use of indigo! In Germany, an imperial edict was published in 1654, prohibiting the use of indigo, or "*devil's dye*," and directing great care to be taken to prevent its clandestine importation, "because," says the edict, "the trade in woad is lessened, dyed articles injured, and money carried out of the country!" The magistrates of Nuremberg went further, and compelled the dyers of that city to take an oath once a year not to use indigo; which practice was continued down to a late period. In 1598, upon an urgent representation of the States of Languedoc, at the solicitation of the woad growers, the use of indigo was prohibited in that province; and it was not till 1787, that the dyers of France were left at liberty to dye with such articles, and in such a way, as they pleased.—BECKMANN, vol. iv., p. 142. Let not those who may happen to throw their eyes over this paragraph, smile at the ignorance of their ancestors—*Mutato nomine, de te fabula narratur*. How much opposition is made in most countries at this moment to the importation of many important articles, for no better reasons than were alleged in the 16th century against the importation of indigo!

Indigo is produced in Bengal, and the other provinces subject to the presidency of that name, from the 20th to the 30th degrees of north latitude; in the province of Tinnevely, under the Madras government; in Java; in Luconia, the principal of the Philippine Islands; and in Guatemala, and the Caraccas, in Central America. Bengal is, however, the great mart for in-

digo; and the quantity produced in the other places is comparatively inconsiderable.

Raynal was of opinion that the culture of indigo had been introduced into America by the Spaniards; but this is undoubtedly an error. Several species of *indigofera* belong to the New World; and the Spaniards used it as a substitute for ink, very soon after the conquest. (HUMBOLDT, *Nouvelle Espagne*.) For the first 20 years after the English became masters of Bengal, the culture and manufacture of indigo, now of such importance, was unknown as a branch of British industry; and the exports were but trifling. The European markets were, at this period, principally supplied from America. In 1788, however, the attention of the English began to be directed to this business; and though the processes pursued by them be nearly the same with those followed by the natives, their greater skill, intelligence, and capital give them immense advantages. In their hands, the growth and preparation of indigo has become the most important employment, at least in a commercial point of view, which can be freely carried on in the country, the culture and preparation of opium being a monopoly. The indigo made by the natives supplies the internal demand; but a portion of that which is raised by them, with all that is raised by Europeans, is exported. In the Delta of the Ganges, where the best and largest quantity of indigo is produced, the plant lasts only for a single season, being destroyed by the periodical inundation; but in the dry central and western provinces, one or two *ratoon* crops are obtained; and owing to this circumstance, the latter are enabled to furnish a large supply of reed to the former.

STATEMENT OF THE QUANTITY AND VALUE OF INDIGO SHIPPED FROM CALCUTTA IN 1830—31, 1840—41, 1851—52.

Countries.	1830—31.		1840—41.		1851—52.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Fy. maunds.	Rupces.	Fy. maunds.	Rupces.	Ind. maunds.	Rupces.
Great Britain.....	83,741	85,74,100	84,205	1,65,81,074	50,679	1,27,13,127
France.....	28,151	23,15,100	20,260	40,56,266	24,791	39,68,162
North America.....	5,899	5,89,900	4,822	9,45,863	3,751	5,97,297
Arabian and Persian Gulfs.....	10,939	10,93,900	5,053	9,64,414	5,887	6,81,194
Bombay.....	550	55,000	687	1,27,499	207	22,705
Sweden.....	243	24,300	.....	.....	.....	.....
Bremen.....	.....	.....	206	41,256	.....	.....
Elsewhere.....	38	8,300	78	13,775	1,687	2,78,961
Total.....	1,26,556	1,26,55,600	1,15,263	2,27,11,602	1,17,004	1,82,16,586
Being in pounds.....	9,444,241	.....	8,601,557	.....	9,683,371	.....
“ tons.....	4,216 3 65	.....	3,889 10 69	.....	4,800 12 27	.....
Shipped for Britain only.....	2,856 8 86	.....	2,805 5 38	.....	2,965 8 95	.....

It deserves to be remarked, that since the opening of the trade, Indian capitalists have betaken themselves to the manufacture of indigo on the European method, and that at present a considerable part of the whole annual produce is prepared by them. The culture of indigo is very precarious, not only in so far as respects the growth of the plant from year to year, but also as regards the quantity and quality of the drug which the same amount of plant will afford even in the same season. Thus the produce or 1825—26 was 41,000 chests, while that of 1826—7 was but 25,000 chests; and in 1842 the produce was only 79,000 maunds, while that of the following year was no less than 172,249 maunds! The price of indigo in India, increased for a while, in a far greater ratio than the quantity. In 1813—14, the real value of that exported from Calcutta was £1,461,000; but in 1827—28, although the quantity had increased but 20 per cent., the value rose to £2,920,000, or was about doubled. There was no corresponding rise in the price in Europe, but, on the contrary, a decline; and the circumstance is to be accounted for by the restraints that were then placed on the investment of capital in the production of colonial articles suited to the European market, the consequent difficulty of making remittances from India, and an unnatural flow of capital to the only great article of Indian produce and export that was supposed

capable of bearing its application. The consumption of indigo has varied but little in England during the last 10 years, having been, at an average of that period, about 2,000,000 lbs. a year. This stationary demand, notwithstanding the fall in the price of the drug and the increase of population, is principally to be ascribed to the decreasing use of blue cloth, in the dyeing of which it is principally made use of. Its consumption in France is about as great as in Britain. Besides the exports to Great Britain, France, and the United States, a good deal of Bengal indigo is exported to the ports on the Persian Gulf, whence it finds its way to southern Russia. It is singular that it is not used by the Chinese, with whom blue is a favorite color. The indigo of Bengal is divided into two classes, called, in commercial language, *Bengal and Oude*; the first being the produce of the southern provinces of Bengal and Bahar, and the last that of their northern provinces and of Benares. The first is, in point of quality, much superior to the other. This arose at one time, in a considerable degree, from the practice which prevailed in the northern provinces, of the European planter purchasing the wet fecula from the Ryot or native manufacturer, and completing the processes of curing and drying the drug. This is at present in a great measure discontinued; and the Oude indigo has, in consequence, considerably improved in quality. Its

inferiority is probably more the result of soil and climate, than of any difference in the skill with which the manufacture is conducted.

The following is believed to be a pretty accurate estimate of the annual production of indigo in India, in maunds of 82 lbs.:

	1842.	1843.	1844.	1845.	1846.	1847.	1848.	1849.	1850.	1851.	Average.
	Maunds.	Maunds.	Maunds.	Maunds.	Maunds.	Maunds.	Maunds.	Maunds.	Maunds.	Maunds.	Maunds.
Bengal.....	42,120	108,283	97,046	80,534	63,277	72,010	83,420	82,520	70,560	74,000	77,431
Tirhoot.....	12,510	41,470	28,432	21,316	11,413	18,580	27,412	22,300	21,950	31,000	23,108
Benares.....	16,980	12,878	16,869	16,712	18,783	11,060	10,118	9,850	12,000	11,000	13,775
Oude.....	5,899	9,063	6,960	9,900	7,855	7,450	5,620	6,600	8,012	9,000	7,525
Total.....	79,000	172,249	143,207	127,862	101,325	110,000	126,565	121,270	112,522	125,000	121,899

In addition to the exports from India, indigo is exported from Java, the Philippine Islands, Central America, and other places. In 1845 the exports from Batavia amounted to 1,653,869 lbs., and, we believe, they have varied but little in the interval. In 1850 the exports from Manilla were estimated at about 450,000 lbs. According to Humboldt, 1,800,000 lbs. of indigo were exported from Guatemala in 1825. But if so, its production must have fallen off greatly in the interval. It does not now probably exceed 500,000 lbs. in all Central America. Indigo is also produced in some of the West India islands, but in small quantities. Good indigo is known by its lightness or small specific gravity, indicating the absence of earthy impurities; by the mass not readily parting with its coloring matter when tested by drawing a streak with it over a white surface; but above all, by the purity of the color itself. The first quality, estimated by this last test, is called, in commercial language, *fine blue*; then follow *ordinary blue*, *fine purple*, *purple and violet*, *ordinary purple and violet*, *dull blue*, *inferior purple and violet*, *strong copper*, and *ordinary copper*. These distinctions refer to the Bengal indigo only, the Oude being distinguished only into *fine* and *ordinary*. The indigo of Madras, which is superior to that of Manilla, is about equal to ordinary Bengal indigo. The indigo of Java is superior to these.

We subjoin an account of the prices of Bengal indigo of medium quality, at the quarterly sales in London, from 1847 to 1851, both inclusive:

Years.	February.	May.	July.	October.
	s. d.	s. d.	s. d.	s. d.
1851.....	5 2	5 2	4 10	4 4
1850.....	4 8	4 6	4 9	5 6
1849.....	3 9	4 0	4 0	4 0
1848.....	4 1	3 7	3 5	3 7
1847.....	4 8	4 4	4 0	5 8

For further information as to indigo, see COLEBROOKE'S *Husbandry of Bengal*, p. 154; MILBURN'S *Orient. Com.*; WILKINSON'S *Commerce of Bengal*; WILSON'S *Review of do.*; evidence of Gillian MacLaine, Esq., East India Committee, 1830-31, etc. The fixed capital required in the manufacture of indigo consists of a few vats of common masonry for steeping the plant, and precipitating the coloring matter; a boiling and drying-house; and a dwelling-house for the planter. These, for a factory of 10 pair of vats, capable of producing, at an average, 12,500 lbs. of indigo, worth on the spot about £2500, will not cost above £1500 sterling. The buildings and machinery necessary to produce an equal value in sugar and rum, would probably cost about £4000. This fact, therefore, without any reference to municipal regulations, affords a ready answer to the question which has been frequently put, why the planters in India have seldom engaged in the manufacture of sugar in preference to that of indigo.

Cultivation of American Indigo.—At the present moment, and for the past two years, the supply of the first quality indigo has not been equal to the demand for it, and that demand is constantly increasing. Some very excellent indigo, well adapted for making chymic, used to be obtained from Guatemala, but the kind most esteemed is the first quality of Bengal, for which we are dependent on a colony of Great Britain. About 12 years ago the best Bengal indigo could easily be obtained, but at present it is almost unknown in the

market. A spurious article, however, much resembling it, is abundant, but it does not possess one half the coloring matter of the genuine, and yet it is sold at a retail price varying from 6s. to 14s. per pound. Our object is to direct the attention of our southern planters to the cultivation of the indigo plant, and the manufacture of the best kinds of indigo, for the inferior kinds are by far too plenty. About 60 years ago, and within that period, some very fine qualities of indigo used to be cultivated in South Carolina; its character was much higher than the finest Guatemala or the best Bengal, but it is now unknown in the arts, to the great regret of calico-printers, dyers, and leather-dressers. In the fermentation of the indigo-plant so much oxygen is absorbed, that its manufacture was found to be very injurious to the health of the negroes on the plantations. This was one reason for giving up its culture; and another, and perhaps the strongest, was the higher profits derived from the cultivation of cotton. It appears to us now, however, that with exercise of sufficient care, the health of the negroes may be maintained as well as in the rice culture: also that the price which could now be obtained for it would be very remunerative. There are hundreds of persons in our country who would rather pay \$2 per pound for the best kind of indigo—that quality which was manufactured at one time in South Carolina, or the kind that was sold for the best Bengal 12 years ago—than that which is now sold for 75 cents per pound. We think these considerations ought to induce some of our planters to engage in the cultivation of the finest qualities of indigo. See HUNT'S *Mer. Mag.*, xiii., 227; *Jour. of Sci.*, xviii., 237; *Ency. Bri.*

STATEMENT SHOWING THE EXPORTS OF INDIGO FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whither exported.	Pounds.	Value.
Danish West Indies.....	236	\$130
Hamburg.....	28,289	21,544
Bremen.....	84,660	21,761
England.....	14,071	18,071
Gibraltar.....	764	802
Canada.....	796	852
Other British North Amer. pos..	8	10
British West Indies.....	5,543	1,909
Canary Islands.....	200	219
Cuba.....	3,505	2,443
Turkey in Europe.....	1,037	984
Hayti.....	1,180	852
San Domingo.....	105	72
Mexico.....	568	661
Uruguay.....	1,617	1,051
Total.....	92,529	\$70,866
From warehouse.....	48,324	\$40,542
Not from warehouse.....	49,205	\$30,324

STATEMENT SHOWING THE IMPORTS OF INDIGO INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Pounds.	Value.
Holland.....	261	\$194
England.....	508,193	865,273
Canada.....	590	845
Other British North Amer. pos..	224	183
British Honduras.....	42,629	32,211
British East Indies.....	622,108	416,122
Philippine Islands.....	407,899	123,421
Cuba.....	408	462
Mexico.....	1,000	1,025
Central Republic.....	1,923	1,434
New Granada.....	5,510	4,837
Venezuela.....	146,370	115,198
China.....	175	10
Total.....	1,732,290	\$1,068,743

Indorsement.—*The Law of Indorsement, and the Rights and Duties of an Indorser.*—Only a note or bill payable to a payee or order, is, strictly speaking, subject to indorsement. Those who write their names on the back of any note or bill, are indorsers in one sense, and are sometimes called so. The payee of a negotiable bill or note—whether he be also maker or not—may indorse it, and afterward any person, or any number of persons may indorse it. The maker promises to pay to the payee or his order; and the indorsement is an order to pay to the indorsee, and the maker's promise is then to him. But if the original promise was to the payee or order, this "or order," which is a negotiable element, passes over to the indorsee, and he may indorse, and so may his indorsee, indefinitely. Each indorser, by his indorsement, does two things; first, he orders the antecedent parties to pay to his indorsee; and next, he engages with his indorsee that if they do not pay, he will. What effect an indorsement of a negotiable note or bill, by one not payee, before the indorsement by payee, should have, is not quite certain. Upon the whole, however, we should hold, with some reason and authority, that where such a name appears, as it may be made to have the place of a second indorser whenever the payee chooses to write his name over it, it shall be held to be so intended, in the absence of evidence; and then, of course, it gives the payee no claim against such a party, because a first indorser can have none against a second, but the second may have a claim against the first. But evidence is receivable to prove that the party put his name on the note for the purpose of adding to its security, by becoming responsible for it to the payee. And then, if he indorse the note before it was received by the payee, the consideration of the note attaches to him, and he may be held either as surety for consideration or as a maker. If he wrote his name on the note after it was made, and, at the request of the payee or other holder, he is bound only as a guarantor or surety, and the consideration of the note being exhausted, he is bound only by showing some new and independent consideration. No one who thus indorses a note not negotiable can be treated or considered precisely as a second indorser, whatever be the names on the paper before his own; but any indorser of such a note or bill may be held to be a new maker or drawer, or a guarantor or surety, as the circumstances of the case indicate or require; but either the original consideration or a new one must attach to him to affect him with a legal obligation.

If the words "to order," or "to bearer," are omitted accidentally and by mistake, it seems they may be afterward inserted without injury to the bill or note; and whether a bill or note is negotiable or not, is held to be a question of law. By the law-merchant, bills and notes which are payable *to order* can be effectually and fully transferred only by indorsement. This indorsement may be *in blank* or *in full*. The writing of the name of the payee—either the original payee or an indorsee—with nothing more, is an indorsement in blank, and a blank indorsement makes the bill or note transferable by the delivery, in like manner as if it had originally been paid to bearer. If the indorsement consists not only of the name, but of an order above the name, to pay the note to some specified person, then it is an indorsement in full, and the note can be paid to no one else; nor can the property in it be fully transferred, except by the indorsement of such indorsee; and he may again indorse it in blank or in full. If the indorsement is paid to A B *only*, or its equivalent words, A B is indorsee, but can not indorse it over.

Any holder for value of a bill or note indorsed in blank, whether he be the first indorsee or one to whom it has come through many hands, may write over any name indorsed an order to pay the contents to himself, and this makes it a special indorsement, or an indorse-

ment in full. This is often done for security, that is to guard against the loss of the note by accident or theft. For the rule of the law is, that negotiable paper, transferable by delivery (whether payable to bearer or indorsed in blank), is, like money, the property of whoever receives it in good faith. The same rule has been extended, in England, to exchequer bills, to public bonds payable to bearer, and to East India bonds; and we think it would extend here to our railroad and other corporation bonds; and, perhaps, to all such instruments as are payable to bearer, whether sealed or not, and whatever they may be called. If one has such an instrument, and it be stolen, and the thief passes it for consideration to a *bonâ fide* holder, this holder acquires a legal right to it, because the property and possession go together. But if the bill or note be specially indorsed, no person can acquire any property in it, except by the indorsement of the special indorsee. It is said, however, that this precaution protects only the party who has thus made himself a special indorsee, and that the former parties remain liable in the same way as if the indorsement continued blank.

At one time this acquirement of property in negotiable paper was defeasible by want of proof or care; that is, if a holder lost his note, and a thief or finder passed it off to a *bonâ fide* holder, the property did not pass, if the circumstances were such as to show negligence on the part of the purchaser, or a want of due inquiry. But this question of negligence seems now to be at an end, and nothing less than fraud defeats the title of the purchaser.

The written transfer of negotiable paper is called an indorsement, because it is almost always written on the back of the note; but it has its full legal effect if written on the face. Joint payees of a bill or note, who are not partners, must all indorse. An indorser may always prevent his own responsibility by writing "without recourse," or other equivalent words, over his indorsement; and any bargain between the indorser and indorsee, written or oral, that the indorser shall not be sued, is available against that indorsee, but not against subsequent indorsees, without notice. A bill or note may be indorsed conditionally, and an acceptor of a bill so indorsed, who paid it before such condition is satisfied or complied with, has been held to pay it again after the condition is performed.

Every indorsement and acceptance admits conclusively the signature of every party who has put his name upon the bill previously in fact, and is also previous in order. Thus an acceptance admits the signature of the drawer, but not the signature of one who actually indorses before acceptance, because acceptance is in its nature prior to indorsement. If a holder strike out an indorsement by mistake, he may restore it; if on purpose, the indorser is permanently discharged. If the plaintiff, in his declaration, derives his title through all the previous indorsements, all must be there, and proved. But a holder may bring his action against any prior indorser, and fill any blank indorsement, specially to himself, and sue accordingly; but then he invalidates subsequent indorsements. The reason is, that he takes from them all right to indorse; thus, for example, if A makes a note to B, and B, C, D, E, and F, indorse it in blank, and G, the holder, writes over C's name, "pay to G," it is as if C had written this himself, and then G only, could indorse, and, of course, D, E, and F could not, as they were mere strangers. And a holder precludes himself from taking advantage of the title of any party whose indorsement is thus voided. Nor can he strike out the name of any indorser prior to that one whom he makes defendant; for, by so doing, he deprives the defendant of his right to look to the party whose name is stricken out, and this discharges the defendant.

One may make a note or bill payable to his own order, and indorse it in blank; and this is now very

common in our commercial cities, because the holder of such a bill or note can transfer it by delivery, and it needs not his indorsement to make it negotiable further.

A transfer by delivery, without indorsement, of a bill or note payable to bearer, or indorsed in blank, does not generally make the transferor responsible to the transferee, for the payment of the instrument. Nor has the transferee a right to fall back, in case of non-payment, upon the transferor, for the original consideration of the transfer, if the bill were transferred in good faith, in exchange for money or goods; for such transfer would be held to be a sale of the bill or note, and the purchaser takes it with all risks. But it seems not to be so where such a note is delivered either in payment or by way of security for a previously existing debt. Then if the transferor has lost nothing by the reception of the note by the transferee—because if he had continued to hold the note, he would have lost it—there seems to be no reason why the transferee should lose it. We have no doubt that such a transferor may make himself liable, without indorsement, by express contract; and that circumstances might warrant and require the implication that the bill or note so transferred remained, by the agreement and understanding of both parties, at the risk of the transferor. And every such transferor warrants that the bill or note (or bank-note) is not forged or fictitious.

An indorsement may be made on the paper before the bill or note is drawn; and such indorsement, says Lord Mansfield, "is a letter of credit for an indefinite sum, and it will not lie in the indorser's mouth to say that the indorsements were not regular." The same rule applies to an acceptance on blank paper. So, an indorsement may be made after or before acceptance. If made after a refusal of acceptance, which is known to the indorsee, he takes only the title of the indorser, and is subject to all defenses available against him. A bill or note once paid at or after maturity ceases to be negotiable, in reference to all who could be prejudiced by its transfer. So, where a bill drawn payable to a third person, by whom it is indorsed, is dishonored and taken up by the drawer, it ceases to be a negotiable instrument; for the drawer has no title to indorse it. But if one draw a bill payable *to his own order*, and indorse it over, and, upon the bill being dishonored, take it up, he may indorse it again, and this last indorsee can recover against the acceptor. And if a bill or note is paid before it is due, it is valid in the hands of a subsequent *bonâ fide* indorsee.

A portion of a negotiable bill or note can not be transferred so as to give the transferee a right of action for that portion in his own name. But if the bill or note be partly paid, it may be indorsed over for the balance. If an action be brought on a bill or note, no transfer during the pendency of such action gives to the transferee a right of action, unless he was ignorant of the action; then the transfer is valid. After a holder's death his personal representative should transfer. But it seems that if a note needing indorsement was indorsed by the holder, but not delivered, the executor can not complete the transfer by delivery. The husband who acquires a right to a bill or note given to the wife, either before or after marriage, may indorse. One who may claim payment of a bill or note, and of whom payment may also be demanded, or one who is liable to contribute for the payment of a note, can not sue upon it. But if only the technical rule—that the same party can not be plaintiff and defendant—prevents the action, it may be avoided by indorsement over to another before maturity.—PARSONS' *Elements of Mercantile Law*, ch. ix. See articles *BILLS OF EXCHANGE*; *STORY on Bills*; KENT'S *Commentaries on American Law*; *Banker's Mag.*, vols. v., vi., vii.; *En. Brit.*, article *EXCHANGE*; *BAYLEY on Bills*; *Manual for Notaries Public*.

Indus. This great river of Asia has its rise in Thibet, at the north of the Kailas mountain, regarded in Hindoo mythology as the mansion of the gods, in about lat. 32°, long. 81° 30'. It first takes a north-westerly direction for about 460 miles, when it is joined by the river of Dras, which, rising in the mountains of Cashmere, and receiving several streams both from the east and west, discharges a considerable volume of water at its confluence. At Makpon-i-Shagaron, in lat. 35° 48', long. 74° 30', the Indus emerges from the mountainous region, and turning south (a course which it thenceforth continues to the sea), takes its way through the country north of Attock. Close above this last-mentioned town, and at the distance of 870 miles from its source, the Indus receives on the western side the great river of Cabool. Both rivers have a large volume of water, and as they meet amid numerous rocks, the confluence is turbulent, and attended with great uproar. The town of Attock is situated about 1000 feet above the sea-level, and about 17,000 feet below the source of the Indus, which falls, therefore, 16,000 feet in 870 miles, or at the average rate of about 19 feet per mile. The length of its channel from Attock to the sea is 942 miles, and, consequently, in that lower part of its course, it falls little more than 1 foot per mile. For about 10 miles below Attock, the river, though in general rolling between high cliffs of slate rock, has a calm, deep and rapid current; but for 100 miles further down to Kalabagh, it becomes an enormous torrent. Lieutenant Wood, describing this section of its course, observes, "It here rushes down a valley, varying from 100 to 400 yards wide, between precipitous banks from 70 to 700 feet high." From Kalabagh southward, to Mittunkote, distant about 350 miles, the banks, either right or left, are in several places so low, that the first rise of the river covers the country round with water, extending, as the inundation advances, as far as the eye can reach. On entering the plain, the water loses its clearness, and becomes loaded with mud. Two or three miles below Mittunkote, and about 490 miles from the sea, the Indus receives the waters of the Punjnad, the channel which conveys the collected stream of the Punjaub. Above the confluence, the breadth of the Indus is less than that of the other river, but in consequence of the greater depth and velocity, the former has the greater volume of water. Wood found that the Indus, near the confluence, had a breadth of 608 yards, a velocity of about five miles an hour, a depth of 12 or 15 feet, and discharged 91,719 cubic feet per second. The Punjnad had a breadth of 1766 yards, a velocity of about two miles an hour, a depth of 12 or 15 feet, and discharged 68,955 cubic feet per second. Below the junction, the Indus in its lowest state is 2000 yards wide. Its aspect in this part is well described by Major Boileau. He says, "At the place where we crossed the Indus, almost immediately below its junction with the Punjnad, its stream is 2047 yards, or nearly a mile and a quarter in breadth, at a place where its width is unbroken, either by islands or sandbanks. The banks are very low, and the water very muddy, having just begun to rise from the melting snow at its sources, nor is the stream of very great depth, except in the main channel; but with all these drawbacks, it is a magnificent sheet of water, a very prince of rivers." Below Mittunkote, the river passes in succession the towns of Sukkur, Bukkur, Sehwan, Hyderabad, and Trical. The last mentioned of these towns is situate in lat. 25° 9', long. 68° 21', and here the delta commences; and the country below it, and contained between the Fulaile branch on the east, and the extreme western branch of the river, being, with little exception, alluvial, and obviously deposited by the stream. At about five miles below Tatta, and 60 miles from the sea, the Indus divaricates into two great branches, the Buggaur, which flows westward, and the Sata, which maintains the previous course of

the Indus southward, and is, in strictness, the continuation of that river. The lower part of the delta is intersected by rivers and creeks in almost every direction, like the delta of the Ganges; but it so far differs from the latter, that it has no trees on its surface, the dry parts being covered with brushwood, and the remainder, by much the largest part, being noisome swamps or muddy lakes. It is remarkable that the influence of the tides is not felt at a greater distance than 60 or 65 miles from the sea. At the mouths of the different branches, the rush or influx of the tide is high and dangerous, running, as has been estimated, at the rate of four miles an hour, though varying greatly at different places. From the sea up to Hyderabad, the Indus is in general about a mile in breadth, varying in depth from two to five fathoms. The river begins to swell in the middle of July, from the melting of the snow, and continues to increase until the end of August. The most eastern of the estuaries connected with the Indus is the Korea Mouth, from which, proceeding westward, the remaining creeks or estuaries most worthy of notice, occur in the following order: The Seer, Mull, Kaha, Kooke-warree, Kedywarree (discharging the waters of the Sata), Hujamree, Jooa, Durbar, Pitteeanee, Coondee, Pitty, and Gizee. The spring-tide rises nine feet. The length of the navigable part of the river from the sea to Attock, has been ascertained by measurement to be 942 miles, that of the upper part is about 870 miles, making a total length in round numbers of 1800 miles. The average declivity of the water-course from the locality of the source to Attock is, per mile, 19 feet; from Attock downward to Kalabagh, a distance of about 110 miles, it is 20 inches; from this place to Mittunkote, a distance of about 350 miles, it is eight inches, and thence to the sea six inches. The Indus appears destined to become an important channel of commercial communication.—E. T.

Ingot, a mass of gold or silver melted down and cast in a mold, but not coined or wrought. A large portion of the gold received from California at New York is put into this shape for more convenient export.

Ink (Du. *Ink*, *Inkt*; Fr. *Encre*; Ger. *Dinte*; It. *Inchiostro*; Lat. *Atramentum*; Rus. *Tschernilo*; Sp. *Tinta*; Sw. *Blak*). Every liquor or pigment used for writing or printing is distinguished by the name of ink. Common practice knows only black and red. Of black there are three principal kinds: 1. Indian ink; 2. Printers' ink; and 3. Writing ink. The Indian ink is used in China for writing with a brush, and for painting upon the soft flexible paper of Chinese manufacture. It is ascertained, as well from experiment as from information, that the cakes of this ink are made of lampblack and size, or animal glue, with the addition of perfumes or other substances not essential to its quality as an ink. The fine soot from the flame of a lamp or candle received by holding a plate over it, mixed with clean size from the shreds of parchment or glove-leather not dyed, will make an ink equal to that imported. Good printers' ink is a black paint, smooth, and uniform in its composition, of a firm black color, and possesses a singular aptitude to adhere to paper thoroughly impregnated with moisture.

The ancient black inks were composed of soot and ivory black, and Vitruvius and Pliny mention lampblack; but they had likewise various colors, as red, gold, silver, and purple. Red ink was made by them of vermilion and various kinds of gum. Indian ink is brought from China, and must have been in use by the people of the East from the earliest ages, most of the artificial Chinese productions being of very great antiquity. It is usually brought to Europe in small quadrangular cakes, and is composed of a fine black animal glue.—BECKMANN.

Black Ink.—Nutmalls, sulphate of iron, and gum,

are the only substances truly useful in the preparation of ordinary ink; the other things often added merely modify the shade, and considerably diminish the cost to the manufacturer upon the great scale. Many of these inks contain little gallic acid, or tannin, and are therefore of inferior quality. To make 12 gallons of ink, we may take 12 lbs. of nutgalls, 5 lbs. of green sulphate of iron, 5 lbs. of gum senegal, and 12 gallons of water.

The bruised nutgalls are to be put into a cylindrical copper, of a depth equal to its diameter, and boiled, during three hours, with three fourths of the above quantity of water, taking care to add fresh water to replace what is lost by evaporation. The decoction is to be emptied into a tub, allowed to settle, and the clear liquor being drawn off, the lees are to be drained. Some recommend the addition of a little bullock's blood or white of egg, to remove a part of the tannin. But this abstraction tends to lessen the product, and will seldom be practiced by the manufacturer intent upon a large return for his capital. The gum is to be dissolved in a small quantity of hot water, and the mucilage thus formed, being filtered, is added to the clear decoction. The sulphate of iron must likewise be separately dissolved, and well mixed with the above. The color darkens by degrees, in consequence of the peroxydization of the iron on exposing the ink to the action of the air. But ink affords a more durable writing when used in the pale state, because its particles are then finer, and penetrate the paper more intimately. When ink consists chiefly of tannate of peroxyd of iron, however black, it is merely superficial, and is easily erased or effaced. Therefore, whenever the liquid made by the above prescription has acquired a moderately deep tint, it should be drawn off clear into bottles, and well corked up. Some ink-makers allow it to mold a little in the casks before bottling, and suppose that it will thereby be not so liable to become moldy in the bottles. A few bruised cloves, or other aromatic perfume, added to ink, is said to prevent the formation of moldiness, which is produced by the ova of infusoria animalcules. I prefer digesting the galls to boiling them.

The operation may be abridged, by peroxydizing the coppers beforehand, by moderate calcination in an open vessel; but, for the reasons above assigned, ink made with such a sulphate of iron, however agreeable to the ignorant, when made to shine with gum and sugar, under the name of japan ink, is neither the most durable nor the most pleasant to write with. From the comparatively high price of gall-nuts, sumach, logwood, and even oak bark, are too frequently substituted, to a considerable degree, in the manufacture of ink. The ink made by the prescription given above, is much more rich and powerful than many of the inks commonly sold. To bring it to their standard, a half more water may safely be added, or even 20 gallons of tolerable ink may be made from that weight of materials. Sumach and logwood admit of only about one half of the coppers that galls will take to bring out the maximum amount of black dye. Chaptal gives a prescription in his *Chimie appliquée aux arts*, which, like many other things in that book, are published with very little knowledge and discrimination. He uses logwood and sulphate of copper, in addition to the galls and sulphate of iron; a pernicious combination, productive of a spurious fugitive black, and a liquor corrosive of pens. It is, in fact, a modification of the vile dye of the hatters. Lewis, who made exact experiments on inks, assigned the proportion of 8 parts of galls to 1 of sulphate of iron, which, with average galls, will answer very well; but good galls will admit of more coppers.

Gold Ink is made by grinding upon a porphyry slab, with a muller, gold leaves along with white honey, till they be reduced to the finest possible division. The paste is then collected upon the edge of a knife or

spatula, put into a large glass, and diffused through water. The gold by gravity soon falls to the bottom, while the honey dissolves in the water, which must be decanted off. The sediment is to be repeatedly washed till entirely freed from the honey. The powder, when dried, is very brilliant, and when to be used as an ink, may be mixed up with a little gum water. After the writing becomes dry, it should be burnished with a wolf's tooth.

Silver Ink is prepared in the same manner.

Indelible Ink.—A very good ink, capable of resisting chlorine, oxalic acid, and ablation with a hair pencil or sponge, may be made by mixing some of the ink made by the preceding prescription, with a little genuine China ink. It writes well. Many other formulæ have been given for indelible inks, but they are all inferior in simplicity and usefulness to the one now prescribed. Solution of nitrate of silver thickened with gum, and written with upon linen or cotton cloth, previously imbued with a solution of soda, and dried, is the ordinary permanent ink of the shops. Before the cloths are washed, the writing should be exposed to the sunbeams, or to bright daylight, which blackens and fixes the oxyd of silver. It is easily discharged by chlorine and ammonia. A good permanent ink may be made by mixing a strong solution of chlorid of platinum with a little potash sugar, and gum to thicken. The writing made therewith should be passed over with a hot smoothing iron to fix it.

By decomposing vanadate of ammonia with infusion of galls, a liquid is obtained of a perfectly black hue, which flows freely from the pen, is rendered blue by acids, is insoluble in dilute alkalis, and resists the action of chlorine. Whenever the metal vanadium shall become more abundant, as it probably may ere long, we shall possess the means of making an ink, at a moderate price, much superior to the tannate and gallate of iron. To prepare the above vanadic salt cheaply, the cinder or hammerschlag obtained from the iron made at Ekersholm, in Sweden, or other iron which contains vanadium, being reduced to a fine powder, is to be mixed with two thirds of its weight of nitre, and one third of effloresced soda. The mixture is to be ignited in a crucible; cooled and lixiviated, whereby solutions of the vanadates of potash and soda are obtained, not pure, indeed, but sufficiently so for being decomposed, by means of sal ammoniac, into a vanadate of ammonia. This being rendered nearly neutral with any acid, constitutes an excellent indelible ink.

Indelible Ink may be prepared by adding lampblack and indigo to a solution of the gluten of wheat in acetic acid. This ink is of a beautiful black color, at the same time cheap, and can not be removed by water, chloria, or dilute acids. M. Herberger gives the following directions for its preparation: Wheat-gluten is carefully freed from the starch, and then dissolved in a little weak acetic acid; the liquid is now mixed with so much rain water that the solution has about the strength of wine vinegar, i. e., neutralizes 1.16 of its weight of carbonate of soda. 10 grs. of the best lampblack and 2 grs. of indigo are mixed with 4 ozs. of the solution of gluten, and a little oil of cloves added. This ink may be employed for marking linen, as it does not resist mechanical force.

Ink, indelible, of Dr. Traill, is essentially the same as the above. French indelible ink consists of Indian ink diffused through dilute muriatic acid, for writing with quills, and through weak potash lye for writing with steel pens.

Red Ink.—This ink may be made by infusing, for three or four days in weak vinegar, Brazil wood chipped into small pieces; the infusion may be then boiled upon the wood for an hour, strained, and thickened slightly with gum arabic and sugar. A little alum improves the color. A decoction of cochineal with a little water of ammonia, forms a more beautiful red

ink, but it is fugitive. An extemporaneous red ink of the same kind may be made by dissolving carmine in weak water of ammonia, and adding a little mucilage.

Green Ink.—According to Klaproth, a fine ink of this color may be prepared by boiling a mixture of two parts of verdigris in eight parts of water, with one of cream of tartar, till the total bulk be reduced one half. The solution must be then passed through a cloth, cooled, and bottled for use.

Yellow Ink is made by dissolving 3 parts of alum in 100 of water, adding 25 parts of Persian or Avignon berries bruised, boiling the mixture for an hour, straining the liquor, and dissolving it in 4 parts of gum arabic. A solution of gamboge in water forms a convenient yellow ink.

By examining the different dye-stuffs, and considering the processes used in dyeing with them, a variety of colored inks may be made.

China Ink.—Proust says, that lampblack purified by potash ley, when mixed with a solution of glue, and dried, formed an ink which was preferred by artists to that of China. M. Merimée, in his interesting treatise, entitled *De la peinture à l'huile*, says, that the Chinese do not use glue in the fabrication of their ink, but that they add vegetable juices, which render it more brilliant and more indelible upon paper. When the best lampblack is levigated with the purest gelatine or solution of glue, it forms, no doubt, an ink of a good color, but wants the shining fracture, and is not so permanent on paper as good China ink; and it stiffens in cold weather into a tremulous jelly. Glue may be deprived of the gelatinizing property by boiling it for a long time, or subjecting it to a high heat in a Papin's digester; but as ammonia is apt to be generated in this way, M. Merimée recommends starch gum made by sulphuric acid (British gum) to be used in preference to glue. He gives, however, the following directions for preparing this ink with glue. Into a solution of glue he pours a concentrated solution of gall-nuts, which occasions an elastic resinous-looking precipitate. He washes this matter with hot water, and dissolves it in a spare solution of clarified glue. He filters anew, and concentrates it to the proper degree for being incorporated with the purified lampblack. The astringent principle in vegetables does not precipitate gelatin when its acid is saturated, as is done by boiling the nut-galls with lime-water or magnesia. The first mode of making the ink is to be preferred. The lampblack is said to be made in China, by collecting the smoke of the oil of sesame. A little camphor (about 2 per cent.) has been detected in the ink of China, and is supposed to improve it. Infusion of galls renders the ink permanent on paper.

Sympathetic Ink.—The best is a solution of muriate of cobalt.

Printers' Ink. See URE's *Dict.* for full details.

Blue Ink.—Mr. Stephens's patent blue ink is made by dissolving Prussian blue in a solution of oxalic acid. The blue should be washed in dilute muriatic acid. M. Hornung has given the following as the best formula for blue ink: Mix 4 parts of perchlorid of iron, in solution, with 7.50 parts of water, then add 4 parts of cyanid of potassium dissolved in a little water; collect the precipitate formed; wash it with several additions of water; allow it to drain until it weighs about 200 parts; add to this 1 part of oxalic acid, and promote the solution of the cyanid by shaking the bottle containing the mixture. The addition of gum and sugar is useless, and even appears to exercise a prejudicial effect on the beauty of the ink. It may be kept without any addition for a long time.—URE's *Dictionary of Manufactures*. See INDIAN INK.

Inkle, a sort of broad linen tape, principally manufactured at Manchester and some other towns in Lancashire.

Inlaid work. There are many pretty and varied kinds of inlaid work manufactured from small fragments of material. There is the *Marquetrie* or inlaid cabinet-furniture of France, consisting in inlaying woods of a great variety of tints, in the form of flowers, ornaments, etc. The *Buhl*, or Boul-work, is also of French invention, wherein metals are inlaid upon a ground of ebony or tortoise-shell. The elaborate German cabinets, made of ebony, are inlaid with precious stones and various woods and metals. There is the *Mosaic inlay*, in which the pieces inlaid are extremely small, and of which exquisite boxes are made by the Hindoos; witness, too, the marvelous Spanish table at the Great Exhibition of London in 3,000,000 of pieces. The *Parquetrie*, or inlaid flowering, which differs from Marquetrie chiefly in the bolder scale of the designs; woods of different colors being cut to pattern, and inlaid. There is the novel and beautiful process of inlaying articles of furniture with porcelain; the inlaid portions are not merely pannels and pilasters, but painted porcelain flowers and other ornaments. The *Pietra Dura* is a kind of art carried to great perfection in Tuscany: its cultivation in that country has for a long period supplied most of the palaces of Europe with works in *pietra dura*, which rank among the finest examples of decorative furniture.

Insolvency and Bankruptcy. The first Insolvent Act in England was passed in 1649, but it was of limited operation; a number of acts of more extensive operation were passed at various periods, and particularly in the reign of George III. The benefit of the act known as the Great Insolvent Act was taken in England by 50,733 insolvents from the time of its passing, in 1814, to March, 1827, a period of 13 years. Since then, the acts relating to insolvency have been several times amended. Persons not traders, or, being traders, whose debts are less than £300, may petition the Court of Bankruptcy, and propose composition, and have *pro tem.* protection from all process against their persons and property, 6 Vict., 1842. Act amended, 8 Vict., August, 1844.—HAYDN.

Bankruptcy.—Blackstone defines a bankrupt—"A trader who secretes himself, or does certain other acts tending to defraud his creditors." But an intention to defraud is not now held to be essential to constitute a bankrupt; who may be either simply an insolvent, or a person who is guilty of certain acts tending to defraud his creditors.

INSOLVENCY.—*Analysis of the Laws of Bankruptcy.*—In Great Britain, insolvency is applied to every class of persons, while bankruptcy is exclusively applied to traders. In foreign countries, insolvency is the general denomination. Bankruptcy is declared when there is any degree of criminality. The law of bankruptcy of England is consolidated in the 12 and 13 Vict., c. 106. In America, various attempts were made for a general enactment for all the States, but with no success. The act of Congress on the subject, passed in 1841, was repealed in 1843. Special insolvency laws exist, of which an abstract is given hereafter. In Scotland, the bankrupt law is included in the 2 and 8 Vict., chap. 41. The French law of the 28th of May, 1838, has modified the Code of Commerce of 1807. Article 437 permits declaration of the insolvency of a trader after his decease. The law of Scotland authorizes the sequestration of estates of a deceased debtor. The same is permitted in Portugal. In England a Court of Bankruptcy is instituted, which may adjudge the creditor a bankrupt. In Scotland the same is placed with the Lord Ordinary. In France the same authority is given to the tribunal. Acts of bankruptcy may be committed in England in various ways. All acts made previous to adjudication of bankruptcy are valid, if they are entered into *bonâ fide* on the part of the contracting party. In France, the following acts, made within 10 days preceding the opening of the insolvency, are void: 1st. Acts transferring property

gratuitously; 2d. Payment of debts not due, and of those due settled otherwise than with commercial effects; 3d. All mortgages, antichrese, or security, consented to for anterior debts; and, lastly, all acts whatever made by the debtor with a third party who was cognizant of his having stopped payment. Articles 53 to 54 of the Prussian code contain also similar instructions. The Spanish code fixes 80 days; the Portuguese code, 40 days; the Dutch code, two months previous to the insolvency as the time during which the insolvent could not alienate his property gratuitously, or endow his children, or transfer or mortgage his real estate.

The Dutch code declares void the donations made by the insolvent at any time where he knew his affairs embarrassed, although the donee was *bonâ fide*. The Russian code prohibits the wife and children of the insolvent to reclaim the donations made to them. By Article 1451, the property engaged by the insolvent, and not yet sold, may be redeemed, and form portions of the assets. As to the administration of the insolvency in England, assignees are chosen by the creditors, under the supervision of the Court. In Scotland, creditors are to elect an interim factor and a trustee, and also three commissioners. In France, the agents created by the code 1807 have been suppressed, and at present there are no more than provisional assignees, who continue their functions till the confirmation of the settlement, or till the formation of the contract of union. The Tribunal of Commerce of Paris has formed a fixed number of assignees, to whom is confided the management of all bankruptcies.

In Spain, the tribunal designates a commissioner, nominates a trustee for the property of the insolvent, and calls the creditors, who choose some assignees, who are to be taken from among the creditors, or their attorneys. In England, the commissioners of bankruptcy are judges, elected by the Lord Chancellor, one for each district. All legislation provides for the remuneration of the assignees, trustees, or administrators: these remunerations are fixed by Art. 1078, Spanish code, Portuguese code, Russian code, etc., etc., either upon a determined share, or the receipts which they have realized, or by remuneration, valued by the tribunal. The Spanish code prohibits an attorney from representing more than one creditor; and the Portuguese code prohibits a creditor from representing another creditor at the meetings.

In order that an insolvent may obtain a settlement, there need be, in France and in Russia, a majority of the creditors and three fourths of the debts. In Scotland, a majority and three fifths of the debts. In Spain, one more than the half of creditors and three fifths of the debts. The wife of the insolvent has no deliberative voice there in the resolutions relative to the settlement. In Holland, in Portugal, in Wurtemberg, and according to the ordinance of Bilbao, the two thirds of ordinary creditors and three fourths of debts, or the three fourths of the creditors and two thirds of the debts must be added together. The Prussian code, which divides the creditors into six classes, exacts the majority on sum and classes; in case of division of classes, the settlement may be adopted by the one and rejected by another; but if the division is impracticable, the declaration of division shall be equivalent then to a refusal. With respect to the confirmation, both in France and in Spain, it can only be pronounced eight days after the settlement has been obtained. The dissenting creditors, according to the Spanish code, can not form opposition to it, unless on account of defects in the forms of calling the meetings, on account of collusion, or of want of legitimate rights in the parties voting, or of fraudulent exaggeration of their debts; and in Holland, when the assets exceed the sum entered in the settlement. The Dutch code and the French law render the confirmation obligatory upon all the creditors both absent and

present, and even upon those who have not been called.

The rights of foreign creditors are generally regulated by treaties, Prussia, or by the right of reciprocity, Austria. By the French code of civil procedure, two months are granted to creditors residing in England to prove their debts. By the Sardinian code, such delay is three months.—*Com. Law of the World*, by LEONE LEVI. London, 1856. 2 vols.

United States.—There is not any bankrupt system in existence under the government of the United States. An act of Congress was passed on the subject in 1841, but it was repealed in 1843. The several States are left free to institute their own bankrupt system. Insolvent laws prevail throughout the Union. In the States of Maine, New Hampshire, Massachusetts, Virginia, and Kentucky, they are confined to the relief of debtors charged in execution. In New Jersey, Delaware, Maryland, Tennessee, North and South Carolina, Georgia, Alabama, Mississippi, and Illinois, the insolvent laws extend to debtors in prison on mesne or final process. In New York, Connecticut, Rhode Island, Pennsylvania, Ohio, Indiana, Missouri, and Louisiana, they are still more extensive, and reach the debtor whether in or out of prison. The following is an abstract of the laws of the several States in reference to summary attachment against insolvents:

I. *Alabama*.—Original attachments, foreign and domestic, are issued by judges of the circuit or county courts, or justices of the peace. An attachment may issue, although the debt or demand of the plaintiff be not due; and shall be a lien on the property attached, until the debt or demand becomes due, when judgment shall be rendered and execution issued. A non-resident plaintiff may have an attachment against the property of a non-resident defendant; provided he gives good and sufficient resident security in the required bond; making oath that the defendant has not sufficient property within the State of defendant's residence to satisfy the debt or demand.

II. *Arkansas*.—An attachment may be issued against the property of a non-resident; and also against a resident of the State when the latter is about to remove out of the State; or is about to remove his goods or effects; or about to secrete himself so that the ordinary process of law can not be served on him.

III. *California*.—1. Creditors may proceed by attachment when the defendant has absconded, or is about to abscond from the State; or is concealed therein to the injury of his creditors. 2. When the defendant has removed, or is about to remove, any of his property out of the State, with intent to defraud his creditors. 3. When the defendant fraudulently contracted the debt, or incurred the obligation, respecting which the suit is brought. 4. When the defendant is a non-resident. 5. When he has fraudulently conveyed, disposed of, or concealed his property, or a part of it; or intends to convey the same to defraud his creditors. In California the real estate shall be bound, and the attachment shall be a lien thereon, although the debt or demand due the plaintiff be not due—in case the defendant is about to remove himself or his property from the State. The law of attachment applies in California, when the contract has been made in that State, or when made payable in that State.

IV. *Connecticut*.—Attachment may be granted against the goods and chattels and land of the defendant; and likewise against his person when not exempted from imprisonment on the execution in the suit. The plaintiff to give bonds to prosecute his claim to effect.

V. *Delaware*.—A writ of domestic attachment issues against an inhabitant of Delaware when the defendant can not be found; or has absconded with intent to defraud his creditors; and a writ of foreign attachment when the defendant is not an inhabitant of this State.

This attachment is dissolved by the defendant's appearing and putting in special bail at any time before judgment.

VI. *Florida*.—An attachment issues when the amount is actually due, and the defendant is actually removing out of the State, or absconds or conceals himself.

VII. *Georgia*.—A judge of the superior court, or a justice of the inferior court, or a justice of the peace, may grant an attachment against a debtor whether the debt be matured or not, when the latter is removing without the limits of the State, or any county, or conceals himself. The remedy by attachment may be resorted to by non-resident as well as by resident creditors. The necessary affidavit may be made before any commissioner appointed by the State to take affidavits. Indorsers of notes, obligations, and all other instruments in writing, are entitled to the same remedy as provided for securities. In all cases the attachment first served shall be first satisfied. No lien shall be created by the levying of an attachment, to the exclusion of any judgment obtained by any creditor, before judgment is obtained by the attaching creditor.

VIII. *Illinois*.—Attachments are issued by the clerks of the circuit court, when affidavit is filed that the defendant has departed, or is about to depart, out of the State, or conceals himself, so that process can not be served upon him.

IX. *Indiana*.—The property of an inhabitant of the State may be attached, whenever he is secretly leaving the State, or shall have left the State with intent to defraud his creditors. The property of a non-resident is liable to attachment as in other States.

X. *Iowa*.—The plaintiff may cause any property of the defendant, which is not subject to execution, to be attached at the commencement, or during the progress, of the proceedings, whether the claim be matured or not; provided an affidavit is filed to the effect that the defendant is a foreign corporation, or acting as such, or that he is a non-resident of the State, or (if a resident) that he is in some manner about to dispose of or remove his property out of the State.

XI. *Kentucky*.—1. The plaintiff may have an attachment against the property of the defendant when the latter is a foreign corporation, or a non-resident of this State; or, 2. who has been absent therefrom four months; or, 3, has departed from the State with intent to defraud his creditors; or, 4, has left the county of his residence to avoid the service of a summons, or conceals himself that a summons can not reach him; or, 5, is about to remove his property, or a material part thereof, out of the State; or, 6, has sold or conveyed his property with the intent to defraud his creditors, or is about so to sell or convey. Such attachment is binding upon the defendant's property in the county from the time of the delivery of the order to the sheriff.

XII. *Louisiana*.—A creditor may obtain an attachment against the property of his debtor upon affidavit: 1, when the latter is about leaving permanently the State before obtaining or executing judgment against him; 2, when the debtor resides out of the State; 3, when he conceals himself to avoid being cited to answer to a suit, and provided the term of payment have arrived. In the absence of the creditor, the oath may be made by his agent or attorney, to best of his knowledge and belief.

XIII. *Maine*.—In this State, an original writ may be framed either to attach the goods or estate of the defendant, or for want thereof to take his body. All goods and chattels may be attached by the creditor and held as security pending any suit against the debtor. Such a writ will authorize an attachment of goods and estate of the principal defendant, in his own hands, as well as in the hands of trustees. Real estate, liable to be taken in execution, may be attached.

XIV. Maryland.—A creditor may obtain an attachment, whether he be a citizen of Maryland or not, against his debtor, who is not a citizen of this State, and not residing therein. If any citizen of the State, being indebted to another citizen thereof, shall actually run away or abscond, or secretly remove himself from his place of abode, with intent to evade the payment of his just debts, an attachment may be obtained against him. An attachment may be laid upon debts due the defendant upon judgments or decrees rendered or passed by any court of this State, and judgment of condemnation thereof may be had, as upon other debts due the defendant.

XV. Massachusetts.—Original writs may be framed, either to attach the goods or estate of the defendant, or for want thereof to take his body; or, there may be an original summons, either with or without an order to attach the goods or estate. All real estate, or goods and chattels that are liable to be taken in execution, may be attached upon the original writ, in any action in which any debt or damages are recoverable, and may be held as security to satisfy such judgment as the plaintiff may recover.

XVI. Michigan.—The grounds of attachment in this State are, 1, that the defendant has absconded, or is about to abscond, or has concealed himself; 2, that he has assigned, or concealed, or is about to remove, his property with a view to defraud; 3, that he fraudulently contracted the debt, or incurred the obligation, about which the suit is brought; 4, that he is not a resident of the State, or has not resided there three months immediately preceding the suit; 5, that the defendant is a foreign corporation.

XVII. Mississippi.—An attachment against the estate, including real estate, slaves, goods, chattels, etc., of a debtor, when it is shown that he has removed, or is about removing or absconding from the State, or privately conceals himself. Attachment also lies against the property of non-resident decedents. It may be obtained before the debt is due for which it issues, when the creditor has ground to believe that the debtor will remove with his effects out of the State, or has removed.

XVIII. Missouri.—An attachment may be issued here when the debtor is not a resident of the State; or, if a resident, when he absconds, absents, or conceals himself; or is about to remove his property, or fraudulently convey it, with a view to hinder or delay his creditors; or, 2, where the debt was contracted out of the State, and the debtor has secretly removed his effects into this State with intent to defraud.

XIX. New Hampshire.—In this State a writ of attachment may be issued upon the institution of any personal action; and will hold real and personal property, shares of stock in corporations, pews in churches, and the franchise of any corporation authorized to receive tolls; until the period of thirty days from the time of rendering the judgment.

XX. New Jersey.—An attachment may issue at the instance of a creditor (or in his absence, of his agent or attorney), against the property of a debtor when the latter is about to abscond from the State, or is not a resident of the State, or is a foreign corporation.

XXI. New York.—Any creditor to the amount of \$25 may compel the assignment of their estates by debtors imprisoned on execution in civil causes for more than 60 years. If the debtor refuses to be examined, and to disclose his affairs, he is liable to be committed to close confinement. If he refuses to render an account inventory, and make an assignment, he will not be entitled to his discharge; though the officer having jurisdiction in the case is authorized to make the assignment for him. The proceedings, and the effect of the discharge, when duly obtained, and the duties of the debtor, and the rights of the creditors, are essentially the same as in the case of proceedings with the assent of two thirds of the creditors.

2. Every insolvent debtor may also petition the proper officers for leave voluntarily to assign his estate for the benefit of his creditors; and the same proceedings and checks are substantially prescribed as in other cases of insolvency. His discharge, obtained in such a case, exempts him from imprisonment, as to debts due at the time of the assignment, or previously contracted; and as to liabilities incurred by making or indorsing any promissory note or bill of exchange. But the discharge does not affect or impair any debt, demand, payment, or decree against the insolvent; and they remain good against his property acquired after the execution of the assignment; and the lien of judgment and decree is not affected by the discharge.

3. The creditor at whose suit the debtor is imprisoned, may require him, after the expiration of three months, to make the assignment, and his refusal will forever bar him from his discharge under this provision.

4. Corporations being creditors, may petition by a director, or other officer, acting under the corporate seal; and such director or officer, may make the requisite affidavits. So one joint partner may act as a creditor for the firm; and provision is made for the accommodation of non-resident creditors.

5. Debts purchased below the nominal amount entitle the creditor to act to the amount of the sum actually and bona fide paid; nor is a creditor having a security permitted to become a petitioner unless he relinquishes his security for the common benefit of the creditors. The assignments and discharges in these insolvent cases are to be recorded by the clerk of the county in which they were executed. No debt or duty to the United States is affected by any such discharge, not even as to the remedy by imprisonment; but debts and duties to the State, except taxes, are placed upon the same footing as debts to individuals.

6. The assignment of the insolvent passes all his interest, legal and equitable, existing at the time of executing the assignment in any estate, real or personal; but no contingent interest passes unless it shall become vested within three years after making the assignment, and then it passes. Probabilities coupled with an interest are assignable; but not bare possibilities, such as the expectancy of an heir. The assignment does not affect property held by the debtor in trust; nor does the assignment by the insolvent husband affect the property settled to the separate use of the wife free and clear of her husband.

7. The insolvent discharges apply only to debts existing when the petition, inventory, and schedule of debts are presented, and not so as to cover debts contracted between that time and the time of the discharge.

8. The property assigned is distributed ratably among all the creditors, subject, nevertheless, to existing legal liens and priorities existing before the assignment; and under the New York insolvent laws, a creditor can not become a petitioning creditor in respect to any debt secured by a legal lien, unless he previously relinquishes that lien for the general benefit of the creditors.

9. The attachment-law of New York is a legal mode, by which a title to property may be acquired by operation of law. When the debtor, who is an inhabitant of New York, absconds, or is concealed, a creditor to whom he owes \$100, or any two, to whom he owes \$150, or any three, to whom he owes \$300, may, on application to a judge or commissioner, and on due proof of the debt, and of the departure or concealment, procure his real and personal estate to be attached; and on due public notice of the proceeding, if the debtor does not within three months return and satisfy the creditor, or appear and offer to contest the fact of having absconded, or offer to appear and contest the validity of the demand and give the requisite security, then trustees are to be appointed who become vested with the debtor's estate; and they are to col-

lect and sell it, and settle controversies, and make dividends among all his creditors, in the mode prescribed.

10. From the time of the notice, all sales and assignments by the debtor are declared to be void. If the debtor resides out of the State, and is indebted on a contract made within the State, or to a creditor residing within the State, although upon a contract made elsewhere, his property is liable to be attached and sold in like manner; but the trustees are not to be appointed until nine months after public notice of the proceedings.

11. Perishable goods, other than vessels, when attached under the Absconding Debtor Act, may be immediately sold and converted into money; and if the sheriff, under the attachment, seizes property claimed by third persons, he is to summon a jury and to take their inquiry as to the title to the property claimed.

12. If any American vessel belonging to the debtor be attached under these proceedings, it may be released on the claimant of the vessel giving security to pay the amount of the valuation of the vessel to the trustees, or to the debtor, as the case may be; and if it be a foreign vessel claimed by a third person, the attaching creditor must give security to prosecute the attachment, and to pay the damages if it should appear that the vessel belonged to the claimant.

13. A creditor, having an unliquidated demand resting on contract, is a creditor within the Absconding Debtor Act, and competent to apply for the attachment. Any creditor may proceed against an absconding or concealed debtor, being an inhabitant of the State, or against any non-resident debtor, if the contract was made in New York; but if the contract was made elsewhere, then the creditor must be a resident of the State.

14. Attachment-laws against the property, real and personal, of absconding and non-resident debtors prevail throughout the several United States, but those statute laws are not uniform on this point.

XXII. *North Carolina*.—An attachment may issue on the complaint of a creditor, his agent, attorney or factor, against the property of a debtor when he has removed, or is about to remove, privately from the State, so that the ordinary process of law will not reach him.

XXIII. *Ohio*.—1. A creditor may procure, before or after the maturity of the claim, an attachment against the property of a debtor, where the latter is a foreign corporation or a non-resident; or, if a resident, when he has absconded, or left the county of his residence, or conceals himself; or is about to remove or convert his property, with a view to defraud his creditors. 2. When the debtor fraudulently contracted the debt, or incurred the obligation.

XXIV. *Pennsylvania*.—In this State the writ of domestic attachment issues against any debtor, being an inhabitant of the State, if he has absconded from his usual place of abode; or shall have remained absent from the State, or shall have confined himself in his own house, or concealed himself elsewhere, to defraud his creditors. No second attachment will be issued against the same property, unless the first be not executed, or be dissolved by the court. A writ of attachment may be also issued against the property of a foreign corporation or a non-resident. In the latter case, the attachment inures to the benefit of the attaching creditor only. In the former case, it is for the benefit of creditors at large.

XXV. *Rhode Island*.—In this State a writ of attachment is first levied against the body of the defendant; and if he can not be found, then against his goods and chattels. The property of foreign corporations and debtors is also liable to attachment, at the suit of a creditor.

XXVI. *South Carolina*.—A writ of attachment will issue, at the instance of a creditor wherever residing, against a debtor when he is a non-resident—or

against a citizen who has been absent more than a year and a day; or when he absconds or is removing out of the county; or conceals himself so that the ordinary process of law can not reach him.

XXVII. *Tennessee*.—When a debtor has removed, or is about to remove out of the county privately, or absconds or conceals himself, an attachment may be obtained against his property, at the suit of a creditor, or his agent, attorney, or factor. In the case of non-resident debtors, having any real or personal property in the State, it is required, in order to obtain an attachment, to file a bill in chancery.

XXVIII. *Texas*.—Original attachments are issued against the property of a debtor when he is not to be found in the county; and the property attached shall remain in custody until final judgment. Attachment will also lie when the defendant is a non-resident; or when a resident is about to remove out of the State; and whether the debt be matured or not.

XXIX. *Vermont*.—Writs of attachment may issue against the goods, chattels, or estate of the defendant, or for want thereof, against his body, before or after the maturity of a claim. Actions against non-residents, or when the defendant has absconded from the State, may be commenced by trustee process.

XXX. *Virginia*.—The property of the defendant, if a non-resident, or a resident who is about to remove himself or effects from the State, is liable to attachment. An attachment in such cases will hold before the claim is due and payable.

XXXI. *Wisconsin*.—An attachment will hold against the property of a debtor when he has absconded, or is about to abscond, from the State; or has fraudulently assigned, disposed of, or concealed his effects; or removed his property from the State; or when the defendant is a non-resident or a foreign corporation.

XXXII. *Minnesota*.—A warrant of attachment may be issued against the property of a defendant when a foreign corporation; or, when not a resident of this Territory; or, 3, has left the Territory with intent to defraud his creditors.

Thus it will be seen that in all the States the property of non-residents and foreign corporations is liable to attachments at the suit of creditors, before judgment is rendered; likewise against domestic debtors when they have absconded from the State, or have fraudulently conveyed, or are about to convey, sell, assign, or secrete their effects. In some few States, however, even this condition is not essential before a writ of attachment will issue.

In the States of Alabama, Massachusetts, Connecticut, Maine, New Hampshire, Vermont, and Rhode Island, the creditor may have a writ of attachment against the property of the debtor at the first institution of a suit; and without any ground of fraud or fraudulent intent—such property being held by the attachment until the termination of the suit, or until judgment; the plaintiff in such cases giving bond or security to indemnify the defendant for any loss or damage sustained, should the case be decided in favor of the latter. Generally, the property is liable only when actually levied upon; but in the State of Kentucky only, the property is liable from the moment of the delivery of the order to the sheriff.

The reader will find the American law on this subject fully illustrated in "A Treatise on the Law of Suits by Attachment in the United States. By CHAS. D. DRAKE, of the St. Louis Bar." 8vo. Published by Messrs. Little & Brown, Boston; to which work we are indebted for the present abstract. On the subjects of insolvency and bankrupt laws, see HUNT'S *Mer. Mag.*, v., 360, iv., 22, vi., 419, vii., 261, 352, viii., 294, xxi., 513, xxii., 64, 195, 311; *N. Y. Rev.*, vii., 440; *Am. Reg.*, ii., 74; *Westminster Rev.*, xli., 500, lii., 419; *Dem. Rev.*, xiii., 286; *No. Am. Rev.*, vii., 25; *NILES'S Register*, xix., 403, xxi., 243, 382 (JOHN SERGEANT), 407 (ANDREW STEVENSON).

Insurance, a contract of indemnity, by which one party engages, for a stipulated sum, to insure another against a risk to which he is exposed. The party who takes upon him the risk, is called the *Insurer, Assurer, or Underwriter*; and the party protected by the insurance is called the *Insured, or Assured*; the sum paid is called the *Premium*; and the instrument containing the contract of indemnity is called the *Policy*.

Insurance on Ships and Merchandise.—Suetonius conjectures that Claudius was the first contriver of it, A.D. 48. Insurance was in general use in Italy in 1194, and in England in 1660. Insurance policies were first used in Florence in 1523. The first law relating to insurance was enacted in 1601. Insurance of houses and goods in London began in 1667. This was the year following that of the great fire of London. An office was then set up for insuring houses and buildings, principally contrived by Dr. Barton, one of the first and most extensive builders of the city of London. The first regular office set up in London was the *Hand-in-Hand*, in 1696. A duty was laid on insurances of 1s. 6d. per £100 insured, in 1782: this duty was increased in 1797, and was variously altered since. The date of the first insurance office in the United States has not been ascertained.—HAYDN.

This article has been divided under the general heads of: I. Insurance (General Principles of). II. Insurance (Marine). III. Insurance (Fire). IV. Insurance (Life).

I. **INSURANCE (GENERAL PRINCIPLES OF)**.—It is the duty of government to assist, by every means in its power, the efforts of individuals to protect their property. Losses do not always arise from accidental circumstances, but are frequently occasioned by the crimes and misconduct of individuals; and there are no means so effectual for their prevention, when they arise from this source, as the establishment of a vigilant system of police, and of such an administration of the law as may be calculated to afford those who are injured a ready and cheap method of obtaining every practicable redress; and, as far as possible, of insuring the punishment of culprits. But, in despite of all that may be done by government, and of the utmost vigilance on the part of individuals, property must always be exposed to a variety of casualties from fire, shipwreck and other unforeseen disasters. And hence the importance of inquiring how such unavoidable losses, when they do occur, may be rendered least injurious. The loss of a ship, or the conflagration of a cotton-mill, is a calamity that would press heavily even on the richest individual. But were it distributed among several individuals, each would feel it proportionally less; and provided the number of those among whom it was distributed were very considerable, it would hardly occasion any sensible inconvenience to any one in particular. Hence the advantage of combining to lessen the injury arising from the accidental destruction of property: and it is the diffusion of the risk of loss over a wide surface, and its valuation, that forms the employment of those engaged in insurance.

Though it be impossible to trace the circumstances which occasion those events that are, on that account, termed accidental, they are, notwithstanding, found to obey certain laws. The number of births, marriages, and deaths; the proportions of male to female, and of legitimate to illegitimate births; the ships cast away; the houses burned; and a vast variety of apparently accidental events, are yet, when our experience embraces a sufficiently wide field, found to be nearly equal in equal periods of time; and it is easy, from observations made upon them, to estimate the sum which an individual should pay, either to guaranty his property from risk, or to secure a certain sum for his heirs at his death. It must, however, be carefully observed, that no confidence can be placed in such estimates, unless they are deduced from a very wide induction. Suppose, for example, it happens that during the pres-

ent year one house is accidentally burned, in a town containing 1,000 houses; this would afford very little ground for presuming that the *average* probability of fire in that town was 1 to 1,000. For it might be found that not a single house had been burned during the previous 10 years, or that 10 were burned during each of these years. But supposing it were ascertained, that, at an average of 10 years, 1 house had been annually burned, the presumption that 1 to 1000 was the real ratio of the probability of fire, would be very much strengthened; and if it were found to obtain for 20 or 30 years together, it might be held, for all practical purposes at least, as indicating the precise degree of probability.

Besides its being necessary, in order to obtain the true measure of the probability of any event, that the series of events, of which it is one, should be observed for a rather lengthened period, it is necessary, also, that the events should be numerous, or of pretty frequent occurrence. Suppose it were found, by observing the births and deaths of 1,000,000 individuals, taken indiscriminately from among the whole population, that the mean duration of human life was 40 years; we should have but very slender grounds for concluding that this ratio would hold in the case of the next 10, 20, or 30 individuals that are born. Such a number is so small as hardly to admit of the operation of what is called the *law of average*. When a large number of lives is taken, those that exceed the medium term are balanced by those that fall short of it; but when the number is small, there is comparatively little room for the principle of compensation, and the result can not, therefore, be depended upon. It is found, by the experience of all countries in which censuses of the population have been taken with considerable accuracy, that the number of male children born is to that of female children in the proportion nearly of 22 to 21. But unless the observations be made on a very large scale, this result will not be obtained. If we look at particular families, they sometimes consist wholly of boys, and sometimes wholly of girls; and it is not possible that the boys can be to the girls of a single family in the ratio of 22 to 21. But when, instead of confining our observations to particular families, or even parishes, we extend them so as to embrace a population of 500,000, these discrepancies disappear, and we find that there is invariably a small excess in the number of males born over the females.

The false inferences that have been drawn from the doctrine of chances, have uniformly, almost, proceeded from generalizing too rapidly, or from deducing a rate of probability from such a number of instances as do not give a fair average. But when the instances on which we found our conclusions are sufficiently numerous, it is seen that the most anomalous events, such as suicides, deaths by accidents, the number of letters put into the post-office without any address, etc., form pretty regular series, and consequently admit of being estimated *a priori*. The business of insurance is founded upon the principles thus briefly stated. Suppose it has been remarked that of forty ships, of the ordinary degree of sea-worthiness, employed in a given trade, one is annually cast away, the probability of loss will plainly be equal to *one fortieth*. And if an individual wish to insure a ship, or the cargo on board a ship, engaged in this trade, he ought to pay a premium equal to the 1-40th part of the sum he insures, exclusive of such an additional sum as may be required to indemnify the insurer for his trouble, and to leave him a fair profit. If the premium exceed this sum, the insurer is overpaid; and if it fall below it, he is underpaid.

Insurances are effected sometimes by societies, and sometimes by individuals, the risk being in either case diffused among a number of persons. Companies formed for carrying on the business have generally a large subscribed capital, or such a number of propri-

etors, as enables them to raise, without difficulty, whatever sums may at any time be required to make good losses. Societies of this sort do not limit their risks to small sums; that is, they do not often refuse to insure a large sum upon a ship, a house, a life, etc. The magnitude of their capitals affords them the means of easily defraying a heavy loss; and their premiums being proportioned to their risks, their profit is, at an average, independent of such contingencies.

Individuals, it is plain, could not act in this way, unless they were possessed of very large capitals; and besides, the taking of large risks would render the business so hazardous, that few would be disposed to engage in it. Instead, therefore, of insuring a large sum, as \$20,000, upon a single ship, a private underwriter or insurer may not, probably, in ordinary cases, take a greater risk than \$200 or \$500; so that, though his engagements may, when added together, amount to \$20,000, they will be diffused over from 40 to 100 ships; and supposing one or two ships to be lost, the loss would not impair his capital, and would only lessen his profits. Hence it is, that while one transaction only may be required in getting a ship insured by a company, 10 or 20 separate transactions may be required in getting the same thing done at Lloyd's, or by private individuals. When conducted in this cautious manner, the business of insurance is as safe a line of speculation as any in which individuals can engage. To establish a policy of insurance on a fair foundation, or in such a way that the premiums paid by the insured shall exactly balance the risks incurred by the insurers, and the various necessary expenses to which they are put, including, of course, their profit, it is necessary, as previously remarked, that the experience of the risks should be pretty extensive. It is not, however, at all necessary, that either party should inquire into the circumstances that lead to those events that are most commonly made the subject of insurance. Such a research would, indeed, be entirely fruitless: we are, and must necessarily continue to be, wholly ignorant of the causes of their occurrence.

It appears, from the accounts given by Mr. Scoresby, in his valuable work on the Arctic Regions, that of 586 ships which sailed from the various ports of Great Britain for the northern whale fishery, during the four years ending with 1817, eight were lost (vol. ii., p. 131), being at the rate of one ship out of every 73 of those employed. Now, supposing this to be about the average loss, it follows that the premium required to insure against it should be 1.70 per cent., exclusive, as already observed, of the expenses and profits of the insurer. Both the insurer and the insured would gain by entering into a transaction founded on this fair principle. When the operations of the insurer are extensive, and his risks spread over a considerable number of ships, his profit does not depend upon chance, but is as steady, and may be as fairly calculated upon, as that of a manufacturer or a merchant; while, on the other hand, the individuals who have insured their property have exempted it from any chance of loss, and placed it, as it were, in a state of absolute security.

It is easy, from the brief statement now made, to perceive the immense advantages resulting to navigation and commerce from the practice of marine insurance. Without the aid that it affords, comparatively few individuals would be found disposed to expose their property to the risk of long and hazardous voyages; but by its means insecurity is changed for security, and the capital of the merchant, whose ships are dispersed over every sea, and exposed to all the perils of the ocean, is as secure as that of the agriculturist. He can combine his measures and arrange his plans as if they could no longer be affected by accident. The chances of shipwreck, or of loss by unforeseen occurrences, enter not into his calculations. He has purchased an exemption from the effects of such

casualties; and applies himself to the prosecution of his business with that confidence and energy which nothing but a feeling of security can inspire. "Les chances de la navigation entravaient le commerce. Le système des assurances a paru; il a consulté les saisons; il a porté ses regards sur la mer; il a interrogé ce terrible élément; il en a jugé l'inconstance; il en a pressenti les orages; il a épié la politique; il a reconnu les ports et les côtes des deux mondes; il a tout soumis à des calculs savans, à des théories approximatives; et il a dit au commerçant habile, au navigateur intrépide: certes, il y a des désastres sur lesquels l'humanité ne peut que gémir; mais quant à votre fortune, allez franchissez les mers, déployez votre activité et votre industrie; je me charge de vos risques. Alors, Messieurs, s'il est permis de le dire, les quatre parties du monde se sont rapprochées."—*Code de Commerce, Exposé des Motifs*, liv., ii.

Besides insuring against the perils of the sea, and losses arising from accidents caused by the operation of natural causes, it is common to insure against enemies, pirates, thieves, and even the fraud, or, as it is technically termed, *barratry*, of the master. The risk arising from these sources of casualty being extremely fluctuating and various, it is not easy to estimate it with any considerable degree of accuracy; and nothing more than a rough average can, in most cases, be looked for. In time of war, the fluctuation in the rates of insurance is particularly great; and the intelligence that an enemy's squadron, or even a single privateer, is cruising in the course which the ships bound to or returning from any given port usually follow, causes an instantaneous rise in the premium. The appointment of convoys for the protection of trade during war, necessarily tends, by lessening the chance of capture, to lessen the premium on insurance. Still, however, the risk in such periods is, in most cases, very considerable; and as it is liable to change, very suddenly, great caution is required on the part of the underwriters.

Provision may also be made, by means of insurance, against loss by fire, and almost all the casualties to which property on land is subject. But, notwithstanding what has now been stated, it must be admitted that the advantages derived from the practice of insuring against losses by sea and land are not altogether unmixed with evil. The security which it affords tends to relax that vigilant attention to the protection of property which the fear of its loss is sure otherwise to excite. This, however, is not its worst effect. The records of our courts, and the experience of all who are largely engaged in the business of insurance, too clearly prove that ships have been repeatedly sunk, and houses burned, in order to defraud the insurers. In despite, however, of the temptation to inattention and fraud which is thus afforded, there can be no doubt that, on the whole, the practice is, in a public as well as private point of view, decidedly beneficial. The frauds that are occasionally committed raise, in some degree, the rate of insurance. Still it is exceedingly moderate; and it is most probable that the precautions adopted by the insurance offices for the prevention of fire, especially in great towns, where it is most destructive, outweigh the chance of increased conflagration arising from the greater tendency to carelessness and crime.

The business of life insurance has been carried to a far greater extent in Great Britain than in any other country, and has been productive of the most beneficial effects. Life insurances are of various kinds. Individuals without any very near connections, and possessing only a limited fortune, are sometimes desirous, or are sometimes, from the necessity of their situation, obliged annually to encroach on their capitals. But should the life of such persons be extended beyond the ordinary term of existence, they might be totally unprovided for in old age; and to secure themselves

against this contingency, they pay to an insurance company the whole or a part of their capital, on condition of its guarantying them, as long as they live, a certain annuity, proportioned partly, of course, to the amount of the sum paid, and partly to their age when they buy the annuity. But though sometimes serviceable to individuals, it may be questioned whether insurances of this sort are, in a public point of view, really advantageous. So far as their influence extends, its obvious tendency is to weaken the principle of accumulation; to stimulate individuals to consume their capitals during their own life, without thinking or caring about the interest of their successors. Were such a practice to become general, it would be productive of the most extensively ruinous consequences. The interest which most men take in the welfare of their families and friends affords, indeed, a pretty strong security against its becoming injuriously prevalent. There can, however, be little doubt that this selfish practice may be strengthened by adventitious means; such, for example, as the opening of government loans in the shape of life annuities, or in the still more objectionable form of *tontines*. But when no extrinsic stimulus of this sort is given to it, there do not seem to be any very good grounds for thinking that the sale of annuities by private individuals or associations can materially weaken the principle of accumulation.

Luckily, however, the species of insurance now referred to is but inconsiderable compared with that which has accumulation for its object. All professional persons, or those living on salaries or wages, such as lawyers, physicians, military and naval officers, clerks in public or private offices, etc., whose incomes must of course terminate with their lives, and a host of others, who are either not possessed of capital or can not dispose of their capital at pleasure, must naturally be desirous of providing, so far as they may be able, for the comfortable subsistence of their families in the event of their death. Take, for example, a physician or lawyer, without fortune, but making, perhaps, \$1000 or \$2000 a-year by his business; and suppose that he marries and has a family: if this individual attain to the average duration of human life, he may accumulate such a fortune as will provide for the adequate support of his family at his death. But who can presume to say that such will be the case?—that he will not be one of the many exceptions to the general rule?—And suppose that he were hurried into an untimely grave, his family would necessarily be destitute. Now, it is against such calamitous contingencies that life insurance is intended chiefly to provide. An individual possessed of an income terminating at his death, agrees to pay a certain sum annually to an insurance office; and this office binds itself to pay to his family at his death, a sum equivalent, after deduction of the expenses of management and the profits of the insurers, to what these annual contributions, accumulated at compound interest, would amount to, supposing the insured to reach the common and average term of human life. Though he were to die the day after the insurance has been effected, his family would be as amply provided for as it is likely they would be by his accumulations were his life of the ordinary duration. In all cases, indeed, in which those insured die before attaining the average age, their gain is obvious. But even in those cases in which their lives are prolonged beyond the ordinary term, they are not losers—they then merely pay for a security which they must otherwise have been without. During the whole period, from the time when they effect their insurances, down to the time when they arrive at the mean duration of human life, they are protected against the risk of dying without leaving their families sufficiently provided for; and the sum which they pay after having passed this mean term is nothing more than a fair compensation for the security they previously enjoyed. Of those

who insure houses against fire, a very small proportion only have occasion to claim an indemnity for losses actually sustained; but the possession of a security against loss, in the event of accident, is sufficient motive to induce every prudent individual to insure his property. The case of life insurance is in this respect different. When established on a proper footing, the extra sums which those pay whose lives exceed the estimated duration is but the value of the previous security. In order to adjust the terms of an insurance that the party insuring may neither pay too much nor too little, it is necessary that the probability of his life failing in each subsequent year should be determined with as much accuracy as possible.

To ascertain this probability, various observations have been made in different countries and periods, showing, out of a given number of persons born in a particular country or place, how many complete each subsequent year, and how many die in it, till the whole be extinct. The result of such observations, when collected and arranged in a tabular form, are called *Tables of Mortality*; being entitled, of course, to more or less confidence, according to the number and species of lives observed; the period when, and the care with which, the observations were made, etc. But supposing these tables to be formed with sufficient accuracy, the expectation of life at any age, or its mean duration after such age, may be readily learned from them; and hence also the value of an annuity, or the assurance on a life of any age. Thus, in the table of mortality for Carlisle, framed by Mr. Milne, of the Sun Life Office, and which is believed to represent the average law of mortality in England with very considerable accuracy, out of 10,000 persons, born together, 4000 complete their 56th year; and it further appears, that the number of such persons who die in their 66th year is 124; so that the probability that a life now 56 years of age will terminate in the 10th year hence is $\frac{124}{4000}$. But reckoning interest at 4 per cent., it appears (*Tables Interest and Annuities*), that the present value of \$100 to be received 10 years hence is \$67.556; consequently if its receipt be made to depend upon the probability that a life now 56 years of age will fail in the 66th year, its present value will be reduced by that contingency to $\frac{124 \times \$67.556}{4000} = \2.094 . The present value of \$100, receivable upon the life of a party now 56 years of age, terminating in the 57th or any subsequent year of his life, up to its extreme limit (which, according to the Carlisle table, is the 105th year), being calculated in this way, the sum of the whole will be the present value of \$100, receivable whenever the life may fail; that is, of \$100 insured upon it, supposing no additions were made to it for the profits and expenses of the insurers.

More compendious processes are resorted to for calculating tables of insurances at all ages; but the above statement sufficiently illustrates the principle on which they all depend. In practice, a life insurance is seldom made by the payment of a single sum when it is effected, but almost always by the payment of an *annual premium* during its continuance, the first being paid down at the commencement of the insurance.* If the Table of Mortality adopted by the insurers fairly represent the law of mortality prevailing among the insured, it follows that when a party insured does not attain to the average age according to the table, the insurers will either lose by him, or realize less than their ordinary profit; and when, on the other hand, the life of an insured party is prolonged beyond the tabular average, the profits of the insurers are proportionally increased. But if their business be so extensive as to enable the law of average fully to apply, what they lose by premature death will be balanced by the payments received from those who lives are

* For the method of calculating these annual premiums see *INTEREST AND ANNUITIES*.

prolonged beyond the mean duration of life for the ages at which they were respectively insured; so that the profits of the society will be wholly independent of chances.

The relief from anxiety afforded by life insurance very frequently contributes to prolong the life of the insured, at the same time that it materially augments the comfort and well-being of those dependent on him. It has also an obvious tendency to strengthen habits of accumulation. An individual who has insured a sum on his life, would forfeit all the advantages of the insurance were he not to continue regularly to make his annual payments. It is not, therefore, optional with him to save a sum from his ordinary expenditure adequate for this purpose. He is compelled, under a heavy penalty, to do so; and having thus been led to contract a habit of saving to a certain extent, it is most probable that the habit will acquire additional strength, and that he will either insure an additional sum or privately accumulate.

The practice of marine insurance, no doubt from the extraordinary hazard to which property at sea is exposed, seems to have long preceded insurances against fire and upon lives. We are ignorant of the precise period when it began to be introduced; but it appears most probable that it dates from the end of the 14th or the beginning of the 15th century. It has, however, been contended by Loccenius (*De Jure Maritimo*, lib. ii., c. 1), Puffendorf (*Droit de la Nature et des Gens*, lib. v., c. 9), and others, that the practice of marine insurance is of much higher antiquity, and that traces of it may be found in the history of the Punic wars. Livy mentions, that during the second of these contests, the contractors employed by the Romans to transport ammunition and provisions to Spain, stipulated that government should indemnify them against such losses as might be occasioned by the enemy, or by tempests, in the course of the voyage.—*Impetratum fuit, ut quæ navibus imponerentur ad exercitum Hispaniensem deferenda, ab hostium tempestatisque vi, publico periculo essent*.—Hist., lib. xxiii., c. 49. Malynes (*Lex Mercatoria*, 3d ed., p. 105), founding on a passage in Suetonius, ascribes the first introduction of insurance to the emperor Claudius, who, in a period of scarcity at Rome, to encourage the importation of corn, took upon himself all the loss or damage that it might sustain in the voyage thither by storms and tempests.—*Negotiatoribus certa lucra proposuit, suscepto in se damno, si quid per tempestates accideret, et naves mercature causâ, fabricantibus, magna commoda constituit*.—c. 18. It is curious to observe that this stipulation gave occasion to the commission of acts of fraud, similar to those so frequent in modern times. Shipwrecks were pretended to have happened, that never took place: old shattered vessels, freighted with articles of little value, were purposely sunk, and the crew saved in boats; large sums being then demanded as a recompense for the loss. Some years after, the fraud was discovered, and some of the contractors were prosecuted and punished.—Lib. xxv., c. 3. But none of these passages, nor a similar one, in Cicero's Letters (*Ad Fam.*, lib. ii., c. 17), warrant the inferences that Loccenius, Malynes, and others have attempted to draw from them. Insurance is a contract between two parties; one of whom, on receiving a certain premium (*pretium periculi*), agrees to take upon himself the risk of any loss that may happen to the property of the other. In ancient, no less than in modern times, every one must have been desirous to be exonerated from the chance of loss arising from the exposure of property to the perils of the sea. But though, in the cases referred to, the carriers were exempted from this chance, they were not exempted by a contract *propter aversionem periculi*, or by an insurance; but by their employers taking the risk upon themselves. And it is abundantly obvious that the object of the latter in doing this was not to profit, like an insurer,

by dealing in risks, but to induce individuals the more readily to undertake the performance of an urgent public duty.

But with the exception of the instances now mentioned, nothing bearing the remotest resemblance to an insurance is to be met with till a comparatively recent period. If we might rely on a passage in one of the Flemish chroniclers, quoted by the learned M. Pardessus—see his excellent work, *Collection des Loix Maritimes*, tome i., p. 356—we should be warranted in concluding that insurance had been effected at Bruges so early as the end of the 13th century; for the chronicler states that, in 1311, the Earl of Flanders consented, on a requisition from the inhabitants, to establish a chamber of insurance at Bruges. M. Pardessus is not, however, inclined to think that this statement should be regarded as decisive. It is evident from the manner in which the subject is mentioned, that the chronicler was not a cotemporary; and no trace can be found, either in the archives of Bruges, or in any authentic publication, of any thing like the circumstance alluded to. The earliest extant Flemish law as to insurance, is dated in 1527; and none of the early maritime codes of the North so much as alludes to this interesting subject.

Beckmann seems to have thought that the practice of insurance originated in Italy, in the latter part of the 15th, or early part of the 16th century.—*Hist. of Invent.*, vol. i., art. INSURANCE. But the learned Spanish antiquary, Don Antonio de Capmany, has given, in his very valuable publication on the History and Commerce of Barcelona (*Memorias Historicas sobre la Marina, etc., de Barcelona*, tomo ii., p. 388), an ordinance relative to insurance, issued by the magistrates of that city in 1435; whereas, the earliest Italian law on the subject is nearly a century later, being dated in 1523. It is, however, exceedingly unlikely, had insurance been as early practiced in Italy as in Catalonia, that the former should have been so much behind the latter in subjecting it to any fixed rules; and it is still more unlikely that the practice should have escaped, as is the case, all mention by any previous Italian writer. We, therefore, agree entirely in Capmany's opinions, that, until some authentic evidence to the contrary be produced, Barcelona should be regarded as the birth-place of this most useful and beautiful application of the doctrine of chances.—Tom. i., p. 237.

A knowledge of the principles and practice of insurance was early brought into England. According to Malynes (*Lex Mercat.*, p. 105), it was first practiced among us by the Lombards, who were established in London from a very remote epoch. It is probable it was introduced some time about the beginning of the 16th century; for it is mentioned in the statute 43 Eliz., c. 12, in which its utility is very clearly set forth, that it had been an *immemorial usage* among merchants, both English and foreign, when they made any great adventure, to procure insurance to be made on the ships or goods adventured. From this it may reasonably be supposed that insurance had been in use in England for at least a century previous. It appears from the same statute, that it had originally been usual to refer all disputes that arose with respect to insurances to the decision of "grave and discreet" merchants appointed by the Lord Mayor. But abuses having grown out of this practice, the statute authorized the Lord Chancellor to appoint a commission for the trial of insurance cases; and in the reign of Charles II. the powers of the commissioners were enlarged. But this court soon after fell into disuse; and, what is singular, no trace can now be discovered of any of its proceedings.—MARSHALL on Insurance, Prelim. Disc., p. 26.

Few questions as to insurance seem to have come before the courts at Westminster till after the middle of last century. The decisions of Lord Mansfield may, indeed, be said to have fixed, and in a consider-

able degree formed, the law upon this subject. His judgments were not bottomed on narrow views, or on the municipal regulations of England; but on those great principles of public justice and convenience which had been sanctioned and approved by universal experience. His deep and extensive information was acquired by consulting the most intelligent merchants, and the works of distinguished foreign jurists; and by carefully studying the famous French ordinance of 1681, the most admirably digested body of maritime law of which any country has ever had to boast. Hence the comprehensiveness and excellence of his lordship's decisions, and the respect they have justly commanded in all countries. In his hands the law of insurance became, in a far greater degree than any other part of English law, a branch of that national or public law, of which Cicero has beautifully said, "*Non erit alia lex Rome, alia Athenis, alia nunc, alia posthac, sed et omnes gentes et omni tempore una lex et sempiterna, et immortalis continebit, unusque erit communis quasi magister et imperator omnium Deus.*"—*Fragm., lib. iii., de Republica.*

Insurance against fire and upon lives is of much later origin than insurance against perils of the sea. The former, however, has been known and carried on among us, to some extent, at least, for nearly a century and a half. The Amicable Society, for insurance upon lives, was established by charter of Queen Anne, in 1706; the Royal Exchange and London Assurance Companies began to make insurances upon lives, in the reign of George I.; and the Equitable Society was established in 1762. But the advantages of life insurance, and the principles on which the business should be conducted, were then very ill understood, and the practice can hardly be said to have obtained any firm footing among us, till the Equitable Society, by adopting the judicious suggestions of Dr. Price, began its career of prosperity about 1775. Notwithstanding the example of England, life insurance has made comparatively little progress on the Continent. It was, indeed, expressly forbidden by the French ordinance of 1681 (liv. iii., tit. 6, art. 10); by the regulations as to insurance issued at Amsterdam in 1612 (art. 24); and it is doubtful whether the practice be not inconsistent with the 334th art. of the *Code de Commerce*, though it be now extensively carried on in France. But we are inclined to think that the want of security, more than any positive regulations, has been the principal cause of the little progress of life insurance on the Continent.

II. INSURANCE (MARINE).—There are few persons who are not acquainted, in some degree, with fire and life insurances. The security which they afford to individuals and families is a luxury which nobody, in tolerably comfortable circumstances, is willing to be without. Hence the great increase, in our days, of companies professing to afford this security; and hence the knowledge, on the part of the public generally, of the nature and principles of the engagements into which these companies enter. But marine insurance is a subject which is of immediate interest only to merchants and ship owners; unless, indeed, we should refer to that small portion of the community who have occasion to transport themselves beyond seas with capital and effects for purposes of colonization, or to fill some official situation. Hence the comparative indifference, on the part of the public, as to this subject. The general principles, however, of all insurance are the same; and in treating of marine insurance, it will be necessary to notice little beyond such topics as are peculiar to that branch of the business.

Individual Insurers, or Underwriters.—The first circumstance that can not fail to strike the general inquirer into the practice of marine insurance in this country, is that, while all fire and life insurances are made at the risk of companies, which include within themselves the desirable requisites of security, wealth,

and numbers, a large proportion of marine insurances is made at the risk of individuals.

Prohibition of Companies.—Till 1824, in Great Britain, all firms and companies, with the exception of the two chartered companies, the Royal Exchange and London, were prohibited by law from taking marine insurances. Toward the latter end of that year, the prohibition was removed, and the business of marine insurance was placed on the same legal footing as other descriptions of business. While the restriction lasted, the two chartered companies did so little business that marine insurance might in fact, be said to be wholly in the hands of individuals. These companies were so much higher in their premiums, and so much more exclusive in the risks they were willing to undertake, than their individual competitors, that even those merchants and ship owners, who would cheerfully have paid some trifling consideration to obtain the greater security of a company, were obliged to resort to individuals. And it was only when the repeal of this absurd restriction was proposed, that the companies showed, by defending it, that they set any value upon their privilege. The underwriters at Lloyd's joined them in this opposition; and pamphlets were written and speeches made, to demonstrate how much merchants and ship owners would suffer, were the law to allow them the free use of their discretion in insuring their property; and how much more conducive to their interests it was, that they should be forced up to Lloyd's, to pay premiums to individuals rather than companies. But these pamphlets and speeches are forgotten; and we should be sorry to wound the feelings of their authors, or to trespass on the patience of our readers, by referring to them more particularly.

Mode of conducting Business.—We shall now give an account of the arrangement in England for conducting the business of marine insurance, as well by individuals as the companies.

Lloyd's.—The individual underwriters meet in a subscription room at Lloyd's. The joint affairs of the subscribers to these rooms are managed by a committee chosen by the subscribers. Agents (who are commonly styled Lloyd's agents) are appointed in all the principal ports of the world, who forward, regularly, to Lloyd's, accounts of the departures from and arrivals at their ports, as well as of losses and other casualties; and, in general, all such information as may be supposed of importance toward guiding the judgment of the underwriters. These accounts are regularly filed, and are accessible to all the subscribers. The principal arrivals and losses are, besides, posted in two books, placed in two conspicuous parts of the room; and also in another book, which is placed in an adjoining room, for the use of the public at large. The rooms are open from 10 o'clock in the morning till 5 o'clock in the afternoon, but the most considerable part of the business is transacted between 1 and 4. Those merchants and ship owners who manage their own insurance business, procure blank policies at the government office, or of their stationers, which they fill up so as to meet the particular object in view, and submit them to those underwriters with whom they are connected; by whom they are subscribed or rejected. Each policy is handed about in this way until the amount required is complete. The form of the policy and of a subscription is subjoined to this article. The premium is not paid to the underwriter in ready money, but is passed to account. Nor does the underwriter debit the account of the person to whom he subscribes a policy with the whole amount of the premium, but with the premium less 5 per cent. Whenever losses occur which more than absorb the premiums on any one account, the underwriter is called upon to pay the balance. But should the underwriter's account be what is called good, that is, should the premiums exceed the claims, he sends round, during

the spring and summer, to collect from his various debtors either the balance of his last year's account, or money on account, according to his judgment; but upon what he receives, he makes an allowance of 12 per cent. An underwriter, if prudent, therefore, before he consents to receive, will not only look to the goodness of his account, but to the probability of its continuing so.

Insurance Brokers.—Many merchants and ship owners do not transact their own insurance business. They give their orders for insurance to others, who undertake it for them, and are responsible for its proper management. These latter persons are called insurance brokers; and some of them manage the business of a number of principals. To them, likewise, are transmitted the orders for insurance from the outports and manufacturing towns. They charge the whole premium to their principals, and their profits consist in 5 per cent. upon the premium, 12 per cent. upon the money that they pay to the underwriters, and $\frac{1}{2}$ per cent. that they deduct from all the claims which they recover from the underwriters. It is proper to remark that this is the established or regular profit; but competition has occasioned numerous deviations from it by the brokers, many of whom consent to divide this profit with the principals who employ them. The insurance brokers are not unfrequently underwriters also; and as some insurances are considered far more lucrative than others to underwriters, and as the brokers have particular facilities, in some respects, of judging of the goodness of their own risks, so likewise have they an inducement to play into one another's hands, and they do so accordingly. See BROKERS.

Payment of Losses.—Losses are paid at all the offices promptly, and without deduction. In England, a month's credit is allowed to the underwriters; and another month, and sometimes two months, are given to the broker, to collect from the underwriters, and pay over to his principals.

Clubs.—Besides the individual underwriters and companies above noticed, there are clubs or associations formed by ship owners, who agree, each entering his ships for a certain amount, to divide among themselves one another's losses. These clubs are institutions of long standing; but, since the alteration of the law in 1824, appear to be on the decline. Their formation originated in a twofold reason: first, that the underwriters charged premiums more than commensurate with the risk; and secondly, that they did not afford adequate protection. To avoid the first of these two evils, instead of paying a fixed premium, they pay among themselves the actual losses of their several members as they occur; and to avoid the second, they lay down certain principles of settlement in accordance with their views of indemnity. Each member of one of these clubs gives his power of attorney to the selected manager; and this manager issues a policy for each ship, which policy is subscribed by him as attorney for all the members, the premium inserted in the policy being understood to be nominal. These clubs are open to the leading objections that apply to individual underwriters; for the members are not collectively, but only individually, liable to those of their number who happen to sustain a loss; and the delay of settlement is such, that more than 12 months have been known to elapse before the payment of a loss has been obtained from all the members.

Rate of Premium.—But little need be said upon the circumstances that influence the rate of premium demanded by the insurers. It must be self-evident that premiums will vary according to the seasons, the quality of the vessel, the known character of the captain, the nature of the commodity, and the state of our political relations. All these, of course, are matters upon which each individual must exercise his own discretion, partly from general experience, and partly

from particular information; exaggeration of risk, and consequent exorbitancy of premium for any length of time, being out of the question, where so many individual underwriters, in addition to the companies, are in competition with one another, and where the merchants have the means at hand of effecting their insurances abroad. We have already taken notice of the intelligence of which Lloyd's is the focus. In addition to this there is a subscription register book for shipping maintained by the principal merchants, ship-owners, and underwriters. This book professes to give an account of the tonnage, build, age, repairs, and quality of almost all the vessels that frequent our ports; and, although exceedingly defective in many respects, is a material assistance to the insurers, who have no means of ascertaining by their own observation the particulars of one in a hundred of the ships they are called upon to insure.

Contract of Insurance.—Having thus given a general outline of the mode of transacting business between the insurers and insured, and the means used to enable both parties to come, as near as possible, to a due estimate of the risk to be insured against, our next step will be to explain the nature of the contract, and the bearing of its more important clauses.

It is unnecessary to state that the object of those who are engaged in commerce, or in moving articles of merchandise from one part of the world to another, is to *buy* at such a price that, after paying all the expenses of transport, the *sale* price may leave them a surplus in the shape of profit. If there were no such contrivance as insurance, merchants would be obliged to calculate upon the probability of the occasional loss of their property, and to regulate their transactions accordingly; but it must be obvious that enterprise, under such circumstances, would be very much crippled. Now, insurance, in as far as it approaches perfection in guarantying the merchant against all loss, except that of the market, substitutes a fixed charge for uncertain and contingent loss, and enables him to confine his attention exclusively to price and quality, and to charges of transport; in which latter, of course, the premium of insurance is included. As, however, in practice, insurance is by no means a perfect protection, either to the merchant or ship owner, against all loss that may occur *in transitu*, there is, even after insurance, some contingencies remaining to be taken into consideration; and we do not know that we can do better, by way of explaining the contract of insurance, than state, as briefly and succinctly as possible, what are the losses against which the merchant and ship owner are not protected by an insurance effected in this country.

1. *Acts of our own Government.*—All losses arising from the acts of our own government. Thus, if an embargo were laid on vessels about to sail for a particular quarter, and the merchant obliged to unload his goods; or if his goods were condemned to be destroyed in quarantine; or purposely destroyed at sea by some of our cruisers; no part of his loss would be made good by the insurer. The insurer in this country, although liable for the acts of foreign powers, is not liable for such acts directed against the property of their own subjects. Thus, if French property, insured in this country, were confiscated by the French government, the owner would have no remedy against his insurer.

2. *Breaches of the Revenue Laws.*—All losses arising from a breach of the revenue laws. It may be observed, that if the owner of the ship, by his act, expose the goods of the merchant to loss, the merchant so injured, although he can not recover from his insurers, may claim from him. It may also be observed, that if the captain of the vessel, by his act, to which neither the owner of the ship nor the merchant is a party, expose the ship and cargo to loss, the insurers, in such case, are bound to make good the loss; the

insurers being liable for all damage arising from illegal acts of the captain and crew, supposing the owner of the ship not to be accessory. The illegal acts of the captain and crew, contrary to the instructions and without the consent of the owners, are termed "barratry" in the policy. See BARRATRY.

3. *Breaches of the Law of Nations.*—All losses arising from a breach of the law of nations. Thus, if any port is declared by a foreign power to be in a state of blockade, and such blockade is acknowledged by our government; and if a ship, in defiance of that notification, attempt to break the blockade, and is taken in the attempt; the insurer is not liable for the loss. It will often happen, when a port is under blockade, that the profit is so great upon goods introduced in defiance of the blockade, as to tempt adventurers to break it, and to enable them to afford a very high premium to insure against the risk. But as policies for such an object are not acknowledged in our courts of law, when effected, they are understood to be *policies of honor*. The same kind of policy is adopted by underwriters, to protect foreign merchants who prefer insuring in this country against capture by our vessels.

4. *Consequences of Deviation.*—All losses subsequent to any deviation from the terms of the policy. Thus, if a merchant, in a policy on produce from the West Indies to London, warrant the ship to sail on or before the 1st of August, and the ship sail after that day and be lost, the insurer is exonerated. Or, if a merchant insure from London to Lisbon, and the ship call at Havre and is afterward lost, the insurer is not liable. It will be understood, of course, that the owner of the ship is liable to the merchant for any breach of contract on his part, as well as that the insurer is liable for the barratry of the master; a deviation on the part of the master, not intended for the benefit of the owner, and contrary to his instructions, being considered barratry. Should the owner of the goods neglected to describe accurately the voyage for which he wishes to be insured, the loss would be a consequence of his own negligence.

There is a doctrine connected with barratry which it will here be proper to notice. A captain, owner or part owner of the ship in which he sails, can not commit an act of barratry. In other words, the insurers are not, in such a case, liable for an act of his which would otherwise be barratrous. The equity of this doctrine, as far as regards the interests of the captain himself, can not be called in question; but it is difficult to understand why the merchant who ships goods on board such a captain's vessel should not be permitted to insure, among other risks, against the captain's illegal acts. We have heard that a clause has occasionally been introduced into policies to protect merchants against captain-owners, and we do not suppose that our courts of law would refuse to enforce such a clause. Indeed, we can not discover any reason why every party, saving the captain, should not have the power of insuring against the consequences of illegal acts of the captain. We believe, that among the life offices which protect themselves from loss by suicide and the hands of justice, there are some which make a distinction in favor of those who merely hold policies on the lives of others as a collateral security. The propriety of such a distinction must strike every body.

5. *Unseaworthiness.*—All losses arising from unseaworthiness. Unseaworthiness may be caused in various ways, such as want of repair, want of stores, want of provisions, want of nautical instruments, insufficiency of hands to navigate the vessel, or incompetency of the master. It might be supposed, at first sight, that insurance affords a much less perfect security than it really does, seeing on how many pleas it is possible for the insurer to dispute his liability; but when it is considered that the proof of unseaworthiness is thrown upon the defendant, and that the leaning of the courts is almost always in favor of the insured, it

will be easy to suppose that no respectable insurers would ever plead unseaworthiness unless they could make out a case of more than ordinary strength and clearness. The degree of uneasiness felt by merchants and ship owners at their liability to be involved in loss by cases of unseaworthiness, may be guessed from the fact that although the Indemnity Insurance Company at one time precluded themselves from pleading unseaworthiness by a special clause in their policy, not only did they obtain no additional premium in consequence thereof, but they did not even obtain a preference over other companies and individuals at the same premiums. At least, this fact must be either admitted as a proof of the absence of uneasiness on this head, or of that inveteracy of habit which seems to lead the great bulk of mankind always, if possible, to continue undeviatingly in those courses to which they are accustomed, even where the benefits to be derived from a deviation are undeniable.

6. *Protraction of the Voyage.*—All loss arising from unusual protraction of the voyage. Thus, if a ship meet with an accident in the Baltic, and the repairs detain the vessel till the close of the season, when the passage home is rendered impracticable by the ice till the opening of the ensuing season, no payment is made to the merchant, in mitigation of his loss from interest of money, loss of market (if the market fall), or deterioration in the quality of his goods (unless arising from actual sea damage); nor to the ship owner, in mitigation of his loss from the extra wages and maintenance of his crew. In most foreign countries the ship owner is remunerated by the insurers for the wages and maintenance of his crew while his ship is detained in consequence of any loss for the making good of which they are liable.

7. *Liability for doing Damage to other Vessels.*—All loss to which the ship owner is liable when his vessel does damage to others. According to our laws, the owner of every ship not in charge of a pilot, that does damage, by negligence of the master and crew, to any description of craft or vessel, is liable to make good the same to the extent of the value of his own ship and freight: for beyond this he is not liable. The common policy in use among the underwriters at Lloyd's and the companies does not protect the ship owner from this loss. But the clubs or associations before mentioned almost universally take this risk. Indeed, this is one of the purposes which gave rise to their formation. But even they limit their liability to the amount of the policy; so that if a ship insured with them were to run down another, and to sink herself in the concussion, the owner would only receive the value of his own vessel from the club, and still be liable to the owner of the other vessel. The Indemnity and Marine Companies, by a clause in their policies, make themselves liable for three fourths of the loss which the owner of the vessel insured with them may sustain from damage done by his vessel to those of others. If such a case as the one just supposed should occur under their policy, the insured would receive the value of his own vessel and three fourths of the loss to be made good by him to the owner of the other vessel. The policies of these companies approach in this respect the nearest of any to perfect protection to the ship owner. But the loss from running down other vessels, although serious, may sometimes ruinous, seldom occurs; and many ship owners trust so confidently that it will never fall upon them, that they are as well satisfied to be without as with this protection. The Supreme Court of the United States has confirmed a decision, to the effect, that where a collision takes place without fault in a port where the local law divides the whole loss (thereby opposing the general maritime law), the insurers were liable for it. This is opposed to the English decisions.

8. *Average Clause.*—The next description of loss of which we shall treat, against which the insured are

not protected, is described in the following clause of the policy: "Corn, fish, salt, seed, flour, and fruit, are warranted free from average, unless general, or the ship be stranded; sugar, tobacco, hemp, flax, hides, and skins are warranted free from average under 5 per cent., unless general, or the ship be stranded; and all other goods, also the ship and freight, are warranted free from average under 3 per cent., unless general, or the ship be stranded." The language employed in this clause, being technical, requires explanation to render it intelligible to the general reader. Average is a name applied to certain descriptions of loss, to which the merchant and ship owner are liable. There are two kinds of average, general and particular. *General Average* comprehends all loss arising out of a voluntary sacrifice of a part of either vessel or cargo, made by the captain for the benefit of the whole. Thus, if a captain throw part of his cargo overboard, cut from an anchor and cable, or cut away his masts; the loss so sustained, being voluntarily submitted to for the benefit of the whole, is distributed over the value of the whole ship and cargo, and is called "general average."

Particular Average comprehends all loss occasioned to ship, freight, and cargo, which is not of so serious a nature as to debar them from reaching their port of destination, and when the damage to the ship is not so extensive as to render her unworthy of repair. Losses where the goods are saved, but in such a state as to be unfit to forward to their port of destination, and where the ship is rendered unfit to repair, are called "partial or salvage loss." The leading distinction, between particular average and salvage loss is, that, in the first, the property insured remains the property of the assured—the damage sustained, or part thereof, as the case may be, and as will hereafter be explained, being made good by the insurer; and in the second, the property insured is abandoned to the insurer, and the value insured claimed from him, he retaining the property so abandoned, or its value.

Particular Average on Goods.—A few cases illustrative of the method of stating a claim for particular average will best explain the nature of this description of loss, and will at the same time show the reader what the practical distinction is between particular average and salvage loss.

The property insured we shall suppose to be a *ton of hemp*, the cost of which at Petersburg is \$150, for which sum it is insured from New York to London, and that the duty, freight, and charges to which the merchant is subject on landing at London are \$50. We shall likewise suppose that the hemp, on its arrival, is so damaged as not to be worth more than half what it would have fetched had it been sound. The insurer would then be called upon to make good to the insured \$75, or 50 per cent., upon the sum insured. But it does not follow that this payment of \$75 would indemnify the merchant, or that it would not more than indemnify him, for the loss sustained.

If the hemp upon arrival in that country would have fetched in a sound state.....	\$250 00	
Less duty, freight, and charges.....	50 00	
		\$300 00
But in its damaged state is only worth...	125 00	
Less duty, freight, and charges.....	50 00	
		75 00

The merchant's loss by the damage is.....\$125 00

Whereas he only receives from the insurer \$75. Upon the principle of a salvage loss he would also receive \$75.

If the hemp would have fetched in a sound state.....	\$100 00	
Less duty, freight, and charges.....	50 00	
		\$50 00
But in its damaged state is only worth...	50 00	
Less duty, freight, and charges.....	50 00	

The merchant's loss by the damage is.....\$50 00

Whereas he receives from the insurer \$75. Upon the principle of a salvage loss he would receive \$150.

If the hemp would have fetched in a sound state.....	\$150 00	
Less duty, freight, and charges.....	50 00	
		\$100 00
But in its damaged state is only worth...	75 00	
Less duty, freight, and charges.....	50 00	
		25 00

The merchant's loss by the damage is.....\$75 00

And he receives from the insurer \$75. Upon the principle of a salvage loss he would receive \$125.

It will be observed that the merchant's loss by the damage of his goods varies with the state of the market. It may also be observed, that in general the merchant will not receive from the insurer the whole amount of the loss that he sustains. Whenever his market is a profitable one (and that it must usually be so will be obvious to every body), whenever, indeed, his market is not a decidedly losing one, his policy does not afford him a complete protection.

The argument in favor of this mode of settling claims for particular average—and it should be observed that the subject has been discussed, and the principle acknowledged in the courts of law—is, that the insurer's liability is to be guided by the amount upon which he had received a premium or consideration; that he is not to be affected by the rise or fall of markets; but that the *gross* market price of the *sound*, and the *gross* market price of the *damaged* goods, are to be the test by which the rate of damage upon the amount insured is to be adjusted; the insurer being liable, besides, for all the extra charges arising out of the damage.

In the first case stated, the merchant's loss by damage is \$25 upon \$40, or 62½ per cent.; in the second, \$10 upon \$10, or 100 per cent.; in the third, \$15 upon \$20, or 75 per cent. If the duty, freight, and charges were diminished in proportion to the diminished value of the goods, the loss in each case would be 50 per cent. upon the net price, as it is 50 per cent. upon the gross price. As far as the duty is concerned, government, upon many articles, reduces it in proportion to the diminution in the value of the goods; and if the freight were reduced in a similar manner, the merchant would always be indemnified for his loss by the insurer. But the practice with regard to freight in this country admits of no such arrangement; freight being paid according to the quantity delivered.

To make the principle upon which claims for particular average are adjusted, and its bearing, still clearer, we shall illustrate it by a few more cases. Suppose two packages to be insured at cost price—a cask of rice and a cask of sugar—each weighing 10 cwt.; the cost of each at the port of shipment \$50, the freight of each 250 cents per cwt. at the port of delivery, both articles free from duty, and to arrive at a market where no more than the cost price is realized; assuming that both packages are damaged 50 per cent.—the rice by loss of quality, the sugar by loss of weight—the statement will be as follows:

10 cwt. of rice, had it arrived sound, would have produced.....	\$75 00	
Less freight on 10 cwt.....	25 00	
		\$50 00
But being damaged did only produce.....	37 50	
Less freight on 10 cwt. at 250 c. per cwt.....	25 00	
		12 50
Merchant's loss.....		\$37 50

10 cwt. of sugar, if sound, would have produced.....	\$75 00	
Less freight on 10 cwt. at 50 c. per cwt.....	25 00	
		\$50 00

The barrel, being damaged, did only weigh 5 cwt. and produce.....	37 50	
Less freight on 5 cwt. at 250 c. per cwt.....	12 50	
		25 00

Merchant's loss.....\$25 00

In each case the merchant is entitled to recover from his insurer \$25, or 50 per cent., upon \$50, the sum insured, which, although an indemnity to him for

his loss on the sugar, is far from being so for his loss upon the rice. If the merchant would contrive so to shape his contract with the ship owner for freight as to reduce the freight in proportion to the depreciation in the value of the damaged commodity, he would be completely protected. The ship owner might, on his side, protect himself by insurance from loss by reduction of quality, as he now does from loss by reduction of quantity. But we have already more than once adverted to the difficulty of breaking in upon established practices. The merchants go on from year to year complaining of the losses to which they are subjected from this awkward contrivance, while no steps are taken to improve it. To show that the principle is equitable as between the merchant and his insurer, we subjoin one more statement, where the damage is taken at 100 per cent.

10 cwt. of rice, if sound, would have produced.....	75 00	
Less freight on 10 cwt.	25 00	
		\$50 00
Being totally spoiled did produce nothing.		
The merchant being still liable for the freight....	25 00	
Making his loss.....		\$75 00
He receives \$50 only from the insurer.		
10 cwt. of sugar, if sound, would have produced.....	\$75 00	
Less freight on 10 cwt.....	25 00	
		\$50 00
The barrel being washed out produces nothing.		
The merchant, however, not being liable to pay freight		
His loss is only.....		\$50 00
Which he recovers from the insurer.		
It will be observed, that in each case the insurer pays \$50, or the full sum upon which he receives the premium.		

When whole cargoes, or parcels of goods of considerable value, are insured, the clause in the policy which protects the insurer from particular average under a certain percentage is often partially set aside. Thus, if a cargo of 500 hogsheds of sugar, valued at \$10,000, were damaged to the extent of \$460, the merchant, supposing the protecting clause to remain in force, would recover nothing from the insurer, the loss not amounting to 5 per cent. The additional written clause, by which it is the practice to modify the printed clause, is as follows: "Particular average, payable upon each 10 hds. sugar, 10 casks and 50 bags coffee, and 10 bags cotton, following numbers, and upon each package of manufactured goods, chest of indigo, bag of wool or silk, the same as if separately insured." Such clauses may be, and are, introduced *ad libitum* by mutual consent of insurer and insured, the premium or consideration being arranged accordingly. The protecting clause is considered, on the other hand, by the insurers, exceedingly unsatisfactory in some respects; and they, as occasion requires, insist upon additional protection. Thus, saltpetre, hides, cocoa, and tin plates, are generally warranted free from particular average, unless the ship be stranded; and upon tobacco, it is customary for the insurers to make themselves liable only to such part of the particular average as exceeds 5 per cent., throwing 5 per cent. upon the merchant.

Particular Average on Freight.—The clause, as far as it affects "freight," calls for no particular comment. Particular average upon freight can only arise, according to prevailing practice, from loss of weight; and whenever the loss of weight amounts to 3 per cent. or upward, the ship owner is entitled to recover from his insurer. The ship owner, upon the arrival of the ship at its port of destination, is entitled to hold the goods as security until the freight is paid. If the owner of the goods should prove insolvent, and the goods should be entirely spoiled by sea damage during the voyage, and the ship owner thus lose his freight, he has no claim upon the insurer; because, although his collateral security is destroyed by a peril of the sea, his right to receive freight remains unimpaired,

and it is against the loss or impairing of this right that the insurer protects him.

Particular Average on Ships.—Particular average upon ships is a subject somewhat more beset with difficulties. There is scarcely a ship that makes a voyage of any length that does not sustain some damage. The clause in the policy warranting the ship free from particular average under 3 per cent., unless stranded, protects the insurer from the constant recurrence of petty claims; but in addition to this, it is the practice to class the damage that a ship sustains in the prosecution of her voyage under two heads; ordinary damage, or wear and tear; and extraordinary damage, or particular average. The splitting of sails, the breaking of anchors and cables, the upsetting of windlasses, are losses that come under the first head. The carrying away of masts and bulwarks, damage to the copper sheathing and hull from striking on rocks, come under the second. When a ship sustains damage, if she be on her first voyage, the whole expense of the repairs is made good by the insurers. But if she be not on her first voyage, it is the established custom that the insurer pays no more than two thirds of the repairs, the owner of the vessel having, as it is thought, an equivalent for the one third which falls upon him, in the substitution of new work for old. Where the nature of the damage is such as to require that the copper should be stripped off the ship's bottom, the insurer pays the difference between the price of the old and the new copper on the weight of the old copper stripped off; the excess in weight of the new over the old copper is paid for by the ship owner; and the labor of stripping and replacing the copper is paid for on the principle already mentioned. In any general rule of this kind, it must be obvious that the ship owner will sometimes gain and sometimes lose by an accident. As soon as the ship owner, or his captain, learns that his vessel has met with an accident, or as soon after as possible, he summons regular surveyors to examine his vessel and report all defects, discriminating between those defects that have arisen from perils of the sea and those from wear and tear. The first only are made good by the insurer, together with all charges, such as surveyors' fees, dock dues, etc., caused by the necessity of undergoing repair. It has been already observed, that when a ship is obliged, in the progress of her voyage, to put into port for the purpose of repair, although the owner of the ship be subjected to great expense for the wages and maintenance of his crew during the detention, he can recover no part of this expense from the insurer; the doctrine being, that the owner of the ship is bound to navigate his vessel, and that the insurer does not undertake to guaranty that the voyage shall be completed within any specific time. Such is the doctrine, at least, in this country, and the practice is founded upon it; but in all other countries the doctrine and practice are the reverse. For in them allowance is made to the ship owner for the wages and maintenance of the crew during the whole period that the ship is under repair. Where a vessel sustains damage and undergoes repair in the progress of her voyage, and is subsequently lost, the insurer is liable both for the particular average and a total loss. Or the owner of the ship may, if he please, insure the amount expended in repair; and then, in the event of subsequent loss, the insurer is liable for the total loss only; but in the event of subsequent safe arrival, the average is augmented by the charge of insurance. The operation of the clause warranting the ship free from average under 3 per cent., unless general, or the ship be stranded, may now be clearly seen. If a ship be insured and valued at \$50,000, and the repairs of the vessel do not, after all the deductions above referred to, amount to 3 per cent., there is no claim upon the insurer, unless the vessel shall have been stranded. See AVERAGE.

Stranding.—The term stranded is not well chosen, admitting of more than one construction; and the clause of which it forms a part is imperfectly conceived. And in settlements of accounts, when differences arise, the parties who discuss them are more apt to strive for that interpretation of terms and clauses which is favorable to their interests, than for that which is best adapted for general purposes. It is commonly understood that merely striking the ground and coming off is not a stranding; it being necessary, in order to fall within that term, that the ship should remain on the ground or rock, as it may happen, and that efforts should be made to float her. Striking on an anchor and leaking dangerously is not a stranding. We shall only adduce two illustrations, for the purpose of showing how ill adapted this clause is as a means to an end. Corn and other such articles are warranted free from particular average, unless the ship be stranded, because the insurers, considering these articles to be peculiarly susceptible of damage, will not consent to take that risk, except on some extraordinary occasion. A ship laden with corn, makes a very stormy passage from the Baltic to London, and damages the whole of her cargo. Upon arrival off the coast she is stranded, but got off without straining or sustaining any damage. The insurer is held to be liable for the damage to the corn, under the clause of the policy. On another occasion, after a very favorable passage to the coast, a ship strikes upon a shoal, but is not stranded, sustaining, however, so much damage that she arrives at London with 6 feet of water in her hold, and her cargo almost wholly spoiled. The insurer is held not to be liable under the clause of the policy.

General Average.—The insurer is bound to make good all general average without exception, however trifling the amount. General average is treated as though altogether unconnected with particular average; and damage to the goods not amounting to 3 per cent. is not payable by the insurer, although there may be also a general average, and the general and particular average together may amount to more than 3 or 5 per cent. General average is a charge which must be paid by the merchant and ship owner, even if uninsured; although when insured, he transfers, as it were, in virtue of his insurance, the charge from himself to his insurer. All the elements that can by possibility enter into general average may be classed under four heads:—1. Sacrifice of part of the ship and stores; 2. Sacrifice of part of the cargo and freight; 3. Remuneration of services required for general preservation; 4. Expense of raising money to replace what has been sacrificed, and to remunerate services.

1. When any part of the ship is sacrificed for the general benefit, the owner is entitled to receive (deducting, of course, his share of contribution), the amount of his outlay in the replacing of such sacrifice; allowance being made, on the principle stated above, where old works and materials are replaced with new. The deduction of one third, however, does not invariably apply. For instance, one sixth only is taken off the price of an iron cable that is slipped from for the general benefit, because iron cables are calculated to last for a great number of years; and no reduction is ever made from the price of anchors. The charge of replacing the loss may amount to considerably more than the value lost, computing the value at the place where the ship was originally fitted. Thus, the cost of replacing an anchor and cable slipped from in the Downs, is frequently double the value of the anchor and cable at London. But whatever the charge may be, such charge forms the basis of settlement.

2. Sacrifice of the cargo and freight takes place in jettison, or where part of the cargo is flung overboard to lighten the vessel. Upon arrival in port, after such jettison, the owner of the goods jettisoned is entitled

to receive (deducting his share of contribution), what the goods would have produced nett to him, supposing them to have arrived sound; and the owner of the ship is entitled to receive (deducting his share of contribution), the freight to which he would have been entitled upon the same delivery of the goods.

3. Remuneration of services and other charges. When a ship loses her anchors and cables, very large sums are frequently awarded to boatmen who venture off to her with new ones at the imminent hazard of their lives. A ship disabled at sea is towed into port by another, and remuneration for such service is awarded according to the value saved, the detention occasioned, and the loss sustained. The ship rendering the service may be laden with fish or fruit, that may be totally spoiled by the detention, or may be in ballast. A ship captured by the enemy may be recaptured by a man of war or armed merchant vessel; here, again, salvage is awarded according to the circumstances of the case. All these charges are general average; that is to say, must be distributed over ship, freight, and cargo. When a ship, with her cargo, is driven on shore, the expense of attempting to get her off is general average. If she can not be got off without discharging, the expense of discharging is general average; but the expense of getting the ship off after the cargo has been taken out falls exclusively upon the ship. The warehousing of the cargo, and other expenses incurred for its preservation, are charges exclusively upon the cargo. The expense of reloading is borne by the freight. When a ship puts into port in distress, the pilotage inward is general average; the pilotage outward is a charge upon the freight. This distribution of charges has settled into a tolerably well established practice; and upon this principle claims are settled at the offices.

4. The money required to meet the above charges is sometimes attainable without expense. If the accident happen near home, and the ship owner be respectable, he advances the money and recovers from the various parties concerned so soon as the accounts can be made up; or if the accident happen in a foreign port, where the owner of the ship is well known, the captain's bill upon him will sometimes be received in payment of the charges incurred. But where such facilities do not exist, the captain is empowered to pledge his ship, freight, and cargo, as security to any one he may prevail upon to supply the necessary funds. This pledge is termed a bottomry bond. By it the captain admits the receipt of the money; consents to the payment of a premium (which varies with the distance of the port of destination, the risk of the voyage, the respectability of the owner, and the necessities of the captain); and assigns the ship, freight, and cargo, as security for the repayment of the money advanced and the stipulated premium. Should the captain consider the bottomry premium demanded of him exorbitant, or should he deem it preferable in other respects, he may sell a portion of the cargo for the purpose of raising such money as he may stand in need of toward the prosecution of his voyage. The expense of raising the requisite funds, whether by commission, by bottomry premium, or by loss on the sale of the cargo, is charged to those parties for whose interest the money is required. Thus, if a ship, having struck upon a rock, puts into port in distress, and is obliged to unload to repair; supposing the particular average upon the ship to amount to \$500; the general average, consisting of assistance into port and expense of unloading, \$200; particular charges on freight, consisting of expense of reloading and pilotage outward, \$100; and particular charges on cargo, consisting of warehouse rent and repair of packages, \$200; and the expense of raising money should be 20 per cent.—these sums would be severally increased by this addition, and would be raised to \$600, \$240, \$120, and \$340. See BOTTOMRY, RESPONDENTIA.

It still remains to be inquired in what proportion the general average is to be paid by the different owners of the cargo, and the owner of ship and freight. Almost all general averages are adjusted at the ship's port of destination, and the values of the ship and cargo are taken at what they would produce in their actual state upon arrival, and the freight, according to what is actually receivable, less the wages of the captain and crew; the general average being distributed in proportion to these values. Should the cargo be altogether worthless, it can not be made to contribute; and should the wages of the crew exceed the freight, then the freight is not liable to contribute. In case of jettison, the party whose property has been sacrificed for the general benefit receives indemnity on the same principle; the value to which he is entitled being what his property would have produced *nett*, supposing it to have been sold on the arrival of the vessel—the same value serving for the basis of his proportion of contribution. Some few cases occur where the general average is adjusted at the port of departure. Thus, if a ship, outward bound to the British colonies, cut from an anchor and cable in the Downs, or incur other general average on our own coast, the insurances being principally effected in this country, it is the custom to adjust it on the spot, by which means both delay and expense are avoided. On these occasions, the values at the port of shipment are taken as the basis of contribution. A total loss, subsequently to a general average, does not exonerate the insurer from his prior liability; and although it is customary with the ship owner, or his agent, specifically to insure the money expended in average, for the purpose of protecting the insurer against any greater liability than 100 per cent., he is not absolutely obliged to do so. When the average funds are raised by bottomry, the party advancing them takes the ship, freight, and cargo, as security, and charges a premium to cover the risk of the ship's non-arrival at her port of destination. And thus, on such an occasion, a subsequent total loss relieves the insurer from all liability to average. The law and customs by which averages are adjusted vary in different countries; but the insurer in this country is only liable for the averages adjusted according to our laws. The merchant, however, whose goods arrive at a foreign port, is obliged to submit to the laws of that port. He may thus be a considerable loser; paying general average according to one law, and receiving from his insurer according to another. And he never can be a gainer, because, before he is entitled to recover from his insurer, he must prove that he has paid to the owner of the ship. This is one of the many inconveniences to which mercantile men are exposed, which can not be removed without, what it may be hoped will gradually take place, an assimilation of the commercial laws of different countries.

Proof of Loss.—The policy of insurance is the instrument under which the merchant and ship owner claim indemnification for all losses that are not specially excepted. The proof that the loss has been sustained must also be exhibited; such as the title to the vessel and cargo, and the evidence of the captain and crew to establish the circumstances out of which the claim arises. If A were to insure his vessel for the space of 12 months, and at the expiration of 6 months were to sell his ship to B: A's interest in the vessel having ceased, so also does his insurer's liability; and B, if he wish to be protected, must make a new insurance. Proof of ownership, therefore, is an essential preliminary to the recovery of a claim. In general practice, no difficulty arises from this, because the fact of ownership is sufficiently notorious. The bill of lading is, in most cases, satisfactory proof that the cargo was on board, as well as of the amount of freight.

Valued and open Policies.—If an insurance for \$10,000 be effected upon 100 hhds. of sugar, valued at

\$100 per hhd., the bill of lading, showing that the vessel had 100 hhds. on board, establishes the interest at \$10,000, and the policy is termed a valued policy. But if an insurance for \$10,000 be effected on 100 hhds. of sugar, and nothing be expressed as to value, the bill of lading only establishes that 100 hhds. are on board, without establishing the amount of interest. The production of the invoice, showing the cost of the goods, is necessary to that end, the policy being termed an open one.

Return of Premium for short Interest.—In a valued policy, when the whole of the property insured does not appear to have been shipped, the difference between the quantity insured and the quantity shipped is termed short interest. Thus, if \$10,000 be insured upon 100 hhds. of sugar, valued at \$100 per hhd., and 80 hhds. only be shipped; as the insurer's liability does not extend beyond \$8,000, so he is obliged to return the premium upon \$2,000 to which no risk attaches. This return of premium is called a return for short interest.

For Over-Insurance.—In an open policy, where the value shipped is not equal to the value insured, the difference is termed over-insurance. If a merchant insures in London for £5,000 upon goods, without specifying any value, from Calcutta to London, the premium being £3 and the stamp duty 5s. per cent., the amount of interest that attaches to the policy is so fixed, that he is neither to gain nor lose by the transaction in the event of the vessel's loss, supposing his insurance to be sufficient. To entitle him to recover a profit, the profit to be insured must be stipulated in the policy. The expense of insurance upon £100 being 3.25, it is clear that every £100 insurance covers 96.75 original cost, that is to say, protects the merchant from loss to that extent in case of the loss of the vessel. If then, we assume the invoice of the goods shipped to be 40,000 rupees, or, at the exchange of .10c. per rupee, £4,000, the interest attaching to the policy is ascertained as follows:—If 96.75 cost is insured by £100 insurance, what will £4,000 cost be insured by? Answer, £4,135. Under such circumstances, although a policy exists for £5,000, the insured is not able to prove interest for more than £4,135; and consequently, the insured being entitled to recover no more than that sum in case of loss, the insurer is called upon to make a return of premium for over-insurance upon £865.

Although we have treated separately of returns for short interest and over-insurance, we should observe that these terms in practice are used indiscriminately; and, indeed, we can not say that we perceive much advantage in making the distinction, or preserving the distinctive appellations. It sometimes happens that the property expected in a vessel is not all insured at one time or in one policy. But this makes no difference in the principle of settlement according to our law: although, according to the laws of most other countries, the policies take precedence of one another according to their dates, the whole short interest falling upon the policy or policies last effected. The foreign law, in this instance, appears to us the more equitable and reasonable of the two; and that our reason for thinking so may be intelligible, and thus gain assent or meet with refutation, we shall state a case of short interest upon a number of policies, such as not unfrequently appears. A merchant, A, orders his correspondent at Calcutta to ship for his account a quantity of sugar, not exceeding 1,000 tons, at a price not exceeding £200 per ton. In due time he receives a letter from his correspondent acknowledging the receipt of his order, and expressing confident hopes of being able to purchase the quantity, or the greater part of it, at the limits prescribed, and promising to advise as he proceeds. A, on receipt of this letter, say on the 1st of January, makes a provisional insurance for £50,000 upon sugar valued at £200 per ton.

Continuing without further advices, and fearing lest his correspondent's letter should have miscarried, and that he might have property afloat uninsured, on the 1st of February, 1st of March, and 1st of April, he effects similar insurances, thus covering the whole 1,000 tons. He subsequently receives advice that his correspondent had not been able to purchase more than half the quantity ordered, at his limit, and recovers from his insurers half the premium upon each policy. Now, it was not at all improbable that he might have received advice from his correspondent, as he expected, much sooner. And if he had received advice in the middle of February, of the shipment of 500 tons, and that the ship which contained them was totally lost in the river Hooghly, the insurers upon the two first policies would have been liable for a total loss. And it appears to us a defective arrangement, by which a party, who is at one time exposed to a total loss, should at another be compelled to return half his premium. It is true that the merchant may, if he please, insert in his policies a clause by which the policies shall be made to succeed one another; but we should say that the law, in insurance cases, as in the disposal of the property of deceased persons, ought to be the best general disposition, leaving to individuals the right of modification according to particular circumstances.

Return for Double Insurance.—Besides returns for short interest and over-insurance, there are returns for double insurance. They are, in fact, to all intents and purposes, the same thing. Double insurance exists where the party, through forgetfulness, makes an insurance upon his property twice over; or where the shippers and consignees of goods, when uncertain of one another's intentions, effect each an insurance upon them; or where the captain of a vessel in foreign parts, fearing lest his advices should not reach his owner, effects an insurance upon it, and the owner at the same time, acting with equal caution, effects one also. The observations already made upon returns for short interest, and upon the difference between our laws and those of other countries, apply with equal force here.

We have now gone over all the principal topics connected with marine assurance. Those who peruse this article with ordinary attention will, we hope, gain a tolerably clear insight into the principles and practice of the business. But a perfectly familiar acquaintance with it can only be acquired by those who are daily conversant with its details.

Analysis of the General Law of Insurance.—The invention of maritime insurance is due to Italy, and it came into use at the close of the 12th or the beginning of the 13th century. The term "policy" is derived from the Italian *Polizza*, which signifies any note or memorandum in writing, creating an evidence of a legal obligation. At that time the Italians were the carriers of Europe, and by their means insurance was introduced into other countries. A colony of Lombards was settled in London in the 13th century, and conducted for a long time almost exclusively the foreign trade of the kingdom; and it is to them that the tradition of England attributes the introduction of insurance. In the reign of Elizabeth a court was constituted to treat of causes relative to policies of insurance in a summary way. The court was formed of the judge of admiralty, the recorder of London, two doctors of civil law, two common lawyers, and eight merchants, empowering any five of them to hear and determine all such causes arising in London. But the court, on account of its restricted character and other causes, fell into disuse, and cases of insurance are now decided by trial in the courts of common law. The contract of insurance is essentially a contract of indemnity against the perils of the sea. The various codes differ in the objects prohibited to be insured. Thus the French code, ordinance of Bilbao, Spanish

code, Danish, Two Sicilies, Roman States, Ionian Islands, Lombardo-Veneto, Sardinia, Hayti, and Greece, prohibit insurance on freight of goods on board, excepted profits, wages of seamen, and maritime interest on loans on bottomry. While Great Britain, Holland, Portugal, Prussia, Malta, United States, and Hamburg, permit them. Re-insurance is prohibited in Great Britain. In Great Britain mariners are forbidden to insure their wages; but a captain of a ship can insure his wages, or any interest as part owner. An insurance on money lent to the captain, payable out of the freight, is illegal. So are wager policies; and it is the same in Massachusetts.

Article 335 of the French code authorizes the assurance on the whole or on a part of the objects which may be insured; but in Spain and Denmark the goods can not be insured for more than nine tenths of their value, and in Spain, no more than four fifths can be insured on the value of a ship; at Malta the insurance can not exceed seven eighths; in Prussia it may be made for the cost price, or for the value of the ship; but in Holland and in Portugal the entire value may be insured after the vessel has set sail. In Great Britain no policy can be made for a longer time than for 12 calendar months.

The duration of risks for a ship continues in Great Britain until 24 hours after she has moored at anchor in safety. The same in the United States and at Malta.

According to the Prussian code, payment ought to be effected within two months after the notice of the damages; after this time interest commences to run. The law of Great Britain being mostly similar to that of America, it has been thought necessary to vary the mode of treating the various subjects; so illegal insurance, rights of agents, concealment, and representations have been enlarged on in the law of America, while for these, as well as for all others, the reader is particularly referred to the law of Great Britain. The general spirit of the law of insurance is beautifully illustrated in the following language of the French jurists at the close of their report to the council of State on the title of insurance in the code of commerce, and rendered by Duer in his work on insurance: "Marine insurance may justly be deemed one of the noblest creations of human genius. From a lofty height it surveys and protects the commerce of the world. It scans the heavens; it consults the seasons; it interrogates the ocean; and, regardless of its terrors or caprice, defines its perils and circumscribes its storms. It extends its cares to every part of the habitable globe; studies the usage of every nation; explores every coast, sounds every harbor. To the science of politics it directs a sleepless attention; it enters the council of monarchs—watches the deliberations of statesmen—weighs their motives, and penetrates their designs. Founding on these vast materials its skillful calculations, secure of the result, it then addresses the hesitating merchant: 'Dismiss your anxiety and fears; these are misfortunes that humanity may deplore, but can not prevent or alleviate. Such are not the disasters you dread to encounter. Trust in me and they shall not reach you. Summon all your resources, put forth all your skill, and, with unflinching courage, pursue your adventures. Succeed—your riches are enlarged; fail—they shall not be diminished. My wealth shall supply your loss. Rely on me, and, for your sake, at my bidding, the arm of your enemies shall be paralyzed, and the dangers of the ocean cease to exist.' The merchant listens, obeys, and is rewarded. Thousands, tempted by his success, follow his example. Those whom it had long separated, the ocean now unites. The quarters of the world approach each other, and are bound by the permanent ties of mutual interest and mutual benefits."—LEVI'S *Com. Law of the World*.

We extract from Duer's *Marine Insurance* the following Law of Insurance in the United States:

"1. Insurance is a contract of indemnity against the perils of the sea. 2. A policy must specify, 1st, the parties between whom, and on whose account, the insurance is made; 2d, the consideration or premium paid; 3d, the subject insured; 4th, the amount insured; 5th, the risk insured against; and, lastly, the voyage or period of time during which the insurance is to continue in force. 3. Form and execution of the contract. The uniform and general practice of merchants may be considered as evidence of the legal necessity of a written contract. A specification of the risks is an essential part of the contract. 4. The policies used in the different States of the Union differ materially; and in New York the forms of the policy in use for the different subjects of insurance are distinct and separate. 5. The subscription of the insurer is alone sufficient. When the insurance is made by an incorporated company, the execution of the policy must be attested by the officers designated for that purpose by its charters or by its laws. 6. When a policy has in fact been executed, and notice of its execution has been given to the assured, its actual delivery is not essential to the completion of the contract. 7. The insurer, whether an individual or an incorporated company, would not be allowed to retract a consent thus confessed to have been given; but would be considered as holding the policy for the benefit of the assured, and bound to deliver it at his request. Should a loss occur, and the policy then be withheld from the assured, he would have a complete remedy in an action at law. 8. When an application for insurance is accepted by the insurer, the rate of premium and the date inserted, and the writing signed by the parties, it constitutes in equity a valid insurance, and in law a valid agreement to insure: it gives to the assured an immediate right, upon the tender of the premium, or premium note, to demand from the insurer the execution and delivery of the policy. The validity of an agreement to insure may be proved by the correspondence, but the evidence of the assent of both to all the terms proposed must be clear and unequivocal. 9. An offer to insure made by letter is a valid undertaking that the party will be bound by it, if in due season a favorable answer be returned. But although the insured is necessarily bound by his offer during the interval that has been stated, it must not be inferred that the applicant has the right, under all circumstances, to accept the offer when he receives it. 10. The policy, from the time of its execution, constitutes the sole evidence of the agreement of the parties; nor, subject to some exceptions, can any previous letters or communications between them, nor even the written application or agreement, be used to vary or control its interpretation. 11. When a policy refers to any other document or paper, the contents of the document or paper become a part of the contract as fully as if they were recited or incorporated in the policy. 12. A policy of insurance, when executed, may not only be cancelled by the consent of the parties, but is subject to any change or modification of its terms that they may choose to adopt. When an alteration is made in the body of the policy by the assured, without the assent of the underwriters, if it change the sense, or affect in any degree the substance of the contract, it renders the whole instrument void. 13. The date is one of the principal requisites in the policy. The date, however, is only presumptive, not conclusive, evidence of the facts that it attests. 14. Wager policies are established and admitted to be illegal.

Of the Construction of the Policy.—15. The construction of a policy, with the exception of cases in which parole evidence is admitted, is a question of law, the determination of which belongs exclusively to the court. As a contract of indemnity to the assured, the policy is to be liberally construed in his favor. An exception from the risks of the policy is to be construed strictly against the insurer. 16. When a discrepancy,

apparent or real, is found to exist between a written and a printed clause of the policy, it is the writing that controls the interpretation. 17. Extrinsic proof, by the testimony of witnesses or otherwise, is received to control or aid the interpretation, in order, 1st, to fix the application of general or indeterminate words; 2d, to correct an error of description, by showing the identity of the subject to which it relates; 3d, to remove a latent ambiguity; and, lastly, to explain the meaning of foreign or technical words. 18. Parole evidence shall never be received to show that the intention of the parties was directly opposite to that which their language expresses, or substantially different from any meaning that the words they have used, upon any construction, will admit or convey. Parole evidence may be admitted to show that particular words, upon the construction of which a controversy turns, have acquired, by the known usages of trade, a peculiar meaning, wholly distinct from their ordinary and popular sense. 19. When the interpretation of words, or the construction of a clause in the policy, that may be understood in a sense more or less extensive, has not been fixed by judicial decisions, parole evidence may be admitted to show whether they have obtained, by use and practice between the assurers and the assured, any, and what, known and definite import. The usage, if proved, will govern the construction. 20. If by a general practice, the voyage or trade to which the insurance relates has been pursued in a certain course or manner that the terms of the policy, in their ordinary interpretation, would not embrace parole evidence may be admitted to prove the existence of the usage. 21. A usage that can alone be allowed to control the interpretation of the policy, or vary the legal rights of the parties, must be general, uniform, notorious, reasonable, and consistent with the terms of the policy, and, to a certain extent, with the rules of law.

Of Illegal Insurances.—Breach of Municipal Laws.—

22. The invalidity of an insurance, as an implied violation of the laws of trade, may arise from the character of the goods exported or imported, the nature of the trade, or the breach of some statutory provision relative to the navigation of the ship or conduct of the voyage. 23. When the exportation or importation of the goods shipped is prohibited, the illegality affects not only the policy upon the goods themselves, but equally those upon the ship and freight, since the voluntary reception of the goods by the master is as much a violation of law as their shipment by the owner. When the prohibited act renders the subsequent voyage or trade illegal, it vacates the policy. 24. The illegality of a voyage, arising from the transportation of prohibited goods, is never permitted to affect a distinct policy upon the lawful goods of a different owner. 25. Where the goods insured by one policy are all of them lawful, the insurance is valid, even when the assured, as owner or otherwise, is interested or concerned in the transportation of unlawful goods by the same vessel, but otherwise when included in an entire policy. 26. The contract is entire when the goods insured (whether the insurance be general or specific) are included in one gross valuation; but where an insurance is specific upon different kinds of goods, and a separate value is affixed to each denomination, the contract is distinct. So where the policy is open upon different kinds of goods. 27. An insurance in one policy for the owners of a ship is not devisable; but the illegal act of one without the knowledge or privity of the others, has the same effect in voiding the entire contract as if all had concurred. But the contract will not be regarded as entire when the insurance is made by a common agent on account of several persons whose interests are several and distinct. 28. When an entire voyage is illegal at its inception, the illegality runs through and infects every part of it. 29. When a particular trade is prohibited by the express terms of a treaty to

which the State within whose jurisdiction the policy is effected is a party, the effect of the prohibition, whether general as to trade or limited to particular commodities, is precisely the same as if it were by a municipal law, an act of Parliament, or of Congress. Every voyage in contravention of the treaty is illegal, and every insurance upon such a voyage, whatever be the subject or terms of the policy, is necessarily void. 30. The defeat of the voyage by an embargo after the policy has attached, is not considered as a dissolution of the contract, but as a loss by a peril insured against, entitling the insured, upon an abandonment, to a recovery of the whole sum insured. 31. The contingent expectation of the parties that an existing law will be repealed interdicting a voyage or trade meant to be covered by the policy, is not sufficient to render the insurance valid when the expectation is not realized, and the voyage is undertaken and prosecuted in defiance of the provisions of the law.

Section II. Enemy's Property.—32. Every insurance upon property liable to confiscation as prize of war by the government of the country to which the insurance belongs, is of necessity invalid. An insurance made in a belligerent country upon the property of the subjects of an opposite belligerent, is void. 33. Goods in the course of transportation from a neutral country to a belligerent, if they are to be delivered to, and become the property of, a belligerent immediately on their arrival, are considered as his goods during the voyage (*in itinere*), and as such are subject to capture and confiscation.

Section III. Enemy's Property—Domicile.—34. A merchant is a political member of the country into which, by his residence and business, he is incorporated; he is a subject of the government that protects him in his pursuits, that his industry contributes to support, and of whose natural resources his own means are a constituent part. 35. When the property of a foreigner who, at the time of its shipment was living in a hostile country, is seized as that of an enemy, the captors are not bound to prove in the first instance that his place of residence was his actual domicile. The presumption of law is in their favor. The *animus manendi*, the intention to remain, the law imputes to him, and to redeem his property from the noxious imputation, he must give such evidence of his intention and plans as shall be effectual to destroy it. 36. The national character of persons who reside in a foreign country, in a public or representative capacity, is not changed or affected by their residence, whatever may be its duration, or by whatever circumstances indicative of the intent to render it permanent it may be accompanied. But if a foreign consul engage in commerce, he is immediately stamped, with respect to that commerce, with the national character of the country in which he resides, and from which his trade is conducted. His character of consul affords no protection to his mercantile adventures. 37. A native subject can not acquire a foreign domicile by an emigration from his own country during the existence of hostilities (*flagrante bello*) so as to protect his trade during the war, either against the belligerent claims of his own country or against those of a hostile power. His native character is wholly unchanged by his change of residence. 38. The nature of the traffic or business in which an individual is engaged, may stamp upon him a national character wholly independent of that which his place of residence would alone impose.

Section IV. Trade with the Enemy.—39. The property of a subject is in all cases liable to confiscation in a court of prize when it is found engaged in an unlawful trade or intercourse with the ports, territories, or subjects of the public enemy; and the property of a subject of a State allied in the war is liable under the like circumstances to the same penalty. 40. To render the importation of goods from an enemy's port an illegal trading, it is not requisite that they should be

the fruits of any purchase, barter, contract, or negotiation in the enemy's country, after hostility had commenced. The sailing of the vessel with the goods on board after the party had knowledge of the war, completes the offense, stamps the cargo with an illegal character, and subjects it, during its transportation, to a rightful seizure. 41. To render a trade with the enemy unlawful, it is not necessary that the communication with the enemy's country should be immediate and direct. A circuitous trade is liable to the same abuses, and involves the same political dangers as a direct one, and therefore equally falls within the interdiction and penalty of the law. 42. If an American vessel, during a war, even when destined to a neutral port, prosecutes her voyage under a license from the government of the enemy, both ship and cargo, while they remain under the protection of the license, are liable to capture, and if captured, are lawful subjects of confiscation. 43. A license granted by the sovereign power is not subject to transfer or assignment, but its legitimate use is confined to those for whose benefit it was originally granted. A license to an alien enemy, whether by name or general words, removes all his personal disabilities. 44. The goods for which the protection of a license is claimed, must correspond with those that the license enumerates or describes. When a license authorizes the importation of goods from an enemy's country in an enemy's ship, the protection intended to be granted, although confined in terms to the goods, by the just construction of the law is extended to the vessel. The national character of the ship, as described in the license, is, in most cases, a condition necessary to be fulfilled to secure the protection that is desired.

Section V. Breach of Neutrality.—45. The duties of a subject or citizen of the neutral State are, 1. To abstain from every act that tends to the assistance of either of the belligerents in the prosecution of the war. 2. To abstain from every act that tends directly to relieve one of the belligerents from the pressure and effect of the opposite hostilities. 3. To offer no resistance to the full exercise of the belligerents' rights of visitation and search, and to resort to no means for eluding and defrauding the rights of capture. 46. From the moment that a ship, with contraband articles on board, quits her port on a hostile destination, as a general rule the offense is complete and the capture legal. To justify the capture, it is enough that the immediate object of the voyage is to supply the enemy, and that the contraband is certainly destined to his immediate use. 47. Articles of contraband are all the munitions and instruments of war; all manufactured articles that in their actual state are fitted for military and naval use, and more especially for the building and equipping of ships of war. Pitch, tar, and hemp are contraband; but they enjoy exemptions if directed to a mercantile port. Provisions are not contraband, but they may be rendered so by their special destination and intended use. 48. An insurance upon goods liable to confiscation as contraband of war—if made in the belligerent country whose rights are violated—is wholly void. 49. A blockade is a naval circumvallation intended to prevent and cut off all communication with the port that it incloses, and to cause an entire suspension of its commerce. The breach of a blockade subjects all the property so employed to confiscation by the belligerent power whose rights are violated.

Of the Parties to the Contract—Of the Legal Competency of the Parties.—50. All persons of full age and otherwise capable of contracting, have the right to insure and be insured. 51. In order to render a party capable of insuring, it is not necessary that he should have any interest in the property insured at the time the insurance is effected, unless the risks as described in the policy have already commenced. When the contract is perspective, it is valid and effectual if the

interest meant to be covered exists when the policy attaches. When a party effects an insurance after the risks have commenced, if he has an interest at the time in the subject-matter of the policy, the contract may be so framed as to entitle him to recover for a loss that had in fact occurred before his own title was acquired by insuring the goods "lost or not lost." 52. An agent employed to procure an insurance can not himself become the insurer.

Of the Description of the Parties in the Policy.—53. The names of the immediate parties to the contract, that is, of the individual or company agreeing to assume the risks, and of the person effecting the insurance, must be mentioned in the policy. 54. When the insurance is made by an agent, the parties really assured may be described by general words; nor is even a general description necessary, if the party effecting the insurance describes himself as "agent" in the policy. Where the person effecting the insurance describes himself as the agent of a particular person, the policy, by its necessary construction, insures only to protect an interest of the party thus named as the principal. 55. When an agent effects a policy in his own name on account of a third person, who is named, or describing the assured by general words, an action on the policy for the recovery of a loss may be maintained in the name of the agent, or in that of the party really interested. But where the agent is a naked trustee, having no lien in the policy, and no interest of his own that was meant to be protected, he will not be allowed to maintain the action in his own name, if it appear that previous to the commencement of the suit his authority as agent had been countermanded or revoked. 56. Although each partner has a right to insure the partnership property in the name or on account of the firm, yet where the insurance is expressed to be on his sole account, it must be limited in its application to his individual share. When the separate interest of a partner, separately insuring, is equal to the amount insured, he can have no motive for averring or attempting to prove a partnership property. 57. When the interest of the party in whom the interest is averred is proved, and an authority from him to insure, or his adoption of the contract is also proved, it is an inference of law from the terms of his policy that the insurance was effected on his account. But when the proof establishes that his interest was not intended to be covered, it forms an insuperable bar to a recovery. 58. The interpretation of every policy that is effected by an agent under previous instructions, must be controlled by the intention of the principal in every case where evidence of the intention can properly be received to determine the construction. The general words of a policy describing the assured, have always received a liberal interpretation. 59. The policy may be so framed that the insurance shall be inseparably attached to the property meant to be covered, so that the successive owners, during the continuance of the risks, shall become in turn the parties really assured.

Of the Assignment of the Policy and of the Rights of the Assignee.—60. Although a policy of insurance in its usual form is not assignable in law so as to enable the assignee to maintain an action upon the contract in his own name, it is in all cases assignable in equity, and vests in the assignee a beneficial interest, varying in its extent according to the purpose for which the assignment is made. 61. Although the rights of the assignee of a policy are equitable in their nature, it is not in a court of equity, when a loss has occurred to which he claims to be entitled, and the underwriters refuse to pay, that he must seek relief. He has a full remedy in an action at law, in the name of the assurer. 62. The assignment in writing of a policy of insurance does not vest in the assignee a perfect title, except as against the assignor, unless it is accompanied by an actual delivery of the instrument itself. The

policies in use in Boston contain special clauses restricting their assignment.

Of Insurance effected by an Agent.—*Of the Authority of an Agent to Insure.*—63. The necessity of proving either the original authority of the agent, or the subsequent adoption of his contract, is expressly affirmed, or necessarily implied, in every case in which a question as to the authority of the agent has arisen. A prior authority conferring on the agent the right to insure, is either express or implied. An express authority may be written or verbal. 64. The authority of a single partner, and of each partner, to insure the partnership property in the name or by general words on account of the firm, or to direct such an assurance to be made, is established and undoubted. 65. The right of a part owner to insure is limited to his own individual share. 66. The master of a ship has no general authority, but has an implied authority in special cases. 67. When a consignee has an interest, he may insure the entire property consigned to him; but a consignee who has no interest, and no lien whatever, upon the goods consigned to him for sale, has no right to insure them on behalf of the consignor, unless specially instructed. 68. A general agent may insure on behalf of his principal, unless restricted in his discretion by the express instruction of his principal. The authority of the agent, express or implied, may be revoked by the principal at any time before the terms of the insurance have been settled by an agreement with the underwriters. 69. In the United States a usage prevails to cover all shipments by a general standing time policy on goods, so as to embrace not only all outward and home shipments made on their own account, but all shipments made to them from foreign ports, upon which they are directed to effect insurance. When there is a subsisting policy in the above form, a direction to insure, once given, is in its nature irrevocable. 70. When an agent accepts an order to insure, or omits to give notice of his refusal, he is of course bound to its execution. When the principal has funds or effects in the hands of his correspondent, the application of which rests in his own discretion, he is justified that they will be applied by his correspondent to procure the insurance that he directs. 71. When the agent has no funds or effects of his principal on hand, but, by an established course of dealing, has been in the habit of executing the orders of his principal to effect insurance, and of advancing the premium, he is bound to execute all similar orders that he may receive from him, until he has given him notice that this course of dealing must be discontinued. 72. When a consignee receives a bill of lading, with an order to insure its contents, if he accepts the consignment, he must execute the order. The law regards the transaction as entire, and the acceptance of the benefit as a tacit promise to discharge the duty. 73. These rules are subject to exceptions. The agent can never be bound to effect an insurance that, from circumstances that could not have been known or anticipated when the order was given, instead of securing an indemnity to his principal, would tend to his certain prejudice and loss. When the agent, when he receives the order, knows, or has just grounds for believing that his correspondent is insolvent, or is threatened with insolvency, the acceptance of the trust rests in his own discretion. Yet, should his apprehension prove to be groundless, he should be called to justify his conduct, by proving that the information on which he has acted was credible and trustworthy. The obligation to insure that arises from a previous course of dealing, can only apply to insurances similar to those that the agent had been in the habit of effecting. 74. The confidence reposed in an agent is strictly personal; and he can not delegate to a third person an authority that, by the intention of his principal, was meant to be executed by himself alone.

SECTION III.—Of Insurances by voluntary Agents, and their Adoption.—75. Although the adoption of a voluntary insurance is necessary to render the contract valid against the principal, and proof of its adoption to warrant the recovery of a loss against the insurer, we are not to infer that the agent who effects the policy is at liberty to rescind his own contract, upon proof either of his want of a previous authority, or of the refusal of his intended principals to ratify his act. 76. There are, however, two cases in which, as exceptions from the general rule, the voluntary agent, when his insurance has been rejected, may justly claim to recover back the premium he has paid: 1st. When he discloses to the underwriters that the insurance is made without authority, and they agree that it shall be cancelled, if not adopted; and 2dly: Where the insurance is rejected for reasons that would have rendered the contract valid, if adopted. 77. The contract of the voluntary agent may be ratified and appropriated by the principal, even with knowledge of a loss, unless the power to adopt the insurance under these circumstances, is excluded by the express provisions of the policy. When an abandonment of the property insured is necessary to justify a claim for a total loss, an adoption of the contract, with the right to enforce the claim, is of necessity limited to the period within which, either by the provisions of the policy or by the general rule of law, the abandonment must be made to render it valid; and a claim for partial loss is just as liable to be barred by the lapse of time, as if it arose under a policy duly authorized. The party for whom the insurance was intended can have no right to adopt and enforce a contract that would not have been valid if made by his express direction. 78. When the agent merely exceeds a given authority, the principal is concluded if he fail to give notice of his dissent within a reasonable time after receiving the information.

Of the Duties of Agents in their Relations with their Principals, and with the Insurers.—79. Every agent who is entitled to receive a compensation for his services, is bound to exercise not only the same care and diligence that he is accustomed to employ in his own private affairs, but all the care, and diligence, and skill that the transaction of the particular business with which he is intrusted, according to its nature, may be reasonably construed to require. 80. A person who undertakes to effect an insurance for another, should make proper inquiries as to the circumstances and standing of the insurers to whom he wishes to apply, and to be careful to select those whose credit is established and undisputed; but when he acts in good faith in making the selection, and has exercised the necessary caution, he is not, generally speaking, responsible for the ultimate solvency of those who subscribe that policy, unless he receives a *del credere* commission. From this rule the voluntary agent is not exempted. 81. When the agent employs a broker to effect the policy, as he is always justified in doing, when such is the usage of the place where the contract is made, it is to the discretion of the broker that the choice of the insurers is intrusted; and for his fraud or neglect in the execution of this trust, the agent is not responsible where no want of good faith, or of proper diligence, is justly imputable to him. 82. An agent who has effected a policy in conformity to the orders of his principal, has the power when the first insurer becomes insolvent, even of rescinding the contract when the interests of his principal plainly demand the measure, so long as the policy remains in his hands. But the agent ought never to cancel a subsisting policy when the partial security that it affords is preferable to a return of the premium, unless with the certainty that he will be able to pay a new contract fully, to protect the interest of his principal. The subsisting policy being rescinded, if the order was special and limited, he will still be bound to follow its

provisions and observe its limits; but if within its limits, and according to its terms, it is the duty of the agent to effect a second insurance. 83. Where an increased premium is demanded, the execution of the order can no longer be regarded as a positive duty, but will rest in the sound discretion of the agent. Where, from the lapse of time, or other circumstances, the alteration of the risk is so material that the premium demanded is much larger than the principal when he gave the order to insure could have contemplated as necessary to be paid, the agent may be partly excused who declines to exercise his authority; and, on the other hand, whatever may be the change in the risk, and the increase of the premium, if there are reasonable grounds to believe that a second insurance will tend to the advantage of the principal, the agent, proceeding in good faith to effect it, will be protected. 84. It is the duty of every agent to communicate to the underwriters all the facts and circumstances of which he has any knowledge or information; to represent truly all the facts he discloses, and to answer truly all the proper inquiries of the insurer; for the concealment or misrepresentation of the agent, whether intentional or undesigned, has the same effect on the validity of the contract as that of the party really assured. 85. Although an agent to whom no fraud or neglect is imputable, is not responsible for the concealment and misrepresentation of the sub-agent whom he is authorized to employ, yet when he employs a broker to effect the policy, he is bound to give him all the necessary instructions and all material information that he himself possesses, and this duty attaches even on an agent who acts gratuitously, who may be rendered liable for the damages resulting from his omissions. 86. When the omission or act of the agent that vitiates the contract can be justly imputed to his fraud or his neglect, he is personally liable for the resulting damage; but where it proceeds from his want of the requisite skill, there are cases in which equity demands some distinctions. 87. A mercantile agent who was neither authorized to insure nor has effected an insurance, may yet render himself liable as an insurer, by a false representation, not to the underwriter, but to his principal, if the nature of the misrepresentation is such as to invalidate a policy founded on it, effected by the principal, or on his behalf. The most important and responsible duty of every agent in effecting an insurance, is to take care that the policy shall be so framed as effectually to cover the property and risks, which he is directed to insure, or which, when not acting under a previous order, he believes and represents himself to have insured. 88. When an agent acts under clear and positive instructions, and violates them in the term and form of the insurance that he effects, his negligence, it is manifest, is still more culpable and renders the agent personally liable. But when the order is plain, the good faith of the agent will protect him. 89. Even when an agent acts gratuitously, without the hope or expectation of a reward, yet, if he enters on the execution of an order to insure, he must follow its terms, and by his omission to cover all the property or risks that he is directed to insure, will become responsible for a loss that the insurance of property effected would have embraced. The mistake of the agent where the practice is unsettled and the law uncertain, affords no evidence of the want of reasonable skill and ordinary diligence, for which, alone, he is responsible. 90. The agent is not responsible if his mistake arose not from his want of requisite diligence and skill, but from the imperfect and confused manner in which the instructions of his principal were expressed. 91. All prior verbal communications are superseded by the written instructions which constitute the proper and sole evidence of the intentions of the party directing the insurances. 92. If the agent

finds it impracticable to effect an insurance according to the terms of his instructions it is his duty to give immediate notice of his failure to his principal. When an agent has separate orders to insure on the same voyage, and against the same risks, the property of several persons whose interests are several, should he elect to cover the whole property in one policy, he must be careful so to frame the contract as to secure to each of his constituents the same indemnity to which he would have been entitled had his property and interest alone been covered. 93. An order to insure is either discretionary or positive, and when positive, is either general or limited. The order is discretionary when the election to insure or not to insure, is committed absolutely to the discretion of the agent; and in such a case if the agent determines not to insure he is responsible only for his good faith. The order when positive is general when it describes the property and voyage, but gives no direction as to the risks to be covered and imposes no limitation as to the premium. When the order is thus general the duty of the agent is fully discharged by his obtaining an insurance in the usual form of the policy at the place where the insurance is made. 94. When the order to insure contains no direction or restriction as to the amount of the premium to be paid, it is the duty of the agent to effect the insurance at all events without regard to the premium; and if by limiting himself to a smaller premium he defeats an insurance, he is liable, with the exception, however, that where the funds he has or he is to advance should not permit him to enhance the premium sufficiently, he would be excused. 95. Special instructions must be exactly followed by the agent. When an agent is directed to insure a certain amount, it is his duty to procure an insurance, if possible, to the full extent of the sum required; but if he can not, he must execute the order as far as he can. 96. An insurance is not wholly void when the agent exceeds the premium to which he was limited. A contract made by an agent who in its terms exceeds his authority, is never wholly void if the excess may be readily ascertained and separated. 97. As a general rule the order unless otherwise expressed, may be construed as intended to refer in its execution solely to the place of the agent's residence; but circumstances may doubtless create an exception and impose a duty that the order does not in terms require. 98. Where an agent who has effected a policy retains its possession with the consent of his principal, his agency is continued. His general duty is to enforce the rights and protect the interests of his principal in all matters arising out of the contract. If a loss, partial or total, has occurred he must collect, arrange, and submit the necessary proofs, adjust and settle its amounts, demand and receive its payment. If in order to sustain the claim of the assured for a total loss, an abandonment is necessary, he must take it on behalf of his principal, must take care that it is properly expressed and is delivered in due season, and he must be careful to preserve the requisite evidence of all his transactions. 99. The most important and responsible of the subsequent duties of the agent is to collect, receive, and pay over the losses that may occur and fall due under the policy, and by his negligence in the discharge of his duty he may readily incur a heavy liability since he is necessarily bound to pay all losses, that but for his neglect and delay might have been recovered from the underwriters. Payment to the agent to discharge the underwriters must be an actual payment made in good faith, not the allowances of a credit. 100. An insurance agent or broker who is authorized to receive a loss, has no authority to accept a credit in lieu of a payment in money, nor can the underwriter in such a case allege his own ignorance of the trust that is violated. When the agent is a creditor of the assured and the nature of his debt gives him a lien on the policy, that lien will attach on all

moneys that he may receive from the underwriter under the policy, and he has a perfect right to retain such moneys to his own use so far as may be necessary to satisfy his claims, by giving due credit to the assured for the amount. The credit given by the agent extinguishes the debt to the assured, and discharges the insurer. 101. A settlement on account between the underwriter and the agent is conclusive on the agent himself. 102. The agent should transmit to his principal, full and just accounts of all his transactions on his behalf, keep him advised of all occurrences, connected with the insurance by which his interests may be affected, and deliver over to his principal, on request, the policy effected on his behalf, provided his own claims, if such as give him a lien on instrument, are first satisfied. The policy is in all cases the property of the party really assured. He may maintain an action of trover for its recovery, not only against his agents, but against every person into whose hands it may have passed, and by whom in violation of his rights it may be withheld. 103. In the United States it is not unusual to insert a provision in the policy by which all losses are made payable only to the person in whose name the insurance is effected. 104. If the agent intends by the insertion of the special clause to extend his lien so as to cover advances or a balance of accounts, to which the privilege is not annexed by law, the extension, if not authorized by the principal, is a fraud upon his rights; and where no such intention exists a provision limiting the payment of a loss to the agent alone may operate to embarrass or delay the remedy of the assured, and should therefore, without his consent, never be inserted.

Of the Rights of the Agent.—105. An agent has a lien on the policy; and moreover, has authority to maintain an action in his own name for the recovery of a loss under the policy. 106. An insurance broker has a lien on the policy against his immediate employer, not only for his commissions and premiums, but for the general balance of his insurance account. If the broker, when he effected the policy knew, or had reasonable ground to believe, that the insurance was on the account of a third person, his lien as against the party really assured, will be confined to the premium and his commission in the particular transaction. 107. A broker who has received moneys under a policy that he effected in ignorance that his employer was an agent, is liable to the party really assured. 108. A mercantile agent has a lien on the policy that he is directed to effect, not only to the premium and his commission in the particular transaction, or extended only to advances made by him on account of the property assured, but also to the general balance due to him, or becoming due while the policy is in his hands in his account with his principal. The privilege of lien embracing claims arising from other distinct transactions does not extend to the necessary, the voluntary or the gratuitous agent. A general lien is not limited to moneys actually paid by the agent or then due to him, but embraces all his outstanding liabilities on behalf of his principal arising out of his agency. 109. But a general lien, unless by a special agreement, does not embrace all the existing demands and liabilities of the agent against his principal, but only such as relate to the business or employment in which the agent is engaged, and have grown out of the relation in that employment between him and his principal. 110. The obligation of the lien attaches equally on all moneys received by him under the policy. The agent waives his lien when he voluntarily delivers the policy to his principal or to his order, or when he parts with the possession wrongfully, as by pledging the policy as his own property. So he may waive his lien by an express or implied agreement. When the policy comes again into his possession, his lien is revived in all its original extent. The lien of a mercantile agent attaches on the policy in the possession of the broker

whom he had employed to effect the insurance. 111. The Revised Statutes of New York limit the right of set-off to a defendant to whom the demand proposed to be set off is due in his own right, either as the original creditor and payee or as the assignee and owner, and the provision, if literally and strictly construed, would exclude a set-off by an agent in any case whatever. The courts, however, may adopt as a reasonable construction, that an agent who in his own name is a party to the contract, and has a lien on the policy and its proceeds, is to be considered as an original creditor, or, in judgment of law, as the assignee and owner of the demand. So long as the premium-note remains in the hand of the underwriter, a return premium on the same policy is its necessary appendage; where the return is entire, it extinguishes the note; where it is partial, it operates pro tanto as a satisfaction.

Of the Extent of the Liability of the Agent.—112. The liability of the agent is simply to make good to his principal the actual damage that the specific breach of duty with which he is charged has directly occasioned. The liability of an agent arising from the insolvency of an underwriter from whom a loss was due that he might have collected, is probably of the same nature as that of an agent under a *del credere* commission not immediate, but secondary. 113. The first remedy of the principal is against the estate of the bankrupt, and the agent is answerable only for the sum that the estate may be deficient to satisfy. And when an agent has received the amount of a loss, he is not permitted to dispute the title of his principal, his duty is to pay over the moneys he receives. 114. To fix the liability of the agent an actual damage resulting to his principal, must be proved. Where an agent, from his neglect to insure, has rendered himself liable as an insurer, he is entitled to avail himself of every defense which, had the necessary insurance been made, might have been urged by the underwriters themselves. 115. The liability of the agent is not in all cases determined, even where it appears that the principal had parted with all his interest in the subject to be insured previous to the happening of the loss. The liability of an agent is not in all cases to be limited to the sum that his principal would have been entitled to claim as an indemnity from the underwriters had an insurance been properly effected. Where the principal has been defeated in an action against the underwriters on the policy, owing to the breach of duty of the agent, the costs and expenses are chargeable to the agent. 116. An agent acting under a *del credere* commission is liable only as a surety for the ultimate solvency of the party with whom he contracts for his principal. A *del credere* agent has no immediate remedy against the underwriter. When the policy is effected in the name of the *del credere* agent, he may maintain an action in his own name on the policy itself, but not when his own name is not on the face of the policy. A *del credere* commission is not within the statute of frauds. See *DEL CREDERE*.

Of Insurances by an Agent of the Underwriters.—117. The authority of the agent to sign a policy may be proved by his habit of subscribing policies on behalf of the defendant, although such proof is incomplete unless it embraces some positive act of the defendant amounting to a recognition of the authority. Where the agent subscribes the policy in his own name and omits that of his principal, he becomes responsible. 118. An agent whose original authority to sign the policy as such has been proved or admitted, has an implied authority to perform every subsequent act on behalf of his principal; and this implied authority extends to the adjustment of a loss, the acceptance of an abandonment, and the payment of a loss. An insurance broker is not the agent of the underwriter to admit or to pay a loss; and if such a payment is made by him, it is regarded as purely voluntary.

119. Agents of insurance companies in the United States are usually intrusted with an authority not merely to transmit applications, but, under certain restrictions, to perfect insurances in the name and on the behalf of their constituents. If the restrictions to which the agent is subject in the exercise of his authority are private and confidential in their nature, their existence as between the principal and his agent is not permitted to be alleged. So far as the rights of third persons are concerned, unless disclosed, they are inoperative and void. The ostensible or apparent authority of a general agent is his real authority in respect to all who deal with him in ignorance and good faith. It is the custom of the underwriters at Lloyd's and of the principal insurance companies in the United States, to appoint agents in nearly all the ports of the world, but the powers of these agents are circumscribed by very narrow limits. They can not bind their employers by any positive act so as to create a liability to the assured that would not otherwise exist, nor are the acts which they are authorized to perform of such a nature as to mislead the public as to the real extent of their authority. When a question arises as to the validity of their acts, it is solely by a reference to their written instructions that it must be determined.

Of Concealment.—120. Each is bound to communicate to the other all facts within his personal knowledge that tend to show the true character and value of the risks that are meant to be covered, and each, in his own communication to the other, is bound to state the exact and the whole truth in relation to the facts that he represents, or, upon inquiry, discloses. A misrepresentation or concealment of material facts, whether it resulted from design or from ignorance, mistake or inadvertence, vitiates that mutual consent essential to its validity. 121. The materiality of facts concealed or misrepresented is not to be determined by the event, but results solely from their probable influence on the estimated value of the risks at the time they were assured. The question is not whether the loss that is claimed is attributable in any degree to the risks that were concealed, but whether, had the facts been known, the underwriter would have subscribed the policy or would have limited himself to the premium that he received. The obligation of a frank and full disclosure attaches equally upon both the parties, the underwriter as well as the assured.

Facts that the Assured is bound to disclose.—122. It is the duty of the assured to communicate all facts that are material to the risks, and which are not known, or presumed to be known, to the underwriter. The assured is bound to disclose all the intelligence that he has received, and all the information that he possesses, that relate to facts which are material to the risks, although the information may be of a doubtful character, and may ultimately prove to be untrue. 123. So if the intelligence received by the assured relates not to a fact, but to mere expectation or belief of the person from whom it was received, if the expectation refers to an event that, had it occurred, would be material to the risks, it must be communicated; nor will the suppression be excused by evidence that the expectation, although entertained and expressed in good faith, was not realized in the event. When it is certain, however, that the assured acted with an entire good faith, circumstances not disclosed by him are not to be deemed material simply on the ground that if communicated they might have excited a suspicion of danger in the mind of the insurer. 124. The assured will not be allowed to protect himself against the charge of an undue concealment by evidence that he had disclosed to the underwriter, in general terms, the information that he possessed. Where his own information is specific, it must be communicated in the terms in which it was received. The information possessed by the assured may not be material in itself,

separately considered, yet may be of such a character that it would probably lead to further inquiries on the part of the underwriter; and if the result of the inquiry would show the information to be material, it must be communicated. Its concealment, whether fraudulent or innocent, will vitiate the insurance. 125. When the insurance is "on ship or ships," omission to disclose the name will not avoid the policy unless the concealment was rendered material by other facts. The voluntary ignorance of the assured, whether the result of fraud or of gross negligence, will not be allowed to excuse him, but as evidence of a concealment vitiating the policy, will have the same effect as his actual knowledge. 126. Where the assured employs an agent to effect the policy, it is his duty to communicate through him all the facts that are requisite to be disclosed. The duty of the principal is the same whether the authority of the agent be general or special. The concealment of a loss by an agent who is bound to give the intelligence, violates the implied understanding on which the contract is founded, as a similar concealment by the principal. Concealment of material facts when the policy is altered, renders the policy void. 127. Where an underwriter seeks to protect himself by a re-assurance, he is bound to communicate not only all the representations made to himself when he subscribed the policy, but all the knowledge and information he had subsequently acquired. In England and in the United States the knowledge of the assured, or of his agent, is never presumed, but must be established, in all cases, by positive evidence. 128. The information usually necessary to be given, may be distributed under the following general heads: 1. The state and condition of the ship or property insured. 2. The nature and extent of the interest insured; and, lastly, the extraordinary perils arising from extreme causes to which the property has been or will probably be exposed. The assured is not bound, in the first instance, to make any representation as to the condition of the ship at the commencement of the risks to which the policy relates. 129. Although not by the terms of the contract, yet in judgment of the law, stipulates that the vessel was or shall be seaworthy, and it is on the truth of this implied stipulation, and not of any representation of the assured, that the underwriter relies, and the policy is founded. Hence, a policy, where the ship is unseaworthy, and the fact is known to, and suppressed by the assured, is conclusive evidence of a meditated fraud. The same disclosures must be made by the assured if any facts are known to him which would justify a reasonable suspicion of the honesty of the master. As the warranty of seaworthiness relates solely to the condition of the ship at the commencement of the risks that are covered by the policy, if the assured has received any advices relating to the state and condition of the ship since the commencement of the voyage insured, he is bound to communicate them. 130. Condition and quality of the goods. When no inquiry is made by the underwriter, the assured is not bound to disclose the state and condition of the goods when shipped, nor where the insurance is on goods generally, is he bound to disclose, in the first instance, the particular character and description of the goods that are meant to be covered. Goods lashed on deck are not at the risk of the underwriter. Whether they were insured in special or general terms, they are not protected unless the fact that they are thus transported is stated in the policy, or unless the mode of transporting is sanctioned by a usage of trade, the existence of which the underwriter is bound to know. When goods laden, or to be laden, are insured in a time policy, such a disclosure is not necessary to be made. The same when the insurance is on successive cargoes on a trading voyage to successive ports, the choice of the port at the discretion of the assured.

Title or Interest of the Assured.—131. The assured is not bound to communicate to the underwriters the particular nature of his interest in the property insured; but in some cases, as when the insurance is on freight, bottomry, respondentia, etc., the nature of his interest must be specified in the policy, and in others, its disclosure to the underwriter is necessary, in order that the terms of the policy may be construed to embrace it. The decisions on this subject in the American courts are very conflicting. 132. When letter-marques are intended to be used, although for the limited purpose of chasing and capturing vessels that may be met in the course of the voyage, it must be disclosed. 133. Information of the fact, or of the day of sailing, although known to the assured, is not in all cases to be given to the insurer. When the ship is known to have performed a part of the voyage insured, she may not be out of time when the policy is effected in reference to the whole voyage, yet may be so in reference to the accomplished portion; and, in such a case, it is the duty of the assured to communicate not merely the original time of sailing, but all the information he had received relative to the course and progress of the voyage. 134. However material may be the facts known to the assured, it is plainly unnecessary to communicate them to the insurer, if they are in fact already known to him. Proof, therefore, of the actual knowledge of the underwriter is in all cases a complete answer to a charge of concealment. The assured is not bound to make any communication in the first instance respecting facts which the underwriter ought to know, and of which, for this reason, the law imputes to him the actual knowledge. The presumption of law in the cases comprehended in this rule, is conclusive and absolute. The insurer is bound to know all the general causes that are open to his inquiry, that may by their operation affect either the political or natural perils that are intended to be covered by the policy. 135. The political perils usually covered by the policy, are the risks of capture, seizure, and detention; therefore the assurer is bound to know the general and public facts upon which a loss arising from such risks may occur. 136. The natural perils of a policy are such as wholly arise from physical causes, and in a limited, but not in an unusual sense of the words, are aptly denominated "perils of the sea," or "sea risks." The underwriter is bound to know all the general causes by which they may be occasioned, increased, or varied. The usages of trade are equally presumed to be known to the underwriter. In all these cases the presumption of knowledge attaches equally upon both parties. 137. To fix the presumption of knowledge upon the underwriters, it is the duty of the assured to communicate all the circumstances within his personal knowledge that are necessary to be known to enable the underwriter to apply the presumption to the particular risks that are meant to be covered. The assured is not bound to communicate material facts if the underwriter expressly or impliedly waives the information. 138. Where, from the facts communicated to the underwriter, he is bound to infer the existence of other facts not disclosed, his omission to make the inquiry is an implied waiver of a more explicit disclosure. The underwriter, by the nature and terms of the contract, may waive all special information as to the actual and probable existence of the particular risk that he agrees to assume. When he thus consents to assume the risk in its most aggravated form, he can not justly complain that facts showing that such was its real extent were not disclosed to him. 139. The assured is not bound in the first instance to communicate any facts that are covered by a warranty express or implied. He is not bound in the first instance to communicate facts that are only material, as showing the existence of a risk which is excepted from the policy. He is not bound to communicate facts that tend to diminish the risks

as they would otherwise be understood by the insurer. 140. The insurer has the right, upon inquiry, to be informed of all facts within the knowledge of the assured, that in the exercise of his own judgment he may deem material to the risks, or important to be known, as a guide to his own discretion. Where the insurer is not to be charged with an equal knowledge, the assured, either without, or upon inquiry, is bound to communicate all the facts, that his knowledge or information embraces, that are material to the risks, or may be deemed material by the insurer, but he is not bound to communicate his own conclusions from the facts that he must disclose. 141. The following are cases in which the effect of a concealment is not to vitiate the entire contract, but merely to exonerate the insurer from a loss resulting from the risk concealed: 1st. National character of the insured. 2d. Liability of the property insured to capture and detention. 3d. Liability to seizure from breach of foreign laws of trade. 4th. Want of necessary documents. 5th and lastly, the use of false or simulated papers.

National Character of the Assured.—142. Where the insurance is made in a neutral country; a full disclosure of the national character of the assured in the first instance is necessary, not to give validity to the contract, but to cover the risk, so as to charge the underwriter with a resulting loss. The assured may be the subject of a neutral State, and legal owner of the property insured, yet, an equitable interest, rendering the property liable to hostile capture, may be vested in a belligerent subject. As such an interest creates a risk not contemplated by the parties, it must be disclosed. 143. Even when the policy contains a warranty of neutrality, and describes the assured by general words, facts not disproving the warranty, yet showing that the property is liable to seizure as enemy's property, are necessary to be disclosed. 144. Liability of property to capture or detention: The voyage or trade to which the insurance relates may be interdicted by the law of nations, by the special provisions of a treaty, or by an unjust ordinance or decree of the belligerent power, or by arbitrary rules or decisions that prevail in the courts of prize. 145. Where the voyage or trade on which the insurance relates, is prohibited by the municipal laws of the foreign country to which the ship is destined, or where the risks are to commence, a concealment of such an extraordinary risk discharges the insurer from a consequent loss, without affecting in other respects the validity of the contract. 146. The rules that determine the validity of an insurance, embracing the risks of an illicit trade, or trade in violation of the municipal laws of a foreign country, are substantially the same as in respect to an insurance on goods contraband of war.

Of Representations.—147. A representation is a statement of facts, circumstances, or information tending to increase or diminish the risks, as they would otherwise be considered made, prior to the execution of the policy by the assured or his agent, to the insurer, in order to guide his judgment in forming a just estimate of the risks he is desired to assume. It is usually made by parole, or by a writing not inserted in the policy; but when the intention as to the construction is sufficiently declared, may be expressed in the policy. 148. Representations relate either, 1st, to facts; 2d, to the information; or, lastly, to the intentions, expectations, or beliefs of the assured. A representation of facts is a positive representation, which is divided into affirmative and promissory: when affirmative, they assert the past or present existence of the facts to which they relate; when promissory, that the specified event will happen, or act be performed. 149. The evidence of a positive representation of facts, may properly be received in all cases. The rules of evidence in respect to the admissibility of a representation, are substantially the same as in respect to a

usage; and, in many cases, the representation, when proved, becomes, like the usage, a part of the contract. The words of the representation are to be strictly and literally construed, but are to be understood in their plain and obvious meaning, in that which it is most probable they were suggested to the mind of the insurer. It will be construed to embrace all the facts, the existence of which, from the terms used, would reasonably and probably be inferred. 150. When a representation is so ambiguous in its terms, that it may be understood with equal propriety in two different senses, it is the duty of the insurer to seek an explanation; and when such a representation is understood by him in a sense different from that intended by the assured if he had omitted to inquire, he will not be permitted to aver its falsity. A representation of future facts, although positive in its terms, may in some cases be justly interpreted, not as an undertaking for the truth of the facts, but as referring solely to the expectation or belief of the party. When a representation of future facts is inconsistent with the terms of the policy, it is not to be rejected. The policy remains the sole evidence of the agreement; but the representation may be operative, by construing it to refer to the intentions of the assured at the time of making it. 151. The words of a representation must be construed in reference to the usages of trade, or in their technical and commercial sense. A representation may supersede a usage and an implied warranty. Where there are several underwriters on the same policy, a representation to the first is construed to extend to all, so that each, when it proves to be false, may avail himself of the defense. This rule is strictly confined to the cases in which the representation is made to the underwriter whose name stands first on the policy. The terms of the rule are restricted to underwriters on the same policy, and it is confined to cases in which the representation to the first underwriter was favorable to the risk, and to such cases the rule exclusively applies. 152. Where the subscription of the first underwriter is obtained under a secret agreement that it is not to be binding, and for the sole purpose of deceiving others to insure, the exhibition of the policy thus subscribed is the assertion of a falsehood, and the contract is void. A representation once made is binding on the party, unless it is altered or withdrawn before the insurance is effected. The completion of the policy is therefore the time to which the representation is construed to refer. 153. A representation, to be binding, must be material, and, to discharge the insurer, must be false wholly or partially, and, according to the character of the representation, false in fact or in the event. It is not necessary that the facts represented should be material to the risk, that is, should affect or change the value of the risk, considered in themselves. The materiality required is not absolute, but relative, and its test is the actual or probable influence of the facts represented on the mind of the insurer. In judgment of law a representation is false when it fails to correspond with the facts that it affirms or stipulates; and hence its falsity is either intentional or accidental. 154. When the representation, whether affirmative or promissory, is made with an intent to deceive, the fraud in all cases vitiates the contract; nor to produce this effect is it requisite that the falsity should be entire: partial falsity, when intentional, is equally a fraud; and an inquiry into the materiality of the charge, as affecting the character and value of the risks, would never be allowed. 155. When the falsity of the representation is accidental, its effect upon the contract will depend, first, upon the nature and extent, and next upon the period of time to which it is to be referred. The falsity of the representation, when entire, in all cases discharges the insurer; but such is not its necessary consequence when it is only literal or partial. The substantial falsity of a representation, in cases exempt from fraud, does not always render the con-

tract wholly void. When the representation is false when made, or at the commencement of the risks, such is the necessary effect, but when the policy has attached, and the representation is falsified by a subsequent event, the breach does not, by a retro-active force, render the policy void in its origin. 156. When the assured has no personal knowledge of the facts he desires to represent, and is unwilling to bind himself by a positive statement, he may qualify the representation by adding, that it is made from the information of others, or may submit the information in its whole extent to the insurer. When the assured submits the information in extenso to the insurers, he is not answerable for the actual or eventual truth of the facts that it embraces, nor, in any case, for the accuracy of the conclusions that the insurers may draw from it. It would be different if the information proceeds from an agent of the assured whose duty it is to give the intelligence. 157. The assured is responsible when the policy is induced by a false representation of his own agent. Where the assured, or his agent in his name, declares that he intends to pursue a certain course, or perform certain acts favorable to the risks, he has entire liberty to change the intentions so declared; but if the representation is made with an actual intent to deceive, the fraud vitiates the contract. Where the party seeking the insurance declares his own expectation, or that of his principal, in regard to the existence or happening of a fact or event that, if true, would diminish the risks, the effect of the representation must depend upon its just interpretation. The same will be for a representation of a belief of a material fact. It is from the character of the party, and his relation to the subject, that such representation acquires strength.

Of the Right and Duties of the Insured in case of Loss.

Section I.—Of Abandonment.—158. A total loss, within the meaning of the policy, may arise either by the total destruction of the thing insured, or, if it specifically remains, by such damage to it as renders it of little or no value. A loss is said to be total if the voyage be entirely lost or defeated, or not worth pursuing, and the projected adventure frustrated. It is a constructive total loss if the thing insured, though existing in fact, is lost for any useful purpose to the owner. In such cases the insured may abandon all his interest in the subject insured, and all his hopes of recovery to the insurer, and call upon him to pay as for a total loss. 159. In cases of abandonment the insurer stands in place of the insured, and takes the subject to himself, with all the chances of recovery and indemnity. A valid abandonment has a retrospective effect, and does of itself, and without any deed of cession, transfer the right of property to the insurer, to the extent of the insurance; and if, after an abandonment duly made and accepted, the ship should be recovered and proceed and make a prosperous voyage, the insurer, as owner would reap the profit. 160. As soon as the insured is informed of the loss he ought (after being allowed a reasonable time to inspect the cargo, and for no other purpose), to determine promptly whether he will or will not abandon; and he can not lie by and speculate on events. If he elects to abandon, he must do it in a reasonable time, and give notice promptly to the insurer of his determination, otherwise he will be deemed to have waived his right to abandon, and will be entitled to recover only for a partial loss, unless the loss be in fact absolutely total. If the thing insured exist in specie, and the insured wishes to go for a total loss, an abandonment is indispensable. The main general doctrines respecting abandonment being entirely incorporated into the English law, it would be useless to insert them at length. 161. An abandonment once rightfully made is binding and conclusive between the parties, and the rights flowing from it become vested rights, and are not to be divested by subsequent events. The right to abandon is to be tested by the actual facts at the time of the abandonment, and not up-

on the state of the information received. Upon a valid abandonment, the master becomes the agent of the insurer, and the insured is not bound by his subsequent acts, unless he adopts them. 162. It is the same thing with the assignee of the cargo. On an accepted abandonment of the ship, the freight earned previous to the disaster is to be retained by the owner or his representative, the insurer of the freight, and apportioned *pro rata itineris*, and the freight subsequently to be earned goes to the insurer on the ship.

Section II. Of the Adjustment of Partial Losses.—

163. In an open policy, the actual or market value of the subject insured is to be estimated at the time of the commencement of the risk. 164. There are two kinds of indemnity that may lawfully be obtained under a contract of insurance. The first is to pay what the goods would have sold for if they had reached the place of their destination; and the value there consists of the prime costs and expenses of the outfit, the freight and expenses at the port of delivery, and the profit or loss arising from the state of the market. This puts the insured in the same situation as if no loss had happened. The other kind of indemnity is to pay only the first cost of the goods and the expenses incurred; and this places the insured in the situation he was before he undertook the adventure. 165. The actual or market value at the port of departure may frequently be different from the invoice price or prime cost, and when that happens, or can be ascertained, it is to be preferred. 166. If goods arrive damaged at the place of destination, the way to ascertain the quantity of damage, either in open or valued policies, is to compare the market price or gross amount at which the same goods would have sold if sound. There is a material difference between the adjustment of a partial loss and of a general average, since the former is adjusted according to the value at the time and place of departure of the vessel, and the latter according to the value at the foreign port. 167. In settling losses under the memorandum in the policy which declares articles free of average under, say 4 per cent., if a partial loss to an article be found on survey and sale to have been 5 per cent., the insurer pays the damages and the expenses. If under 5 per cent., he pays nothing, and the insurer bears the expenses. The expenses are like costs of suit, and fall upon the losing party. The expenses are not taken to make up the 5 per cent. 168. With respect to leakage, the rule in cases free from special stipulations is, that the insurer is not liable for waste occasioned by ordinary leakage, and only for leakage beyond the ordinary waste and produced by some extraordinary accident. The practice is to ascertain in each case what amount of leakage is to be attributed to ordinary cases, or the fault of the insured, or bad stowage, and what to the perils of the sea; and, in pursuing his inquiry, the season of the year, the nature of the articles, the description of the vessel, the length of the voyage, and the stowage, are all to be considered. 169. An adjustment of a loss can not be set aside or opened except on the ground of fraud or mistake of facts not known. In making the adjustment in the case of a partial loss, the rule is to apply the old materials toward the payment of the new, and a deduction of one third new for old is made whether the vessel be new or old. 170. The insurer is liable for all the labor and expenses attendant upon an accident which forces the vessel into port to be repaired; and in consequence of the general permission in the policy for the insured to labor for the recovery of the property, the insurer may be rendered liable for the expenses incurred in the attempt to recover the lost property in addition to the payment of a total loss.

Of the Return of Premium.—171. The premium paid by the insured is in consideration of the risk which the insurer assumes, and if the contract of insurance be void ab initio, or the risk has not been commenced,

the insured is entitled to a return of premium. If the insurance be made without any interest whatsoever in the thing insured, and this proceeds through mistake, misinformation, or any other innocent cause, the premium is to be returned. So if the insurance be made with short interest, or for more than the real interest, there is to be a ratable return of premium. If the risk has not been run the premium must be returned. 172. If the interest has not been run, whether it be owing to the fault, pleasure, or will of the insured, or to any other cause, the premium must be returned for the consideration for which it was given fails. 173. If the vessel never sailed on the voyage insured, or the policy became void by a failure of the warranty, and without fraud, the policy never attaches; but if the risk has once commenced, though the voyage be immediately thereafter abandoned, there is no return or apportionment of premium. 174. And if the premium is to be returned, the insurer retains $\frac{1}{2}$ per cent. by way of indemnity for his trouble and concern in the transaction. 175. The insurer retains the premium in all cases of actual fraud on the part of the insured or his agent. So if the trade be in any respect illegal, the premium can not be reclaimed. If the voyage be divisible, there may be an apportionment of the premium, but not unless the risk were divisible and distinct in the policy. If the voyage and premium be entire, there can be no apportionment. It is requisite that the voyage, by the usage of trade or the agreement of the parties, be divisible into distinct risks; and, in that case, if no risk has been run as to one part, there may be an apportionment of premium.—See *DUER on Marine Insurance*.

Losses of the Boston Stock Insurance Companies.—According to the annual report of the insurance commissioners, the following were the issues of the various stock insurance companies of Boston for the year ending November 1, 1856:

Companies.	Fire.	Marine.	Total
American.....	\$5,076 08	\$137,179 70	\$142,255 78
Boston.....	.....	197,623 30	197,623 30
Boylston.....	8,044 89	828,440 06	441,484 94
City.....	17,533 08	.....	17,533 08
Eliot.....	18,924 45	.....	18,924 45
Tremont.....	32,472 95	.....	32,472 95
Franklin.....	9,364 57	26,535 25	35,900 82
Hope.....	.....	188,013 44	188,013 44
Manufacturers.....	27,599 28	90,501 27	117,870 50
Merchants.....	17,851 63	138,241 94	156,093 57
Merchants' Marine.....	.....	123,718 56	123,718 56
National.....	17,713 89	131,213 29	148,931 67
Neptune.....	12,253 03	493,405 94	445,658 97
Shoe & L. Dealers.....	107 92	8,929 20	4,087 12
Suffolk.....	40 00	118,631 28	118,671 28
United States.....	880 00	73,442 62	74,322 62
Warren.....	688 54	101,288 91	101,985 47
Washington.....	1,292 06	235,909 05	237,201 11

As the commissioners observe, the past year or two have been unusually disastrous to the marine insurance companies, who, in most cases, pay a portion of their losses from the reserved funds of more favorable years. The North American Company reports no losses, either fire or marine. The annual report of the Boston Board of Trade represents the following losses, etc., for the year 1856:

Class of disasters.	Ships.	Ins'rs.	Engs.	Schooners.	Steamers.	Total.	Boston ships.	Others.
Missing vessels.....	1	2	1	6	..	10	11	7
Abandoned or condemned.....	4	5	1	16	..	86	14	29
Returned in distress.....	10	..	5	4	1	28	20	..
Arrived damaged.....	0	17	11	7	1	45	23	22
Stranded.....	26	24	23	44	..	119	46	72
Collisions.....	6	10	9	24	3	52	19	83
Put in leaky.....	14	24	37	39	..	124	55	51
Dismantled.....	1	..	1	5	..	10	6	4
Sunk by ice.....	1	2	..	1	..	4	4	..
Burned or injured.....	1	1	..	..	2	3	..	..
Struck by lightning.....	1	9	1	1	..	5	5	..
Total.....	85	93	101	146	5	435	202	233

RATES OF INSURANCE IN THE UNITED STATES.

Ports.	Rate.
Atlantic ports, from, to ports in Europe, not in the Northern Sea.....	1 1/2 - 3
" " " " " in the Northern Sea.....	2 1/2 - 4 1/2
Africa, to or from, general liability.....	1 1/2 - 2
" out and home.....	3 - 4
Apalachicola, to and from.....	1 1/2 - 2 1/2
Bermuda, to or from.....	1 - 1 1/2
Brazil, to any port.....	1 1/2 - 2
Buenos Ayres, direct.....	2 - ..
" and Montevideo.....	1 1/2 - 1 3/4
Bahamas, to or from.....	1 1/2 - 2
Batavia, or any one port in the Indian Ocean.....	1 1/2 - 2
" out and home.....	3 - 3 1/2
Canton, direct.....	2 - 2 1/2
" out and home.....	3 - 4 1/2
Cuba, any one port.....	1 1/2 - 2
Calcutta, out.....	2 1/2 - 2 1/2
" out and home.....	3 - ..
Cadiz.....	1 1/2 - 2 1/2
Charleston, Savannah, and Darien, to or from.....	1 - ..
Denmark.....	2 1/2 - 3 1/2
Demerara or Surinam, out or home.....	1 1/2 - 2
France, to or from.....	1 - 2 1/2
" out and home.....	2 1/2 - 3 1/2
Great Britain or Ireland, to any port, out or home.....	1 1/2 - 3
" north of the Thames.....	2 1/2 - 5
" and back to the United States.....	2 1/2 - 2 1/2
" Dry goods, home.....	2 - 2 1/2
" Hardware, home.....	2 1/2 - ..
Gibraltar.....	1 1/2 - 2 1/2
Halifax, to or from.....	1 1/2 - 2 1/2
Honduras, to or from.....	1 - 1 1/2
Laguayra.....	1 - 2 1/2
Lisbon, to or from.....	1 - 2 1/2
Madeira and Western.....	2 - 2 1/2
Cape de Verd Islands.....	4 - 4 1/2
" out and home.....	1 1/2 - 2 1/2
Malaga.....	1 1/2 - 2 1/2
Trieste.....	1 1/2 - 2 1/2
" and back to the United States.....	3 1/2 - 4 1/2
Manilla, out and home.....	2 - 2 1/2
Mobile.....	1 1/2 - 2 1/2
New Orleans.....	1 1/2 - 2 1/2
Mobile or New Orleans, from either.....	1 - ..
" to ports in Europe not in the North Sea.....	1 1/2 - 1 1/2
" in the North Sea.....	2 - 2 1/2
Ocracoke Bar (over).....	1 1/2 - 1 1/2
Porto Cabello.....	1 - 1 1/2
Rio Janeiro.....	1 - 1 1/2
Pernambuco.....	1 - 1 1/2
Russia, different seasons.....	1 1/2 - 2
St. Domingo, out or home.....	1 1/2 - 2
San Francisco.....	3 1/2 - 4
Smyrna or Constantinople.....	1 1/2 - 2 1/2
Spanish Main, any one port, or between the Orinoco and the Sabine.....	1 1/2 - 2
" out and home.....	2 1/2 - 3 1/2
Sumatra, port or ports in, to or from.....	1 1/2 - 1 1/2
St. Croix and St. Thomas, to or from.....	4 - 4 1/2
Turks Island and back.....	4 - 4 1/2
Valparaiso, out or home.....	2 - 2 1/2
" out and home.....	4 - 4 1/2
Vera Cruz.....	2 1/2 - 3
Tampico.....	3 1/2 - 4
Wilmington, N. C., to or from.....	1 - 1 1/2
To the coast of Patagonia..... per annum.....	3 - 10
To the Pacific, voyage round.....	4 1/2 - 5 1/2
North of Guayaquil, and not north of S. Francisco.....	3 1/2 - 3
To the Brazil Banks, " " " ".....	1 1/2 - 1 1/2
Windward Islands.....	2 1/2 - 3
" out and home.....	3 1/2 - 5
California.....	4 1/2 - 5
Oregon.....	4 1/2 - 5

COASTWISE RISKS.

To or from any port in Maine, not east of Portland.....	1 - ..
" " " " east of Portland.....	1 - 1

II. *Fire Insurance.*—It is impossible to estimate too highly the value and importance of insurance, and the benefits conferred on mankind by the invention, whether it be considered in its original character as a protection to the merchant who adventured his property on the bosom of the treacherous deep—against its many perils—or in its more modern applications, as a guaranty against loss by fire, and its further interesting adaptation to the assuring of life. Considering that maritime insurance was well known, and insurance on life understood and practiced, to a certain extent, in several mercantile countries by the middle of the 16th century, it appears extraordinary, when we call to remembrance the devastations and distresses oc-

casioned by fire in Great Britain, that some means should not have been adopted at an earlier period to render such calamities less ruinous to individuals, particularly when a plan, which appears eventually to have formed the basis of the present insurance companies, was suggested so early as 1609.

In that year, a person proposed to Count Anthony Gunther von Oldenburg, that, as a new species of finance, he should insure the houses of all his subjects against fire, on their paying so much per cent. annually, according to their value; but the prospect of gain so tempting to most persons, could not induce the Count to adopt the plan. He thought it good if a company was formed of individuals to insure each others' houses, but he doubted that it could by him be "honorably, justly, and irreproachfully instituted without tempting Providence—without incurring the censure of neighbors, and without disgracing one's name and dignity," adding that "God had without such means preserved and blessed, for many centuries, the ancient house of Oldenburg, and He would still be present with him through his mercy, and protect his subjects from destructive fires." This plan appears not to have been again thought of until the fire of 1666 had laid the city of London in ashes.

In consequence of this calamitous event, the citizens began to see the importance, and indeed necessity, of erecting their buildings of a material less susceptible of fire than hitherto; also of adopting a regular system of precaution against future accidents, as well as of devising some scheme for mutual pecuniary protection and relief. Various proposals were accordingly submitted to the Court of Common Council of the city of London, between 1669 and 1680, for the mutual relief of such as might have their houses destroyed by fire—the most notable and acceptable of which was by one of their own body, Mr. Deputy Newbold. But if we may judge from the length of time that elapsed ere the worshipful committee made their report to the court, we should conclude the adopting of the proposal to have been attended with serious difficulties, and in verification of the old proverb that "delays are dangerous," during the period between the first presentation of Mr. Newbold's proposals to the Lord Mayor, and the final report of the committee, to whom the matter was referred by the Court of Common Council, several private individuals associated themselves together, and submitted to the good citizens of London a "design for insuring houses from fire," and on the 16th September, 1681, a notice or advertisement was issued from their "office, on the back side of the Royal Exchange," offering to insure brick houses against fire for *sixpence*, and timber houses for *twelvepence in the pound*—being at the rate of £2 10s. per cent. for the brick houses, and of £5 per cent. for timber.

Subsequently, on the 13th October, 1681, the Court of Common Council did "agree and resolve to undertake ye insuring all houses within this city and liberties from fire, and execute ye same with all expedition," and thereafter "resolved forthwith to engage a sufficient fund, and undoubted security by the chamber of London, in lands and good ground rents, for the performance thereof." Much amusing pamphleteering and advertising in the *Gazette* took place between the advocates of the corporation scheme, and the "interested" in the sale insurance office on the back side of the Royal Exchange.

The journals of the Court of Common Council in 1681, 1682, and 1683, record the signing of many policies, and bear amusing evidence of the zeal and prudence of the fire insurance committees in promulgating the benefits of the corporation scheme, and combating the antagonistic pamphlets issued by their competitors.

As the fruit of this pamphleteering agitation, the subject was brought under the most serious considera-

tion of the court on the 13th November, 1682, as appears by a minute of that date; when the court evinced a much greater anxiety to relinquish than they had to undertake the design, and directed the discharge of existing contracts, with the prepayment of the money which had been advanced.

Notwithstanding this resolution, however, contained in the foregoing minute, we find several policies subsequently passed the common seal, on the 6th March and 3d May, 1683.

After this, the city discontinued issuing policies, and having had a *quo warranto* brought against their charter, every exertion was used to obtain a surrender of the existing policies, and thus release the city lands from the incumbrances thereon.

The last matter taken into consideration, was the petition of Mr. Newbold, the author of the design which turned out so unsuccessful for remuneration, for the time, trouble, and expense he had been at, which was referred to a committee who reported on the 13th October, 1696, and on the 8th December following it was "resolved to give him the benefit of making two persons free of this citie by redemption, paying to Mr. Chamberlin to the citie's use of fortie-six shillings eight pence a-piece, the said persons to be first presented and allowed of by this court." This was the fate of the "City's Design and Undertaking for the insuring of Houses from the evil of Fire." The "interested" in the rival office became, of course, greatly elated, and their success led to the formation of several other companies or mutual insurance societies, for protection against fire.

In 1696, the *Hand-in-Hand Fire Office* was established by about 100 persons, who afterwards formed a deed of settlement, enrolled in Chancery January 24, 1698. This office is remarkable at the present day for its age, and is the only surviving one of those of that period.

Up to the year 1706, the protection afforded by fire insurance societies was limited entirely to houses (*buildings*), but in that year the *Sun Fire Office* was projected by one Charles Povey, for insuring merchandise and household goods (as well as houses) from fire, and was the first office to extend the benefits of insurance beyond the confines of London. This office has for very many years stood first on the list in amount of business.

There is also a stamp duty of 1s. on each policy.

By far the greater number of the above are joint-stock companies, who insure at their own risk and for their own profit, and are represented by agents in all the principal towns of the kingdom; the remainder are joint-contribution, or mutual insurance societies, in which every insurer participates in the profit or loss of the concern.—E. B.

Practice of Fire Insurance.—The advantages of fire insurance are too well known to require any very elaborate description. A manufacturer or private individual can, by the payment of an annual sum (premium) proportioned to the risk, secure himself against loss in the event of his manufactory or dwelling-house, or their contents, being destroyed by fire.

The Law of Fire Insurance in the United States.—*Of the usual subject and form of this insurance.*—We have seen that fire is one of the perils insured against by the common marine policies. It is usual, however, to insure building and personal property which is not to be water borne, against fire alone; and this is what is commonly called fire insurance. The general purposes and principles of this kind of insurance are the same as those of the marine insurance; and the law in respect to it differs only in those respects and in that degree in which the difference is made necessary by the subject-matter of the contract. It will be proper, therefore, to confine ourselves in this chapter, mainly to the statement of these differences and to consider those general principles which have already

been discussed, only so far as this may be necessary for the comprehension or illustration of the peculiarities which belong to fire insurance. This kind of insurance is sometimes made to indemnify against loss by fire, of ships in port; more often of warehouses, and mercantile property stored in them, still more frequently of personal chattels in stores or factories, in dwelling-houses or barns, as merchandise, furniture, books, and plate, or pictures, or live stock. But by far the most common application of this mode of insurance is to dwelling-houses. Like marine insurance, it may be effected by any individual who is capable of making a legal contract. In fact, however, it is always or nearly always in this country, and we suppose elsewhere, made by companies. There are stock companies, in which certain persons own the capital, and take all the profits by way of dividends. Or mutual in which every one who is insured, becomes thereby a member, and the nett profits, or a certain proportion of them, are divided among all the members in such a manner as the charter or by-laws of the company may direct. Or both united, in which case there is a capital stock provided, as a permanent guaranty fund, over and above the premium received, and a certain part or proportion of the nett profits is paid by way of dividend upon the fund, and the residue divided among the insured. *PARSONS ON Contracts.*

Of late years the number of mutual fire insurance companies has greatly increased in this country, and probably by far the largest amount of insurance against fire is effected by them. The principal reason for this is undoubtedly their cheapness; the premiums required by them being in general, very much less in fact than in the stock offices. For example, if the insurance is effected for seven years, which is a common period—an amount or percentage is charged about the same as, or a little more than is charged as the stock companies. Only a small part of this is taken in cash; for the rest a premium note or bond is given, promising to pay whatever part of the amount may be needed for losses, which shall occur during the period for which the note is given. More than this, therefore, the insured can not be bound to pay, and it frequently happens that no assessment whatever is demanded; and sometimes where the company is well established, and does a large business upon sound principles, a part of the money paid by him is refunded when the insurance expires, or credited to him on the renewal of the policy if such be his wish. The disadvantage of these mutual companies is, that the premiums paid, and premium notes, constitute the whole capital or fund, out of which losses are to be paid for. To make this more secure it is provided by the charter of some companies, that they should have a lien upon the land itself on which any insured building stands to the amount of the premium. But while this adds very much to the trustworthiness of the premium notes, and so to the availability of the capital, it is, with some persons, an objection, that their land is thus subjected to a lien or incumbrance.—*Ibid.*

There is another point of difference which recommends the stock rather than the mutual company. It is that the stock company will generally insure very nearly the full value of the property insured, while the mutual companies are generally restrained by their charters from insuring more than a moderate proportion, namely, from one half to three fourths of the assessed value of the property. It would follow, therefore, that one insured by a mutual company can not be fully indemnified against loss by fire; and may not be quite so certain of getting the indemnity he bargains for, as if he were insured by a stock company. But this last reason is, practically, of very little importance, and the lowness of the premiums effectually overcomes the other. The method and operation of fire insurance have become quite uniform throughout the country, and any company may appeal to the

usage of other companies to answer questions which have arisen under its own policy; only, however, within certain rules, and under some well-defined restrictions. In the first place, usage may be resorted to for the purpose of explaining that which needs explanation, but never to contradict that which is clearly expressed in the contract. "And no usage can be admitted, even to explain a contract, unless the usage be so well established and so well known, that it may reasonably be supposed that the parties entered into the contract with reference to it." Thus if under a policy against fire on a vessel in one part of this country, an inquiry is raised as to the local usage, the policy is not to be affected by proof of usage upon any particular matter in other parts of the world, or even of the United States. And not only the terms of the contract must be duly regarded, but those of the charter; thus if this provides that "all policies and other instruments made and signed by the president or other officer of the company, shall bind the company," an agreement to cancel the policy should be signed; although it can not be doubted that a party insured might otherwise give up his policy, or renounce all claim under it, and that a valid agreement to that effect between him and the company would not be set aside for his benefit, on the ground of a merely formal defect.—*Ibid.*

In regard to the execution of a fire policy, and what is necessary to constitute such execution—as, for example, whether delivery is necessary or a signed memorandum be sufficient, or indeed an oral bargain only, and whether this insurance may be effected by correspondence, and if when the proposition and assent complete the contract—we are not aware of any material difference on any of these points, between the law of fire insurance and that which has already been presented as applicable to marine. It has been held in an action on a fire policy, as doubtless it would be on a marine policy, that a memorandum made on the application book of the company by the president, and signed by him, was not binding, when the party to be insured wished the policy to be delayed until a different adjustment of the terms could be settled, and after some delay, was notified by the company to call and settle the business, or the company would not be bound, and he did not call; because there was here no consummated agreement. So, too, a subsequent adoption or ratification is equivalent, either in a fire or marine policy, to the making originally of the contract; with this limitation, however, that no party can by his adoption, secure to himself the benefit of a policy, if it had not been intended that his interest should be embraced within it. It is quite common to describe the insured in marine policies, by general expressions—as, "for whom it may concern," or, "for owners" or the like; but such language is seldom if ever used in fire policies, the insured being specifically named in them.—*Ibid.*

It may be remarked, that the effecting of a fire insurance is not so often done through the agency of a broker, as that of marine insurance; nor is it so usual to pay nothing down, but to give a note for the whole premium. If, however, the insurance company has an express rule to that effect, it may be waived; and this waiver may be express or implied, from the conduct of officers of the company who have the right to act for it; and their admissions bind the company.—*Ibid.*

On the Interest of the Insured.—As to what interest in the insured is sufficient to support an insurance, the principle is the same in fire as in marine insurance. Any legal interest is sufficient; and if it be equitable in the sense that a court of equity will recognize and protect it, that is sufficient; but a merely moral or expectant interest is not enough. Hence, one who has only made an oral bargain with another to purchase his house, can not insure it; but if there be a valid contract in law, or if by writing, or by part perform-

ance, it is enforceable in equity, the purchaser may insure. So he may, although there be a stipulation, the breach of which has made the contract void by its terms, if the other party might waive the condition and enforce the contracts. So if a debtor assign his property to pay his debts, he has an insurable interest in it until the debts are paid, or until the property be sold. This was so held where it appeared that the property would pay the debts, and leave a surplus for the assignor; but we should expect the same ruling where this was not the case, although, in this instance, there had been previously a verdict for the plaintiff, and a new trial for want of evidence of such surplus.—*Ibid.*

Of Reinsurance.—Reinsurance is equally lawful in fire policies as in marine policies, and in general is governed by the same rules. The reinsurance is an insurance, not of the risk of the insured, for that is a merely ideal thing, but it is an insurance of the property originally insured, in which the first insurers have an insurable interest. If a common policy be used, with no other change than the word reinsurance used instead of insurance, all its requirements are in force. If, for example, in case of loss, this property requires a certificate from a magistrate, as to character, circumstances, etc., that must be furnished by the reinsured. But if a suitable certificate were given by the party first insured to the original insurer, and he transmit the same forthwith to those who insure him, that is enough; and so it would be with notice, preliminary proof, and all similar requirements. And an insurer who obtains reinsurance, is bound to communicate (in addition to whatever else should be stated by one asking insurance), all the information he has concerning the character of the party originally insured; and a material concealment on this point would avoid the policy.—*Ibid.*, page 516.

Of Double Insurance.—Double insurance, although sometimes confounded with reinsurance, is essentially different. By this, the party originally insured becomes again insured; but by reinsurance, the original insurer is insured, and, as we have seen, the original insurer has no interest in, and no lien upon, this policy. If, by a double insurance, the insured could protect himself over and over again, he might recover many indemnities for one loss. This can not be permitted, not only because it is opposed to the first principles of insurance, but because it would tempt to fraud, and make it very easy. This effect may be obviated in two ways: one, by considering the second insurance as operating only on so much of the value of the property insured, as is not covered by the first; and then, as soon as the whole value is covered, whether by the first or by subsequent policies, any further insurance has no effect. A second way is, by considering the second insurance as made jointly with the first; then only as much would be paid on any loss, on many insurances, as on one only; but this payment is divided ratably among all the insurers. All the policies are considered as making but one policy; and therefore, any one insurer who pays more than his proportion, may claim a contribution from others who were liable.—*Ibid.*

In this country fire policies usually contain express and exact provisions on this subject. They vary somewhat; but, generally, they require that any other insurance must be stated by the insured, and indorsed on the policy; and it is a frequent condition, that each office shall, in that case, pay only a ratable proportion of a loss; and it is often added that, if such other insurance be not so stated and indorsed, the insured shall not recover on the policy; and it has been held that such a condition applies to a subsequent as well as a prior insurance. Nor will a court of equity relieve if sufficient notice and indorsement have been made. But it has been held that a valid notice might be given to the agent of the company, who was authorized to

receive applications and survey property proposed for insurance.—*Ibid.*

Of the Risk incurred by the Insurers.—At the time of the insurance the property must be in existence, and not on fire, and not at that moment exposed to a dangerous fire in the immediate neighborhood, because the insurance assumes that no unusual risks exist at that time.—*Ibid.*

The U. S. Insurance Gazette for March contains the report of the insurance commissioners, appointed by the comptroller to inquire into the affairs of the fire insurance companies of New York and Brooklyn. The leading features of the report are contained in the annexed table. The examinations were made from March to December:

Name of Company.	Value of bonds and mortgages.	Value of loans on stocks.	Amount of annual premiums.	Amount of re-insurance & after last dividend.
	Dollars.	Dollars.	Dollars.	Dollars.
Astor.....	162,650 00	8,200 00	50,871 60	19,500 00
Arctic.....	243,500 00	17,550 00	87,152 11	15,778 85
Atlantic (Br.).....	155,200 00	26,266 46	78,810 88	37,192 00
Ætna.....	202,100 00	17,250 00	86,589 89	24,000 00
Broadway.....	178,414 00	10,000 00	50,668 87	42,045 00
Beekman.....	208,280 00	26,740 00	66,880 51	27,404 00
Brooklyn (Br.).....	93,897 20	4,800 00	62,186 00	.....
Continental.....	508,256 00	127,500 00	186,376 58	105,518 41
Corn Exchange.....	194,850 00	41,700 00	146,617 90	48,177 17
Commonwealth.....	249,450 00	20,610 00	72,194 06	25,485 12
Clinton.....	257,400 00	24,300 00	43,540 97	19,284 13
City.....	251,350 00	11,000 00	84,009 17	101,788 84
Commercial.....	218,551 00	17,800 00	77,278 72	38,169 17
Columbia.....	195,600 00	80,800 00	40,718 05	17,608 69
Citizen's.....	126,045 12	9,500 00	81,455 96	104,574 90
Empire.....	199,500 00	26,250 00	43,178 17	40,081 13
East River.....	122,750 00	39,450 00	27,265 81	14,874 80
Excelsior.....	216,506 00	2,250 00	90,671 01	23,675 65
Eagle.....	238,410 54	56,550 00	74,120 17	96,778 65
Fulton.....	158,602 00	15,041 00	82,567 51	24,164 54
Firemen's.....	223,102 00	39,000 00	99,085 87	54,800 00
Grocers.....	209,456 00	80,000 00	42,385 91	26,167 26
Greenwich.....	210,851 00	.....	37,240 09	31,972 32
Home.....	470,000 00	194,300 00	383,292 50	204,606 85
Harmony.....	159,936 00	19,350 00	70,594 95	26,868 58
Hanover.....	152,800 00	22,700 00	41,801 00	24,911 07
Howard.....	249,400 00	80,900 00	174,500 00	97,000 00
Hamilton.....	118,104 00	.....	58,978 38	.....
Irving.....	200,650 00	49,500 00	52,597 08	32,250 85
Indemnity.....	136,080 00	6,000 00	.....	.....
Jefferson.....	297,000 00	11,000 00	77,722 48	100,362 06
Knickerbocker.....	230,129 50	7,000 00	58,008 43	47,600 00
Lorillard.....	216,650 00	28,300 00	71,446 36	40,209 02
La Farge.....	97,638 25	2,075 00	66,602 77	.....
Lenox.....	132,840 00	26,887 37	31,428 00	10,764 60
L. Island (Br.).....	204,865 00	82,150 00	70,308 78	100,000 57
Merchants.....	214,144 00	20,700 00	80,154 00	24,350 00
Market.....	208,900 00	39,900 00	89,485 28	49,000 00
Metropolitan.....	308,487 58	19,300 00	70,248 18	26,199 44
Mechanics.....	211,420 00	25,050 00	58,725 10	49,355 24
Manhattan.....	298,575 00	49,100 00	105,543 67	60,808 16
Mercantile.....	208,916 67	25,400 00	54,537 12	40,429 68
Niagara.....	212,900 00	89,740 75	78,322 78	58,888 11
New Amsterdam.....	211,600 00	24,400 00	74,590 92	37,971 41
Nassau.....	149,200 00	25,600 00	44,065 81	40,265 75
North River.....	375,800 00	10,700 00	68,980 79	54,445 72
North American.....	265,748 11	18,000 00	54,786 81	32,524 21
National.....	261,720 00	20,100 00	79,059 67	106,614 00
N. Y. Bowery.....	316,600 00	65,460 00	69,004 27	108,000 00
N. Y. Equitable.....	254,100 00	55,250 00	102,684 86	81,474 29
New York.....	190,130 00	10,285 00	77,996 91	80,000 00
Park.....	196,984 00	13,990 00	54,481 91	7,000 00
Pacific.....	185,987 00	41,450 00	90,281 49	26,514 00
People's.....	137,125 00	23,050 00	49,585 59	24,072 76
Peter Cooper's.....	144,861 00	21,250 00	29,246 91	20,167 48
Phoenix.....	201,961 00	46,600 00	78,160 06	57,289 80
Republic.....	174,850 00	14,500 00	57,920 64	36,609 61
Rutger's.....	172,519 00	2,200 00	66,159 71	31,291 83
Relief.....	131,200 00	38,553 00	51,740 00	21,500 00
St. Nicholas.....	114,400 00	12,607 00	67,949 50	.....
St. Mark's.....	170,710 00	900 00	55,996 16	25,000 00
Stuyvesant.....	199,446 00	18,011 50	47,207 53	30,060 57
Security.....	201,900 00	10,000 00	.....	.....
United States'.....	237,850 00	10,500 00	54,416 46	40,692 00
Washington.....	213,636 07	36,280 00	88,998 79	48,220 52
Williamsb. city.....	160,800 00	24,200 00	56,819 00	40,727 09

Of Adjustment and Loss.—Insurers against fire are not held to pay for loss of profits, gains of business, or other indirect and remote consequences of a loss by fire; we do not know, however, why profits may not be specifically insured against fire, where it is not forbidden by, or inconsistent with, the charter of the in-

surers. There is one wide difference between the principle of adjustment of a marine policy, and of a fire policy. In the former, if a proportion only of the value is insured, the insured is considered as his own insurer for the residue, and only an equal proportion of the loss is paid. Thus, if on a ship valued at \$10,000, \$5000 be insured, there is a loss of one half, the insurers pay only one half of the sum they insure, just as if some other party had insured other \$5000. But in a fire policy, the insurers pay in all cases the whole amount which is lost by the fire, provided only that it does not exceed the amount which they insure. It is said that general average clauses or provisions are inserted in fire policies in England, but are not known here. Still, in one case, the principle of general average was applied. Blankets were used by the assured, with the consent of the insurers, to protect the building from a near fire; they did this effectually, but were themselves made worthless, and an action by the insured against the insurers, for this loss, was sustained by the court.—*Ibid.*, p. 537.

Life Assurance.—It is curious to observe that life assurance, which has so favorable a bearing on our social and moral welfare, may be said to have originated from the study of the laws of chance, as observed in the experience of the gambler. It will be remarked, however, that the one is the very antithesis of the other. In life assurance, the individual is freed from risk by union for mutual protection with his fellow-men. The gambler takes the single risk upon himself, and his average, if he obtain it, can only arise from the duration of his play. In fact, the man who has the opportunity of assuring his life, and does not do it, is the gambler, taking the single risk upon himself.

That the one practice took its origin, however, from the observation of the other, there can be no doubt; the earliest mathematical publication on probabilities, being a little tract of Christian Huygens, written in Dutch, but afterward translated into Latin, and appearing under the title "*De Ratiociniis in Ludo Alex.*" in the *Exercitationes Geometricæ* of Francis Schooten, printed at Leyden, 1657. Two other mathematicians, however, who preceded Huygens, really laid the foundation of the science, although he wrote the first systematic treatise on the subject. We refer to the famous Pascal, and Fermat his friend, a magistrate of the Parliament of Toulouse. But as the history of the general doctrines of probabilities is given under that head, we must confine our remarks to the history of that doctrine as applied to the duration of life, and the progress of life computations.

It has been usual to commence the history of life contingencies with the little volume of "John Graunt, citizen of London," who published observations on the bills of mortality in 1662; but Mr. Hendriks has given the means of more remote speculation on the subject.

The practice in the days of Herodotus was to reckon three generations equivalent to a century, and the census of Vespasian, as noticed in Pliny, distinguished cases of extreme longevity. But we do not find any thing like an observation on the subject until we come to the calculations of the Prætorian præfect, Ulpianus, one of the most eminent commentators on the Justinian Code, who gave a table of the estimated present worth of life annuities, with reference to the requirements of the Falcidian law, which rendered it necessary to put a value on life-rents and other similar provisions. Ulpianus, however, took no account of interest, so that his calculations are more expectations of life than life annuities, and in that view Mr. Hendriks says, "The old Roman jurisprudence gave far more correct views of the comparative value of life at different ages than the moderns possessed, in a popular way, until nearly the close of the 17th century." Ulpianus's calculations (*Pandect*, 35-2-68), compared with

certain Swedish observations given by Dr. Price, are as follows:

Ages.	Stockholm life. Dr. Price.		Ages.	Expectations Male and female. Roman life. Ulpianus.
	Expectation of Males. Females.			
Birth.	14-25	18-10	Birth—20.....	30
5	31-05	37-12	20—25.....	28
10	30-00	36-59	25—30.....	25
15	26-74	33-43	30—35.....	22
20	23-55	30-01	35—40.....	20
25	21-40	26-80	40—41.....	19
30	19-42	23-98	41—42.....	18
35	17-53	21-62	42—43.....	17
40	15-61	19-25	43—44.....	16
45	13-73	17-17	44—45.....	15
50	11-95	15-12	45—46.....	14
55	10-30	12-89	46—47.....	13
60	8-69	10-45	47—48.....	12
65	7-39	8-39	48—49.....	11
70	5-81	6-16	49—50.....	10
75	4-09	4-39	50—55.....	9
			55—60.....	7
			60 and upward.	5

It seems abundantly evident that Ulpianus's estimate must have been based on actual observations in some form, but the Romans must have had a miserable chance of life in old age.

From that period we have nothing to attract attention till the 16th century, when Dr. (or Sir) Thomas Wilson, who died in 1581, published his *Discourse upon Usurie*, which contains illustrations of endowment transactions on the lives of children, but the life contingency portion seems merely incidentally introduced with reference to questions as to usury.

In 1661, M. Cleirac, the author of *Les us et Coutumes de la Mer*, notices the *Guidon*, "a French production, formerly compiled for the benefit of the merchants trading in the noble city of Rouen." This work is nearly 300 years old, its author's name is unknown, but it is a most curious document, in consequence of the reference it makes to assurance matters. From Mr. Hendriks we give the following translation, omitting Cleirac's notes:

"1. In other countries, where the bodies of people may be captured and reduced to bondage, there are various usages for the insurance of the body and life of men, whether they be of free condition, or slaves, which customs will not be mentioned here, because in France, men of whatsoever nation are of frank and free condition.

"2. Notice only will be taken of what is practiced in this country by those who undertake distant voyages, as to the coast of Italy, Constantinople, Alexandria, or other like voyages in the Mediterranean and Atlantic seas, on account of the fear which they have of the galleys, *fustes*, and frigates of the army of the Turk, or Corsairs, who make a traffic of the sale of Christians, whom they capture as well on sea as on land; which creates occasion for the masters and captains of this country, when they undertake such voyages, to stipulate with their merchant freighters, or others, for the restitution of their persons, in case they are captured; and this they can do even for the people of their crew.

"3. In such a case, the master must, in the policy, estimate his ransom, and that of his companions, at so much per head; declare the name of the ship, the stay or touchings which it will make, the duration of each stay, and to whom the ransom is payable. The insurer is bound to pay the sum insured for the ransom 15 days after verification and certification of the captivity, without waiting for the usual two months' delay; and without other formality of seeing freightage, bill of lading, or charter party, it will suffice to produce the attestation of capture and policy.

"4. Pilgrims going to the Holy Sepulchre of Jerusalem, or on other distant voyages, may effect insurance for their redemption, valued at a given amount. Description shall besides be made of their persons, names, surnames, country, abode, age, and rank; and,

moreover, limit shall be made as to within what time they undertake to make and accomplish the voyage: the longest period shall be of three years inclusive, tion whatsoever. In imitation of the preceding, those without admitting excuse of illness, or other detention undertake journeys or vows for a lengthened period, or a passage from one country to another, may insure for their ransom.

"5. Another kind of insurance is made by other nations upon the life of men, in case of their decease upon their voyage, to pay certain sums to their heirs or creditors. Creditors even may insure their debts, if their debtor remove from one country to another; the same can be done by those having rents or pensions, so as in case of their decease, to continue to their heirs such pension or rent as may be due to them. Which are all stipulations forbidden, as against good morals and customs, from which endless abuses and deceptions arose, whence they have been constrained to abolish and prohibit the said usages; which is also to be prohibited and forbidden in this country."

The most remarkable feature of these times was the condemnation of, and legislation against, the practice of assurance in many countries. Not only in France was it assumed unrecognizable by law, but in the Netherlands' ordinance of Philip II., and in the civil statutes of Genoa (1588), in which last it is declared that "securities, bonds, or wagers may not be made, without the license of the Senate, upon the life of the pope, nor upon the life of the emperor, nor upon the life of kings, cardinals, dukes, princes, bishops, nor upon the life of other lords or persons, in constituted dignities, ecclesiastical or secular. Neither may they be made upon the acquisition, loss, or change of lordships, governments, kingdoms, provinces, duchies, cities, lands, or places . . . nor upon any other transaction having the species or form of a bond, security, or wager (*vadimonii securitatis, seu partis*); but all are understood and are forbidden." The 24th article of the Amsterdam ordinance of 1598 prohibits insurance of the life of any person, and likewise wagers upon any voyage or frivolous purpose; and the Rotterdam ordinances of 1604 and 1635 repeat the latter injunctions. The 10th article (*Titre 6*), of the great French marine ordinance of Louis XIV., dated 1681, says, "We forbid the making of any insurance on the life of men;" but the 11th article excepts those who redeem captives, and guarantees the price of the redemption assured upon the persons, if the redeemed on his way back perish by other means than natural death. "Even later than the 17th century," adds Hendriks, "life insurance was regarded in France as obnoxious. In 1783, there remained a spirit of opposition to it. Emerigon, whose work on assurance comprises more than 1300 quarto pages, devotes one page to the subject of life assurance, and that short space to the purpose of attacking the system."

But we must now pass on to a more interesting period, when we are called on to consider the conflicting claims of great names, with reference to the origination and practical application of the doctrine of annuities, as derived from the study of the laws of chance or probability.

John de Wit, the grand pensionary of Holland, submitted to the States-General of Holland, in 1671, a treatise on the valuation of life annuities, and on the basis of that document, it was resolved to grant life annuities for the purpose of raising funds. This treatise Mr. Hendriks characterizes as "the first known production of any age treating in a formal manner of the valuation of life annuities," and the scientific world are much indebted to him for the restoration of this document, which was inserted in the resolutions of the States of Holland and West Friesland of the year 1671, and which had remained as good as lost for 180 years.

In the preparation of this document De Wit was no doubt aided by the preceding labors of Pascal,

Fermat, and Huygens, and he had no doubt the advantage of observations on the duration of life among persons to whom the States of Holland had previously granted annuities; but, independently of the originality of the design, we must give him the entire credit of having discovered a correct principle on which the value of a life annuity might be calculated.

De Wit's treatise is headed, "Value of Life Annuities in Proportion to Redeemable Annuities." He commences with pointing out the difference between a "redeemable annuity," as he terms it, at 4 per cent., that is a perpetuity at 25 years' purchase, or perpetual investment at 4 per cent., and a life annuity; estimating the value of the latter in the most favorable circumstances as "really not below, but certainly above 16 years' purchase." He then gives some preliminary observations on the doctrine of chances, and afterward applies the principle to the calculation of an annuity value at a particular age. His calculations are simplified and explained as follows by Mr. Hendriks:

"First, Out of 128 lives, aged say 3 years, 1 is supposed to die in every half year of the first 100 half years, or 2 per annum for 50 years, leaving 28 alive, aged 58 years, at the end of the term; out of whom 1 dies in every 9 months, being 0.66 per half year during the next 20 half years, or 1.33 per annum for 10 years, leaving 15.66 alive, aged 69 years, at the end of the second term; of whom 1 dies in every year for 10 years, being 0.5 per half year during the next 20 half years, leaving 5.66 alive, aged 73 years, at the end of the third term; of whom 1 dies in every year and a half for 7 years, being 0.33 per half year during the next 14 half years, leaving 1 alive, aged 80, at the end of the fourth term; which survivor does not live over another half year. Secondly, Out of the 128 lives, those who die in the respective half years between the ages of 3 and 80, will receive an annuity certain in half-yearly instalments, for a term equal in continuance to the number of completed half years elapsed between age 3 and the date of their death; therefore, the sum of the present values of half-yearly annuities certain, for the corresponding terms multiplied in the numbers dying within such respective terms, gives the present worth of all the annuities which will be enjoyed by the 128 lives, 1-128 of which represents the present value of the single life annuity at age of, say 3 years."

We have dwelt at some length on the discovery of De Wit, as it has not been available previously in any account given of the progress of life calculations, our best writers in this country, from the absence of any precise knowledge in regard to it, having passed it over with a slight notice. On the continent, however, the labors of De Wit have been more highly appreciated. The Marquis of Condorcet, in his *Discours Preliminaire*, gave him the credit of being "the first mathematician who thought of applying calculation to political questions." "It was he who first essayed to fix the rate of life annuities according to the probabilities of life given by the tables of mortality. Upon politics, upon the true interests of nations, upon the freedom of trade, he had very superior ideas to those of his age; and we may say that his premature death was a misfortune to Europe as well as to his country."

We can not conclude our notice of De Wit without mentioning the name of his fellow-laborer, if we may so term him, the Burgomaster Hudde. We had at one time rather a painful impression left on our mind, arising out of the terms of Hudde's certificate to the report of De Wit to the States-General, and other observations by Mr. Hendriks, but we are glad to find, from the correspondence subsequently brought forward, that they were fellow-laborers in the same field, and that Hudde himself was a man of science.

We have now to mention the first published work in which an attempt is made to form tables of mortality. We allude to the work of John Graunt, whose name has been already mentioned. It was published in 1662, and is the first book on the subject of life observations, as a distinct treatise. It is entitled, *Natural and Political Observations, mentioned in a following index, and made upon the Bills of Mortality*, by JOHN GRAUNT, citizen of London (afterward described in the fifth edition as "Captain John Graunt, F.R.S."). A century previous to the publication of this little volume, viz., on 1st January, 1562, the first register of burials was commenced in London, the necessity for the inquiry arising from the great mortality occasioned by the plague at that time. From that time the bills of mortality were kept at irregular intervals, according to the appearance and disappearance of the plague, but from 1603 the records were continued uninterruptedly. Graunt paid particular attention to these weekly returns, and, with a sagacious appreciation of their value, reduced the results into tables, "in order to the more ready comparing of one year, season, parish, or other division of the city." He analyzes the bills themselves, and draws certain conclusions with great adroitness, giving the first semblance of a table of mortality in the arrangement of deaths in decades. The work passed through five editions, the last under the superintendence of his relative Sir William Petty, who himself paid some attention to the subject, having published *Essays on Political Arithmetic concerning the People, Housings, etc., of London and Paris; Essay concerning the Multiplication of Mankind, and the Growth of the city of London; Observations on the Dublin Bills of Mortality, etc.; and Discourse on Duplicate Proportion*, read before the Royal Society, 1674.

From this time till 1693, when the celebrated Dr. Halley's investigations and calculations appeared, there is little to attract attention. A set of tables was published during this interval, entitled, *Tables for Renewing and Purchasing of the Leases of Cathedral Churches and Colleges, etc.*; also *Tables for Renewing and Purchasing of Lives, etc.*, bearing the imposing title of "Sir Isaac Newton's Tables;" but we learn from Mr. Edwin James Farren's historical *Essay on the Rise and Early Progress of the Doctrine of Life Contingencies in England*, that Sir Isaac Newton being then at Cambridge (Lucasian Professor *vice* Barrow), it appears to have been thought politic to obtain his sanction or imprimatur as to the correctness of the tables, and "his original cognizance of the work appears to have been to merely confirm the (Q.E.D.) correctness of a single table relative to the established usage of renewing college leases."

In No. 196 of the *Philosophical Transactions*, 1693, Dr. Halley published the result of his investigations under the following title: "An Estimate of the Degrees of Mortality of Mankind, drawn from curious Tables of the Births and Funerals at the city of Breslau, with an attempt to ascertain the price of Annuities upon Lives, by E. Halley, R.S.S."—E. B.

Additional information will also be found in the *Actuarial Tables* of W. T. Thomson, F.R.S.E., 1853, and in the very valuable *Tables and Formulas for the Computation of Life Contingencies*, of Mr. Peter Gray, published in 1849. In conclusion, the names of Edward Sang, Peter Hardy, Samuel Brown, Charles Jellicoe, William Wood, William Orchard, and B. H. Todd, may be selected for special notice from the long list of calculators who have advanced various departments of the science. Much valuable information on the subject will also be found in the *Assurance Magazine*; the *Reports of the Registrar-General*; and in the *Evidence given before the House of Commons*, in 1843, on Joint Stock Companies, and in 1858, on Assurance Associations. The evidence on Friendly Societies will also be found interesting.—E. B. See INTEREST and ANNUITIES.

The following summary of the plan of operation and condition of the Mutual Life Insurance Company of New York, is given to show the state of life insurance in the United States. This Company is the largest and one of the best managed in the country; and its condition may, therefore, be taken as a fair exponent of the others, and shows clearly to the insurers the safety of their policies.

Mutual Life Insurance Co., N. Y.—It will be perceived by the statement following that there have been issued in the past year (1856) 2,041 policies, amounting to \$5,878,457, being a net increase in policies of 1,016, and in amount of insured of \$3,119,902. The cash receipts have been \$1,045,235 17; the increase of investments on bonds and mortgages has been \$555,562 14, and the entire net increase \$610,749 94, irrespective of the items of interest accrued, and deferred premiums, which are not estimated. Total assets, \$3,787,945 76. The loans are at 7 per cent. interest. Aggregate amount of loans, May 1, 1856, \$3,187,858 56.

Securities.—Value of lands mortgaged, \$5,009,415; value of improvements thereon, \$3,513,650; aggregate value of mortgaged property, \$8,523,065.

Collaterals.—Policies of fire insurance, assigned or made payable, in case of loss, to the Company, \$1,702,636 85; personal guaranties to a considerable amount, say \$200,000. Total amount of securities, \$10,425,701. It will thus be seen that the value of the mortgaged property is more than twice and a half the amount of the loans they are intended to secure. These securities are fortified by collateral policies of fire insurance to the amount of \$1,702,636. The following schedule of the predicted losses by the tables, and the actual losses for the past 14 years, has been prepared by the Actuary:

A COMPARATIVE TABLE OF THE PROBABLE AND ACTUAL NUMBER OF DEATHS AND LOSSES, ACCORDING TO THE LIFE TABLE OF THE MUTUAL LIFE INSURANCE CO. OF NEW YORK.

Year.	Probable No. of deaths.	Probable amount of losses.	Number of deaths.	Actual amount of losses.
1843....	2-96	\$11,461	..	..
1844....	7-72	29,708	5	\$18,000
1845....	15-55	54,590	7	18,100
1846....	24-96	80,485	28	69,400
1847....	38-67	107,017	20	71,150
1848....	44-37	140,495	27	94,200
1849....	56-81	174,608	64	175,950
1850....	67-61	200,827	71	154,640
1851....	72-48	214,350	50	166,600
1852....	76-56	229,729	68	206,100
1853....	83-59	255,048	71	207,200
1854....	92-44	289,921	85	281,500
1855....	100-75	317,581	80	267,850
1856....	113-56	362,639	75	264,255
Total	793-03	\$2,471,359	655	\$1,994,945

In the above table the second column shows the probable number of deaths, according to the mortality tables now used in the United States. The third column represents the amount of such losses, whereas the fourth and fifth columns show the actual results in a business of 14 years. In none of these years has the Company lost the full amount called for in its tables.

But it must be borne in mind that life insurance is only in its infancy in this country, and that full 30 years must elapse before we can calculate results with any degree of certainty.

FOURTEENTH ANNUAL STATEMENT FOR THE YEAR ENDING 31st JANUARY, 1857.

RECEIPTS.
For premiums and interest, 1856..... \$1,045,235 17

DISBURSEMENTS.
Paid claims by death and expenses..... \$434,485 28

Not increase of assets during the year..... \$610,749 94

Not assets 31st January, 1856..... \$177,195 82

Total net assets 31st January, 1857..... \$3,787,945 76

Number of policies issued during the year..... 2,041

Amount insured by the same..... \$5,878,457 00

Number of policies in force 1st of February, 1857..... 9,794

The following is the division of the country into classes, showing the rates charged:

1. In the United States, north of the southern lines

of Virginia and Kentucky (except within 10 miles of the Mississippi and Missouri Rivers, between 36° 30' and 40° north latitude); in the interior of North Carolina, from the coast; in Tennessee, except within 50 miles of the Mississippi River; and in British North America. All to be east of the 100th meridian of longitude west from Greenwich.

2. *Additional Rates.*—Residences within 10 miles of the Mississippi and Missouri Rivers, between 36° 30' and 40° north latitude, $\frac{1}{2}$ per cent. The United States, south of the southerly line of Virginia and Kentucky, and north of the 32d degree of north latitude, except on the Mississippi River (east of the 100th meridian of west longitude), from 1st July to 1st November, for acclimated persons, $\frac{1}{2}$ per cent.

3. The United States, south of the 32d degree of north latitude (east of the 100th meridian west longitude), from 1st July to 1st November, for acclimated persons, 2 per cent. Acclimation is only deemed complete when the party has had the yellow fever.

4. Upper California, Oregon (except those engaged in mining), Australia (with similar restriction), China, Philippine Islands, and Sandwich Islands, for residence, 1 per cent. For South America, West Indies, East Indies, and other parts of the world not mentioned, rates will be named at the office corresponding with the risks, except in places prohibited.

5. Voyages and trips to and from California and Oregon, 1 per cent.; round the world, 2 per cent. Other voyages subject to special contract at this office. Master mariners and sea-faring men are taken at rates of premium graduated to the risk of the particular trade in which they may be engaged. The conditions as to voyages in such class are applicable to time of peace only, an additional rate being charged in time of war, if the risk of war should be taken by the Co.

Military and naval men are not protected when engaged in actual warfare; but if regularly called into actual service, and dying thereby, the Company will consider said death, under such circumstances, as a tender of their policy to the Company, and will pay the same value therefor as if surrendered by sale. Persons engaged in military corps are not held to come under military conditions, except in the event of foreign invasion.

Persons passing from one class to another.—Persons insured, who pass from a class where the risk is smaller to one which is greater, must apply at the office, and pay the enhanced premium. Persons coming from a class where the risk is greater, to where it is less, will commence to pay the reduced premium when the next renewal premium becomes due, should the extra premium be taken off. But where the health and constitution have become impaired by said residence, the extra premium will not be taken off. All reductions of the extra premiums charged, must be made at the office.

Acclimation for the purpose of life insurance is obtained, 1. By birth and continued residence in the place where insurance is sought. 2. By long continued summer residence, and during the season when and where epidemic and endemic diseases prevail. 3. By having had the disease incident to the climate or locality. 4. Acclimation against yellow fever is not considered complete unless the party has had it, and has continued since to reside in places where it is epidemic.

Rates for Insurance.—The rates adopted by this Company have been formed on the most correct observations which now exist, as to the duration of life at the different places where we insure. We believe that these rates can not be safely reduced, and that any attempt to do it, with the present limited experience in life insurance in this country, would evince a recklessness of results which would justly cost any Company which should attempt it, the withdrawal of the confidence of all who are conversant with the science and principles upon which this business is based.

THE RATES OF ASSURANCE OF ONE THOUSAND DOLLARS ON A SINGLE LIFE, FOR THE WHOLE CONTINUANCE THEREOF.

Age.	Quarterly payments for life.	Semi-ann. payments for life.	Annual payments for life.	Annual payments for 10 yrs.	Annual payments for 5 years.	In one payment.
14	8 77	7 48	14 71	88 49	57 68	254 59
15	8 88	7 68	15 11	84 18	58 86	259 69
16	8 98	7 89	15 52	84 59	60 05	264 88
17	4 09	8 11	15 94	85 62	61 27	270 16
18	4 20	8 33	16 38	86 85	62 51	275 58
19	4 32	8 56	16 83	87 11	63 78	280 99
20	4 44	8 80	17 30	87 87	65 07	286 56
21	4 56	9 05	17 78	88 66	66 38	292 23
22	4 69	9 30	18 28	89 45	67 72	298 00
23	4 82	9 56	18 80	90 27	69 08	303 88
24	4 96	9 84	19 34	91 10	70 48	309 87
25	5 10	10 12	19 89	91 95	71 89	315 97
26	5 25	10 41	20 47	92 82	73 35	322 20
27	5 41	10 72	21 07	93 71	74 83	328 55
28	5 57	11 04	21 70	94 62	76 34	335 03
29	5 73	11 37	22 35	95 55	77 88	341 64
30	5 91	11 71	23 02	96 51	79 46	348 38
31	6 09	12 07	23 78	97 48	81 07	355 26
32	6 28	12 45	24 47	98 48	82 72	362 29
33	6 47	12 84	25 23	99 50	84 41	369 46
34	6 68	13 24	26 03	100 55	86 12	376 78
35	6 89	13 67	26 87	101 62	87 89	384 26
36	7 12	14 12	27 75	102 72	89 70	391 90
37	7 36	14 59	28 67	103 86	91 55	399 71
38	7 61	15 08	29 64	105 02	93 44	407 70
39	7 87	15 60	30 66	106 21	95 38	415 87
40	8 14	16 14	31 73	107 45	97 37	424 23
41	8 43	16 72	32 86	108 72	99 41	432 79
42	8 74	17 32	34 05	110 03	101 51	441 54
43	9 06	17 96	35 30	111 38	103 66	450 49
44	9 40	18 64	36 63	112 78	105 87	459 66
45	9 76	19 35	38 04	114 24	108 15	469 08
46	10 14	20 11	39 53	115 74	110 49	478 62
47	10 55	20 92	41 11	117 31	112 91	488 41
48	10 98	21 77	42 78	118 92	115 39	498 47
49	11 43	22 66	44 55	120 59	117 92	508 49
50	11 91	23 61	46 42	122 31	120 51	518 75
51	12 42	24 62	48 39	124 08	123 15	529 15
52	12 95	25 69	50 49	125 89	125 85	539 68
53	13 52	26 82	52 71	127 81	128 61	550 86
54	14 18	28 02	55 07	129 78	131 44	561 17
55	14 77	29 29	57 58	131 84	134 34	572 12
56	15 46	30 65	60 25	133 98	137 82	583 19

THE RATES OF ASSURANCE OF ONE THOUSAND DOLLARS ON A SINGLE LIFE, FOR A TERM OF YEARS.

Age.	On a policy for 7 years.			For 5 yrs.	For 2 yrs.	For 1 year.
	Quarterly payments.	Semi-ann. payments.	Annual payments.	Annual payments.	Annual payments.	Annual payments.
14	2 00	8 97	7 80	7 60	7 23	7 18
15	2 06	4 09	8 03	7 82	7 50	7 89
16	2 12	4 21	8 27	8 05	7 72	7 61
17	2 18	4 38	8 51	8 28	7 95	7 88
18	2 25	4 45	8 75	8 52	8 18	8 06
19	2 31	4 58	9 00	8 77	8 41	8 30
20	2 38	4 71	9 26	9 02	8 66	8 53
21	2 44	4 85	9 58	9 28	8 91	8 79
22	2 51	4 99	9 80	9 55	9 17	9 05
23	2 59	5 13	10 08	9 82	9 43	9 81
24	2 66	5 27	10 37	10 10	9 70	9 57
25	2 74	5 42	10 66	10 38	9 97	9 88
26	2 82	5 58	10 97	10 68	10 25	10 11
27	2 90	5 74	11 29	10 99	10 55	10 40
28	2 98	5 91	11 62	11 31	10 85	10 70
29	3 07	6 08	11 96	11 64	11 17	11 01
30	3 16	6 26	12 31	11 98	11 49	11 83
31	3 25	6 45	12 67	12 33	11 83	11 65
32	3 35	6 64	13 04	12 69	12 18	12 01
33	3 45	6 83	13 43	13 07	12 53	12 86
34	3 55	7 04	13 83	13 46	12 90	12 71
35	3 66	7 25	14 25	13 86	13 28	13 10
36	3 77	7 47	14 69	14 28	13 68	13 48
37	3 89	7 70	15 14	14 71	14 09	13 88
38	4 01	7 95	15 62	15 17	14 51	14 30
39	4 14	8 20	16 13	15 65	14 96	14 73
40	4 28	8 48	16 66	16 15	15 43	15 19
41	4 43	8 77	17 25	16 69	15 92	15 67
42	4 59	9 10	17 89	17 26	16 43	16 13
43	4 77	9 46	18 59	17 89	16 99	16 71
44	4 97	9 85	19 36	18 58	17 57	17 28
45	5 18	10 23	20 21	19 36	18 21	17 88
46	5 42	10 75	21 13	20 22	18 94	18 55
47	5 68	11 27	22 15	21 17	19 79	19 36
48	5 96	11 83	23 24	22 20	20 71	20 24
49	6 26	12 42	24 42	23 30	21 71	21 21
50	6 59	13 06	25 67	24 43	22 79	22 25
51	6 94	13 75	27 08	25 74	23 93	23 37
52	7 31	14 50	28 50	27 09	25 15	24 54
53	7 72	15 31	30 10	28 56	26 46	25 81
54	8 17	16 20	31 84	30 16	27 86	27 15
55	8 66	17 18	33 76	31 90	29 39	28 62
56	9 20	18 25	35 87	33 83	31 00	30 21

Life insurance in the United States is as yet in its infancy, as far as regards the *science*, but the practice is rapidly gaining favor with all classes of the community, and the number availing themselves of its benefits in this country are daily increasing. Statistics of life and mortality are the foundation upon which the science of life insurance is erected, and reliable information regarding the relative value of life in different climates and at each age is of the greatest importance to a life company, in order to prosecute its business successfully. In Great Britain this information is obtained from two sources, viz., the experience obtained each year among the companies themselves; and, secondly, from the reports of the registrar-general which are annually made to Parliament. From the comparatively small area of the British Isles, and the excellent system of appointments by the government of its scientific men, great advantage is derived. The decennial census of Great Britain is taken in *one day*, which at once eliminates one of the most fruitful sources of error; and by having a registrar and corps of assistants in his office regularly educated and trained, a perfect system is adopted; and thus we have in their reports a mass of reliable, interesting, and valuable information which can nowhere else be obtained. Unfortunately, in the United States it is different. From the immense area of territory, embracing every variety of soil, climate, and physical configuration, it would be almost impossible, even if we had as perfect a system of registration as they have in England, to complete the enumeration of the census in a day, or even a few days.

For the tables of mortality upon which to determine the rates of premium to be charged for assurances upon lives, the American companies are entirely dependent upon European observations; and it is found by the experience of companies in this country, that the rate of mortality in Great Britain will very fairly represent that in the New England and Middle States. But in the Southern States and California it is very different. We have as yet no sufficient data for the determination of the relative mortality among residents of the different States in the Union; consequently, when a life company is called upon to insure the life of a person residing in the South or California, a sum is charged, in addition to the regular premium, for the increased risk in those climates, which is entirely arbitrary. Yet it has been shown in the report by the actuary of the experience of the Mutual Life Insurance Company of New York for ten years ending February 1, 1853, that the annual mortality among every 10,000 persons insured was as follows:

In the whole company	109
New England and Middle States	89
Western States	107
Southern States bordering on the Atlantic	127
" " " " Gulf	160
California	430

The experience of the company has also been computed since 1853, and will be published in 1858, which will include a period of fifteen years in the history of that company.

The following table is taken from the report of Dr. E. Barton, of New Orleans, to the president of the above company, on the relative mortality from yellow fever of persons from various parts of the world who emigrate to New Orleans. The table is an answer to the question, *What is the relative mortality between natives and strangers, American and European?*

Reply.—The answer to this must necessarily be twofold, viz.: 1st, in relation to the acclimated, and, 2d, the unacclimated. Of the first, the following table, with precise details of each nation and people, foreign and domestic, and from different latitudes, was made from the data furnished during the disastrous epidemic of 1853, this having been the most extensive and malignant yellow fever that ever occurred in New Or-

leans. This table was most carefully and laboriously compiled by myself, and is, I believe, the only one made that can furnish any reply to this most important question, and should be deemed a fair exponent of the general liabilities, as the greater should embrace the less.

TABLE SHOWING THE LIFE COST OF ACCLIMATION OR LIABILITIES TO YELLOW FEVER AS DERIVED FROM OR INFLUENCED BY NATIVITY, PER 1000 OF THE POPULATION.

Class.	From.	Per 1000.
1, 2.	New Orleans and the State of Louisiana	3-68
<i>Southern Slave States.</i>		
3.	Arkansas, Mississippi, Alabama, Georgia, and South Carolina	13-22
<i>Northern Slave States.</i>		
4.	Virginia, Maryland, Tennessee, Kentucky; and of this class of States, the largest mortality existed among those coming from Tennessee and Kentucky	80-09
<i>Northern States.</i>		
5.	New York, Vermont, Massachusetts, Maine, Rhode Island, Connecticut, New Jersey, Pennsylvania, and Delaware	52-83
<i>Northwestern States.</i>		
6.	Ohio, Indiana, Illinois, and Missouri	44-23
7.	British America	50-24
	General average in America	29-11
8.	West Indies, South America, and Mexico	6-14
9.	Great Britain	62-19
10.	Ireland	204-97
<i>North of Europe.</i>		
11.	Denmark, Sweden, and Russia	163-26
<i>Middle Europe.</i>		
12.	Russia and Germany	132-01
<i>Lower Western Europe.</i>		
13.	Holland and Belgium	323-94
<i>Mountainous Europe.</i>		
14.	Austria and Switzerland	220-08
15.	France	48-13
16.	Spain and Italy	22-06
	General average from European countries	146-45

The total liabilities, in passing through the acclimating process in New Orleans, in 1853, was to their respective population 60-56.

From this table it will appear, 1st, that liabilities to yellow fever exist (in relation to America) pretty much in proportion to increase of latitude; and, 2dly, by their *cold* moisture, so diametrically opposite in its effects on the constitution to *warm* moisture; and, above all, their personal habits of crowding into cheap and filthy dwellings, and the immigrants being of a low class, and the predominance of intemperance. The comparatively small mortality occurring in those from Great Britain arises from the fact of these immigrants being of a higher class of subjects.

From these remarks it will be seen that life insurance companies in this country must depend in a great measure upon the results of their own experience.

Something, however, has been added to vital statistics by individual States, particularly Massachusetts, New York, Maryland, and Kentucky; and there is no reason why these individual States, as well as the United States, should not have as complete a system of registration of births, marriages, and deaths, as they now have in Great Britain, and thereby give full and accurate statistics of the life and mortality of the country.

The reports of the six life insurance companies of New York, for the year 1857, show that the large sum of \$798,000 has been paid to the representatives of policy holders, and that their aggregate premiums, losses, and assets were severally as follow:

	Prem. and Inter. 1857	Losses. 1857.	Assets. 1857
Mutual Life Ins., N. Y.	\$1,146,000	\$317,000	\$4,488,000
Mutual Benefit Co.	690,000	207,000	2,743,000
N. Y. Life Ins. Co.	474,000	151,000	1,402,000
Manhattan Life Ins. Co.	312,000	57,000	606,000
U. S. Life Ins. Co.	154,000	58,000	430,000
Knickerbocker Ins. Co.	49,000	8,000	....
Total	\$2,846,000	\$798,000	\$9,669,000

—See *Bankers' Magazine*, 1856-'57; also JONES on *Life Annuities*; LEONE LEVY'S *Com. Law of the World*.

Interest is the annual sum or rate per cent. which the borrower of a capital agrees, or is bound, to pay to the lender for its use. "Interêt; loyer d'un capital prêt; ou bien, en termes plus exacts, achat des services productifs que peut rendre un capital" (*Say*, tom. ii., p. 480, ed. 4me). It was generally supposed, previously to the middle of the last century, that, in the event of all legislative enactments regulating the rate of interest being repealed, its increase or diminution would wholly depend on the comparative scarcity or abundance of money; or, in other words, that it would rise as money became scarce, and fall as it became more plentiful. But this opinion has been successfully controverted, first by Mr. Joseph Massie, in a tract published in 1750, entitled "An Essay on the Governing Causes of the Rate of Interest;" and, second, with better effect in Hume's Essay on Interest, in 1752. And it has been shown that the rate of interest in advanced communities is not determined by the abundance of the currency, but by the average rate of profit derived from the employment of capital. No doubt it most frequently happens that loans are made in currency; but this is of no consequence. There is obviously no substantial difference between A furnishing B with 100 bushels of corn, or 100 yards of cloth, to be repaid at the expiration of a specified period by the delivery of 104 or 105 bushels, or 104 or 105 yards, or with as much money, at 4 or 5 per cent., as would purchase the corn or cloth. And it is easy to perceive that, as crowds of passengers may be successively conveyed by the same carriage, so the same sum of money may serve to negotiate an infinity of loans. Suppose A lends to X \$1000, with which the latter buys from B an equivalent amount of commodities; that B, having no use for the money, lends it to Y, who pays it away for produce to C, who again lends it to Z, and so on. It is plain that X, Y, Z have received loans of commodities or produce from A, B, C worth *three* times (and they might have been worth 30 or 300 times) as much as the money employed in settling the transactions. According as the supply of currency, compared with the business it has to perform, is greater or less, we give a greater or less number of guineas or livres, notes or assignats, for the article we wish to obtain. It is not, however, by the fact of the price of such articles being high or low, but by the advantage or profit which the borrowers expect to derive from their possession, that the interest or compensation to be paid to the lenders for their use is determined. It may, perhaps, be supposed, in the case of goldsmiths and jewelers, that when the quantity of metallic money is increased, they will obtain the raw material of their business with greater facility. But this is not always the case; and though it were, it would not in any degree affect the rate of interest. No coins are ever sent to the melting-pot unless the currency be degraded or depreciated; that is, unless it be deficient in weight, or relatively redundant in quantity. And it is plain that the inducement to offer a high or a low rate of interest for loans of money, which it is intended to work up into plate or other articles, will not depend on the supply of such money, but on the profit to be derived from its conversion into goods—a circumstance wholly unconnected with the scarcity or abundance of coin.

It therefore appears that, speaking generally, the rate of interest depends on the profit that may be made by employing capital in industrious undertakings, and not on the price paid for the articles of which it consists. The latter are affected by every change in the value of money, whereas the former is little, if at all, affected by these changes, and is determined by the productiveness of industry. A low or a high rate of profit is uniformly accompanied by a high or low rate of interest. Money, as every one knows, is cheaper in the United States and in Australia than in England; but the ordinary rate of profit being higher, in-

terest, despite the lower value of money, is also higher. Extraordinary as it may seem, it is nevertheless true, that during the half dozen years ending with 1856, the current rate of interest in San Francisco, where bullion is so very abundant as to be almost a drug, has varied from $1\frac{1}{2}$ to 2 and 3 per cent. a month, or from 18 to 24 and 36 per cent. per annum. And though it were allowed that from a third to a half of this rate should be viewed as a premium to compensate the insecurity prevalent in California, still the residue would amount to three, four, or five times the ordinary rate of interest in England. In further corroboration of these statements we may mention, that the low rate of interest in Holland during the greater part of the 17th and whole of the 18th century, was not owing to any peculiar abundance or cheapness of money, but to the high rate of taxation, and the difficulty of investing capital with profit. And to this latter circumstance we owe the low rate of interest in this country toward the middle of last century, and at several later periods. It is not, in short, by the amount or value of the currencies of different countries, but by the means which they respectively enjoy for the profitable employment of capital or stock, that their profit and interest are governed.

That a rise or fall in the value of money can have no direct influence over interest is plain from the fact of the interest being itself paid in the money that has risen or fallen. But, at the same time, a sudden increase in the supply of money may undoubtedly have a temporary effect in depressing interest. Importers of bullion may not be able to lay it out advantageously in purchases, and may, in consequence, be disposed to have it coined and lent, though at a low rate. We incline, however, to think that the influence of considerations of this sort is but inconsiderable. Lenders will not take less for loans than the borrowers are willing to offer, and the offers of the latter must be determined not merely by the amount of money seeking investments, but partly also, and in a still greater degree, by the profit that may be made by its employment. When there is a rapid influx of money, loans for short periods are usually obtainable at low rates. This, however, is not generally the case with loans for lengthened periods. The lenders are willing to accept a reduced interest for a short term, till they can look about for some more profitable means of investment. But the interest on loans on mortgages, or for lengthened periods, is always proportioned to the rate of profit at the time; and, supposing the security to be unexceptionable, is but little affected by any thing else.

The profits made in industrious undertakings are, for the most part, distributed into *gross* and *net* profits. Thus, if from the total returns, whether annual or otherwise, obtained in any business or employment, we deduct all sorts of outlays necessarily incurred in carrying it on, including the wages or remuneration due to the undertakers for their skill and trouble in superintending the business, and a sum to compensate the risks provided against by insurance, the residue is the *net* profit of, or return to, the capital employed. And it is on this latter portion that interest depends, or rather with which it is usually identical. Lenders having nothing to do with the employment of capital, are not entitled to any peculiar advantage that may arise from it. But they are entitled to all that can fairly be considered as the return to the capital they have lent, after the risks, salaries, and necessary emoluments of those who undertake its employment are deducted; and this much, speaking generally, they will get, and no more. Whatever else may be realized by the employment of capital in industrial pursuits belongs to the borrowers, and forms the fund out of which they are remunerated. In coming to this conclusion, we are supported by the authority of Mr. Tooke. "The rate of interest," says he, "is the

measure of the nett profit on capital. All returns beyond this on the employment of capital are resolvable into compensations, under distinct heads, for risks, troubles, or skill, or for advantages of situation or connection." (Considerations on the State of the Currency, p. 12.) Whatever, therefore, may at any time occasion a sudden glut of money or capital may lower the rate of nett profit and interest. But that very circumstance, by increasing the demand for capital, will eventually raise the rate to its proper level; and the glut having disappeared, profits on interest will depend on the productiveness of industry.

Besides such variations as are proportioned to variations in the ordinary rate of profit, and which equally affect all loans, the rate of interest varies according to the security for the repayment of the principal and the duration of the loan. Hence the powerful influence which the character of the borrower, the purpose for which he borrows, and the nature of the business in which he is engaged, have over interest. Careful, skillful, and intelligent parties always borrow, *ceteris paribus*, on lower terms than those of an opposite description. The spendthrift, the idle, and the unskillful, can with difficulty obtain loans on any terms; and those who deal with them, and stipulate for a high rate of interest to cover their risk, frequently find that their guaranty is inadequate, and that they would have better consulted their own advantage by lending to respectable parties on the usual terms. The nature of the employment in which borrowers are engaged has also, as now stated, a powerful effect in determining the rate of interest. Wherever there is risk, it must be compensated. A sum lent on mortgage over a valuable estate is not exposed to any risk. But a sum lent to a manufacturer or a merchant engaged in a hazardous business, is exposed to a high degree of risk; and the interest payable on the latter, inasmuch as it must include a premium to compensate this extra risk, may be twice or three times as much as that paid on the mortgage.

We should mistake, however, if we supposed that this circumstance places those who carry on particularly hazardous businesses in a comparatively disadvantageous situation. Competition will not permit, taking every thing into account, a greater or a less amount of nett profit to be permanently obtained in one branch of industry than in another. The produce realized by those who engage in employments of more than ordinary hazard is generally sold at prices that yield the ordinary rate of profit, with a surplus sufficient to guaranty their stock against the extra risk to which it is exposed. Were it otherwise, every body would decline placing their property in a state of comparative danger, and undertakings of a hazardous nature would not be entered into. But it very frequently happens, that the manager of a hazardous branch of industry, paying from 10 to 12 per cent. for loans, realizes larger nett profits than the purchaser of an estate with money borrowed at 3 or 4 per cent.

Supposing the security to be equal, capital lent for a fixed and considerable period always fetches a higher rate of interest than that which is lent for short periods, or which may be demanded at the pleasure of the lender. There are but few modes of safely employing loans of which the duration is so uncertain, so that they are frequently worth very little; and hence the rate of interest is, in the majority of cases, in part at least, determined by the length of the loan; for, when that is considerable, it may be productively employed in a variety of businesses, in which it would not otherwise be prudent to invest it, at the same time that the borrower has time to prepare for its repayment. But this principle has only a slight influence over loans for terms beyond three, or, at most, five years; for a loan for either of these terms, but especially the latter, may be employed in a great variety of ways, and would bring nearly as much interest as it

would do were it for 10 or 12 years. It is further to be observed, that large classes of borrowers prefer the less interest which they get for advances at short dates to the higher rate which they might get were they for longer terms. Most people wish to have the full command of their capital. Merchants and manufacturers who lent on mortgage would in so far deprive themselves of the means of extending their business, and of speculating. And though sometimes, perhaps, this might be for their advantage, yet the flattering opinion which most people entertain of their own sagacity and good fortune, would but seldom permit them to doubt that it was a very serious disadvantage. Hence the low rates at which banking companies who pay the sums deposited with them on demand, and governments overwhelmed with debt are able to borrow. A stockholder's mortgage, or claim on the revenue of a country, may be immediately converted into cash at the current prices. And, however much the majority of the creditors of a deeply indebted country may be impressed with a conviction of its inability to discharge the various claims upon it, each individual, confident in his own good fortune and foresight, flatters himself that he, at all events, will foresee the coming tempest, and be able to sell out before a public bankruptcy.

It is evident, from these statements, that in addition to the security for loans and their duration, the rate of interest will, to a considerable extent, depend on the facilities afforded for enforcing or carrying out the stipulations in contracts. And hence a main cause of its reduction as society is more and more improved. Generally, it may be said that a speedy, cheap, and effectual process for securing the payment of debts, has a powerful tendency to lower—and a slow, costly, and ineffectual process, to raise—the rate of interest. In most countries, extraordinary means are taken to compel payment of bills; and this is a principal cause of the low rate at which they are commonly discounted. The easy enforcement of contracts constitutes, in truth, an important portion of the security for a debt. By a good security, is not meant a guaranty that a loan will ultimately be made good, but that it will be punctually paid when due; or, if the loan be of a kind that a little delay in its payment is usually given, that that delay will not be exceeded, and that it will be paid within the customary term. A security which should insure the final payment of a debt, but which should not insure its payment when due, or shortly thereafter, is not a good, but a bad security. It is indispensable to the transacting of business safely, cheaply, and expeditiously, that there should be as little doubt as possible either in regard to the payment of loans or the term when they are to be paid. If either of these points be doubtful, the lender will insist on an indemnity for the consequent risk. And it therefore appears that the summary proceedings taken to enforce payment of bills, and such like debts, are in truth and reality more for the advantage of the borrowers than of the lenders. They reduce the rate of interest; and the hardship, such as it is, which they occasionally inflict on the borrower, does not occur in one case out of five hundred; while their powerful influence in depressing interest tells in every case.

Greece.—In Greece the rate of interest was not regulated by law; and it consequently varied with all the causes of variation above alluded to. Generally, however, it was what we should reckon very high, amounting, in most cases, to from 10 to 18 per cent., and upward. This high rate of interest was not occasioned by a high rate of profit, but by the uncertainty of the laws, and the facilities which they afforded to fraudulent debtors to defeat the just claims of their creditors. The interest on money lent on *bottomry*, or on the security of the ship or cargo, or both, was rated at so much per voyage. It therefore depended on the place to which the ship was to sail, the season of the year,

the chance of meeting pirates or enemies' ships, etc. Usually it was extremely great, varying from 30 to 50 or 60 per cent. The bankers and money-lenders of Athens, though of low origin, being mostly freedmen or aliens, appear to have been considered as eminently trustworthy, and entitled to the public confidence. But they were, notwithstanding, quite as unpopular, and for no better reasons, as the Jews and Lombards of the middle ages. We are surprised that so learned a writer as Boeckh should have been so imbued with the vulgar prejudice against them as to state that they drew upon themselves "the merited hatred of all classes." He should have known that it has not been the covetousness of bankers, but that bad laws administered by interested judges, by making loans insecure, and driving parties of the highest respectability from the banking business, have been alone to blame for the exorbitant usury of ancient as well as of modern times. Had contracts been properly enforced, the probability is that interest would have been as low in Greece as in England.—BOECKH'S *Public Economy of Athens*, vol. i., pp. 164-191.

Attempts to limit the rate of interest have raised it.—Instead, however, of leaving the rate of interest to be adjusted by the free competition of the parties, on the principles thus briefly explained, or endeavoring to reduce it by facilitating the enforcement of contracts, most governments have interfered, either entirely to prohibit the taking of interest, or to fix certain rates which might be legally exacted, while any excess over them was declared to be *usury*, and prohibited under the severest penalties. In the ages in which these enactments had their origin, the precious metals were the only species of money, and were considered quite peculiar. Being used in a double capacity—as standards by which to ascertain the values of different articles, and as the equivalents for which they were most frequently exchanged—they acquired a factitious importance in the estimation, not merely of the vulgar, but of persons of the greatest discernment. The fact, that to buy and to sell is merely to barter one commodity for another, to exchange a quantity of corn, or cloth, or beef, for a quantity of gold or silver, and *vice versa*, was entirely overlooked. The attention was gradually transferred from the money's worth to the money itself. And the wealth of states and of individuals was not measured by the amount of their disposable produce, or by the quantity or value of the articles with which they could afford to purchase the precious metals, but by the quantity or value of these metals actually in their possession. For these and other reasons, money has been considered as a *merchandise par excellence*. And we need not, therefore, be surprised at the measures to which the prevalence of such exaggerated opinions almost necessarily led; or that vigorous efforts should have been made to protect those who were unprovided with so powerful an instrument from becoming a prey to their more fortunate neighbors. Individuals might freely dispose of their corn, cattle, land, etc. But it was supposed that the demand for money might be so great, as to enable the lenders, unless restrained in their exactions, to ruin the borrowers, and engross the whole property of the country.

Another cause of the prejudice against stipulating for interest grew out of the dislike entertained to accumulation. It is a consequence of economy, or of a saving of income; and this, in rude ages, is considered indicative of a sordid disposition, and as being positively hurtful. Prodigals and spendthrifts were long, and perhaps still continue to be, the favorites of the public. Before the nature and functions of capital were properly understood, it was believed that it could not be increased without injury to individuals, and that whatever advantage it might give to one party must occasion an equal disadvantage to others. Our ancestors did not know that those who, by their econ-

omy, accumulate stock, add to their own wealth, without diminishing that of any one else; nor did they know that, when expended, as is almost always the case, in the support of productive industry, this stock affords the means of producing an increased income. But reckoning, as they did, that the savings of individuals were so much withdrawn from income in which the public would otherwise have participated, it was natural enough that they should endeavor to limit the advantage derivable from their employment.

Much, also, of the prejudice against bargaining for interest, prevalent in the middle ages, may be traced to the authority of certain texts of Scripture, which were understood to prohibit its exaction. It is doubtful, however, whether, they will really bear that interpretation. And supposing that they did, nothing could be more irrational than to regard the municipal regulation of a people placed in such peculiar circumstances as the Jews, as general and fixed principles, applicable in all ages and countries. (MICHAELIS *On the Laws of Moses*, vol. ii., 336. English translation.) It is a remarkable fact that the famous reformer Calvin was one of the first to emancipate himself from the prejudices formerly so prevalent, especially among religious people, against taking interest. He comments as follows on the statement of Aristotle, that as money did not produce money, no return could be equitably claimed by the lender:—"Pecunia non parit pecuniam. Quid mare? quid domus, ex cujus locatione pensionem percipio? An ex tactis et parietibus argentum proprie nascitur? Sed et terra producit, et mari advehitur quod pecuniam deinde producat, et habitationis commoditas cum certâ pecuniâ parari commutative solet. Quod si igitur plus ex negotiatione lucri percipi possit, quam ex fundi cujusvis proventu: an feretur qui fundem sterilem fortassè colono locaverit ex quo mercedem vel proventum recipiat sibi, qui ex pecuniâ fructum aliquem perceperit, non feretur? et qui pecuniâ fundum acquirit, annon pecunia illa generat alteram annuam pecuniam? Unde verò mercatores lucrum? Ex ipsis, inquires, diligentia atque industria. Quis dubitet pecuniam vacuum inutilem omnino esse? neque qui à me mutuum rogat, vacuum apud se habere à me acceptam cogitat. Non erga ex pecuniâ illâ lucrum accedit, sed ex proventu. Illa igitur rationes subtiles quidem sunt, et speciem quandam habent, sed ubi propius expenduntur, seipsa concidunt. Nunc igitur concludo judicandum de usuris esse, non ex particulari aliquo Scripturæ loco, sed tantum ex æquitatis regulâ." Quoted by Dugald Stewart in his Notes to his *Preliminary Dissertation to the Encyclopædia Britannica*.

But, whatever may have led to the efforts so generally made to limit or suppress interest, it is abundantly certain that, instead of succeeding in their object, they had an opposite effect. If a borrower consider it for his advantage to offer 6, 7, or 8 per cent. for a loan (and otherwise he would not make the offer), why should the legislature prohibit him from offering, and the lender from receiving, more than 3, 4, or 5 per cent.? An interference of this sort, besides being uncalled for and unnecessary, is in a high degree prejudicial. Restrictive laws, instead of reducing, uniformly raise the rate of interest. They can not be so framed as to prevent borrowers from engaging underhand, to pay a higher rate of interest than is fixed by statute. And if the lenders had implicit confidence in the secrecy and solvency of the borrowers, they might accommodate them with the sums wanted, without requiring any additional interest, because of the illegality of the transaction. But cases of this sort are extremely rare. Gratitude, and a sense of benefits received, are but slender securities for honorable conduct. Numberless unforeseen events occur to weaken and dissolve the best cemented friendships; and a transaction of this kind would afford an additional source of jealousies and divisions. In such

matters, indeed, men are more than usually sharp-sighted, and are little disposed to trust to moral guarantees for the security of their property. But though neither the threatenings of the law, nor the inducements which it held out to dishonest debtors to recede from the stipulations into which they had entered, were able to prevent, or even greatly to lessen, what are termed *usurious bargains*, they rendered them more oppressive. They obliged the lenders to demand, and the borrowers to undertake to pay a rate of interest sufficient to yield the current rate of nett profit at the time, with a further sum to balance the risk of entering into what the law made an illegal transaction. This latter sum being, of course, proportioned to the greater or less magnitude of the risk to be provided against, it increased or diminished according as the laws for the prevention of usury were enforced or relaxed. Whenever, under the old system, the market rate of interest rose above the statutory rate, the free transfer of capital was obstructed. Parties could no longer look merely to their own advantage. And loans which might have been obtained for 6, 7, or 8 per cent., had there been no hazard from anti-usurious statutes, were raised, on its account, to 8, 10, and 12 per cent. It is, therefore, plain that if the means taken to put down usury were not wholly responsible for its existence, they, at all events, added largely to its amount.

These conclusions do not rest on theory only, but are supported by a wide and uniform experience. In Rome, during the republic, the ordinary rate of interest was excessively high. The debtors, or plebeians, were every now and then threatening to deprive their creditors, who were generally of the patrician order, not only of the interest, but of the principal itself. Repeated instances occurred to show that these were not mere empty threats; and the patricians indemnified themselves, by a corresponding premium, for the dangers to which they were exposed. "Des continuelles changements," says Montesquieu, "soit par des loix, soit par des plebiscites, naturaliserent à Rome l'usure; car les créanciers, voyant le peuple leur débiteur, leur législateur, et leur juge, n'eurent plus de confiance dans les contrats. Le peuple, comme un débiteur décrédité, ne tentoit à lui prêter que par des gros profits; d'autant plus que, si les loix ne venoient que de temps en temps, les plaintes du peuple étoient continuelles, et intimidoient toujours les créanciers. Cela fit que tous les moyens honnêtes de prêter et d'emprunter furent abolis à Rome, et qu'une usure affreuse toujours foudroyée, et toujours renaissante, s'y établit. Le mal venoit de ce que les choses n'avoient pas été ménagées. Les loix extrêmes dans le bien font naître le mal extrême: il fallut payer pour le prêt de l'argent, et pour le danger des peines de la loi."—*Esprit des Loix*, liv. xxii., c. 21.

In Mohammedan countries, notwithstanding the prohibition in the Koran, the ordinary rate of interest is at least three or four times as great as its ordinary rate in Europe. "L'usure augmente dans les pays Mahometans à proportion de la sévérité de la défense: le prêteur s'indemnise du péril de la contravention." *Ibid.*, liv. xxi., c. 19. During the middle ages, when interest was excessively high, the rate of profit was probably little, if at all higher than at present. But it should be observed that a very great majority of the loans of these ages were but little influenced by its amount. They were not made to be invested, but to be spent. The great barons and other landed proprietors were the principal borrowers. And in 19 out of every 20 instances, the sums which they borrowed were expended in the maintenance of crowds of idle retainers, in warfare, or in prodigalities of some sort or other. And while the borrowers belonged generally to what we should now call the spendthrift class, and there were no efficient means of compelling them to abide by their engagements, the lenders were but

few in number, and mostly Jews and Italians, the objects of the most unreasonable prejudices. Under such circumstances, it would be folly to suppose that the rate of interest should depend in any considerable degree on the rate of profit. The numbers, position, and character of the borrowers, compared with the fewness, position, and character of the lenders, and the risk to which the latter were exposed in entering into such transactions, occasioned the excessively high rate of interest. Of the 50 and even 100 per cent. which borrowers then frequently engaged to pay as interest, not more than 10 or 12 per cent. can properly be said to have been given for the productive services of loans. The rest must be considered as occasioned partly by the extreme scarcity of disposable capital and the carelessness of the borrowers, and partly, and principally, as a *bonus* to compensate the lenders for the imminent hazard of losing the principal.

England.—In England, as in most other countries, Christians were, after the Conquest, absolutely prohibited, both by the civil and the ecclesiastical law, from bargaining for interest. But as Jews, according to the Mosaic law (*Deuteronomy*, chap. xxiii., v. 20), were allowed to lend at an interest to a stranger, its exaction by them was first connived at, and subsequently authorized by law. And the same privilege was afterward extended to the Italian or Lombard merchants. In consequence of this exemption, many Jews early settled in England, and engrossed a large share of the trade of the kingdom. But despite their industry and general good conduct, the prejudices against them, and against the business in which they were mostly engaged, were so very strong that they and their families were regarded as slaves of the crown, by whom they were plundered, to an extent and under pretenses which would now appear incredible. To such an extreme, indeed, were these oppressive practices carried, that a particular office, called the *exchequer of the Jews*, was established, for receiving the sums extorted from them in fines, customs, tallages, forfeitures, etc. They were, in consequence, obliged to charge an enormous rate of interest, or, as Madox expresses it, "to fleece the subjects of the realm as the king fleeced them." (*Madox's History of the Exchequer*, vol. i., pp. 221–261, 4to, 1769.) And hence, while only from 7 to 10 and 12 per cent. interest was paid in countries where sounder principles prevailed, the rate charged in England was 3, 4, and even 5 times as great. At Verona, in 1228, the interest of money was fixed by law at 12½ per cent. Toward the end of the 14th century, the republic of Genoa paid only from 7 to 10 per cent. to her creditors; and the average discount on good bills at Barcelona, in 1435, is stated to have been about 10 per cent. But while interest in Italy and Catalonia, where a considerable degree of freedom was allowed to the parties bargaining for a loan, was thus comparatively moderate, it was, despite its total prohibition, incomparably higher in France and England. Matthew Paris mentions that, in the reign of Henry III., the debtor paid 10 per cent. every two months. And this, though impossible as a general practice, may not have been very far from the average interest charged on the few loans that were then contracted for. (*Hallam's Middle Ages*, vol. iii., p. 402.)

But in the end the disorders occasioned by this ruinous system became so obvious, that, notwithstanding the deeply-rooted prejudices to the contrary, a statute was passed in 1546 (37 Hen. VIII., cap. 7), legalizing interest to the extent of 10 per cent. per annum; because, as is recited in the words of the act, the statutes "prohibiting interest altogether have so little force, that little or no punishment hath ensued to the offenders." In the reign of Edward VI., the horror against interest seems to have revived in full force; for, in 1552, the taking of any was again prohibited, "as a vice most odious and detestable," and "contrary

to the word of God." But, in spite of this denunciation, the rate of interest, instead of being reduced, immediately rose to 14 per cent., and continued at this rate until, in 1571, an act was passed (13th Eliz., cap. 8), repealing the act of Edward VI., and reviving the act of Henry VIII., allowing 10 per cent. interest. In the preamble to this act it is stated, "That the prohibiting act of King Edward VI. had not done so much good as was hoped for; but that rather the vice of usury hath much more exceedingly abounded, to the utter undoing of many gentlemen, merchants, occupiers, and others, and to the importable hurt of the commonwealth." This salutary statute was opposed, even by those who should have known better, with all the violence of superstitious fanaticism. Dr. John Wilson, a man famous in his day, and celebrated for the extent of his learning, informed the House of Commons, of which he was a member, that "it was not the amount of the interest taken that constituted the crime; but that all lending for any gain, be it ever so little, was wickedness before God and man, and a damnable deed in itself, and that there was no mean in this vice any more than in murder or theft." To quiet the consciences of the bishops, a clause was inserted, declaring usury to be forbidden by the law of God, and to be in its nature sin, and detestable. This statute was limited to a period of five years; but, "forasmuch as it was, by proof and experience, found to be very necessary and profitable for the commonwealth of this realm," it was, in the same reign, made perpetual (39th Eliz., cap. 18).

In the 21st of James I., the legal rate of interest was reduced to 8 per cent., by an act to continue for seven years only, but which was made perpetual in the succeeding reign (3d Car. I., cap. 4). During the Commonwealth, the legal rate of interest was reduced to 6 per cent., a reduction which was afterward confirmed by the 12th Car. II. And, finally, in the reign of Queen Anne, a statute (12th Anne, cap. 16) was framed, reducing the rate of interest to 5 per cent., at which it stood till 1839. In the preamble to this statute, it is stated that, "whereas, the reducing interest to 10, and from thence to 8, and thence to 6, in the hundred, hath from time to time, by experience, been found very beneficial to the advancement of trade and the improvement of lands, it is become absolutely necessary to reduce the high rate of interest of 6 per cent. to a nearer proportion to the interest allowed for money in foreign States." It was for these reasons enacted, that all bargains or contracts stipulating for a higher rate of interest than 5 per cent. should be utterly void. And "that all persons who should after that time receive, by means of any corrupt bargain, loan, exchange, cheivance, or interest, of any wares, merchandise, or other thing whatever, or by any deceitful way or means, or by any covin, engine, or deceitful conveyance for the forbearing or giving day of payment, for one whole year, for their money or other thing, above the sum of £5 for £100 for a year, should forfeit, for every such offense, the treble value of the moneys or other things so lent, bargained," etc.

Scotland and Ireland.—In Scotland previous to the Reformation, no interest could be legally charged. But that great event, by weakening the force of those religious prejudices which had chiefly dictated the prohibition of interest, led to the adoption of more liberal opinions on the subject, and to the enactment of the statute of 1587 (11th Parl., Jac. VI. cap. 52), which legalized interest to the extent of 10 per cent. In 1633 the legal rate was reduced to 8 per cent., and in 1661 to 6 per cent. The statute of Anne, reducing the rate of interest to 5 per cent., extended to both kingdoms. The statutes prohibiting the taking of interest in Ireland were not repealed until 1635, when the statute 10th Car. I., cap. 22, gave liberty to stipulate for any rate not exceeding 10 per cent. In 1704 this rate was reduced to 8 per cent.; in 1722 it

was reduced to 7 per cent.; and in 1732 it was further reduced to 6 per cent.

France.—In France the rate of interest was fixed at 5 per cent. so early as 1665; and this, a few short intervals only excepted, continued to be the legal rate till the Revolution. Laverdy, in 1766, reduced it from 5 to 4 per cent. Instead, however, of the market rate being proportionally reduced, it was raised from 5 to 6 per cent. Previously to the promulgation of the edict, loans might have been obtained on good security at 5 per cent.; but an additional per cent. was afterward required to cover the illegality. This caused the speedy abandonment of the measure.* The same thing happened in Livonia in 1786, when the Empress Catherine reduced interest from 6 to 5 per cent. Hitherto, says Storch (*in loco citato*), those who had good security to offer were able to borrow at 6 per cent.; but thenceforth they had to pay 7 per cent. or upward. And such will be found to be invariably the case, when the legal is less than the market rate of interest.

It has been observed by Adam Smith, that the statutory regulations, reducing interest in England, were made with great propriety. Instead of preceding, they followed the fall which was gradually taking place in the market rate of interest, and, therefore, did not contribute, as they would otherwise have done, to raise that which they were intended to reduce. Sir Josiah Child, whose treatise, recommending a reduction of interest to 4 per cent., was originally published in 1668,† states, that the goldsmiths of London, who then acted as bankers, could obtain as much money as they pleased, upon their servants' notes only, at 4½ per cent. The supposed insecurity of the revolutionary establishment, and the novelty of the practice of funding, occasioned the payment of a high rate of interest for a large portion of the sums borrowed by the public in the reigns of William III. and Anne. But private persons, of undoubted credit, could then borrow at less than 5 per cent. During the reign of George II. the market rate of interest fluctuated from 3 to 4 and 4½ per cent.‡ Smith mentions that the increased means of profitably investing capital acquired during the war, terminated by the peace of Paris in 1763, raised the market rate of interest to a level with the statutory rate, or perhaps higher. But it was not until the subsequent European war that any very material or general inconvenience was found to result from the limitation of interest to 5 per cent.

It is necessary, however, to observe, that this remark applies exclusively to loans negotiated by individuals who could offer unexceptionable security; for, since the act of 1714, persons engaged in employments of more than ordinary hazard, or whose character for prudence and punctuality did not stand high, or who could only offer inferior security, were unable to borrow at 5 per cent., and were consequently compelled to resort to a variety of schemes for defeating or evading the enactments in the statute. The most common device was the sale of an annuity. Thus, supposing an individual whose personal credit was indifferent, and who had only the life-rent of an estate to give in security, wished to borrow, he sold an annuity to the lender sufficient to pay the interest stipulated for, which, because of the risks and odium attending such transactions, was always higher than the market rate, and also to pay the premium necessary to insure payment of the principal at the death of the borrower. It is curious to observe, that though the sale of an ir-

* Storch, *Traité d'Economie Politique*, tom. iii., p. 187.

† A second edition, very greatly enlarged, was published in 1690.

‡ On the 18th December, 1752, the 3 per cents. brought the highest price they have hitherto reached, namely, 106½ per cent. On the 20th of September, 1797, the day on which the failure of Lord Malmesbury's attempt to negotiate with the French republic transpired, consols fell to 47½, being the lowest price at which they have ever been sold.

redeemable life annuity, at a rate exceeding legal interest, was not reckoned fraudulent or usurious, yet, so late as 1748, Lord Hardwicke held that, in their less exceptionable form, or when they were *redeemable*, their sale could be looked upon in no other light than as an invasion of the statute of usury, and a loan of money.* But the extreme inexpediency of this distinction soon became obvious, and the law was changed. The great extension of the traffic in annuities, and the advantage of giving as much publicity as possible to such transactions, led to various inquiries and regulations respecting them in the early part of the reign of George III. In consequence, the sale of irredeemable annuities became nearly unknown; and it was ruled, that the sale of a redeemable annuity could not be impeached, though it appeared on the face of the deeds that the lender had secured the principal by effecting an assurance of the borrower's life.

During the greater part of the French revolutionary war, the usury laws operated to the prejudice of all classes of borrowers. The greater extent and high interest of the public loans, the facility of selling out of the funds, the regularity with which the dividends were paid, and the temptations to speculation arising from the fluctuations in the price of funded property, diverted so large a portion of the floating capital of the country into the coffers of the treasury, that it was next to impossible for private individuals to borrow at the legal rate of interest, except from the trustees of public companies, or through the influence of circumstances of a very peculiar nature. Hence, the proprietors of unencumbered freehold estates, of which they had the absolute disposal, were very generally obliged, when they had occasion for loans, to resort to those destructive expedients which had formerly been the resource only of spendthrifts and persons in desperate circumstances.

Committee on Usury Laws.—The evidence annexed to the "Report of the Committee of the House of Commons, in 1818, on the Usury Laws," sets their impolicy and pernicious influence in a clear light. Mr. Sugden, now Lord St. Leonard, stated that when the market rate of interest was above the legal rate, the landed proprietor was compelled to resort to some shift to evade the usury laws. He had "known annuities granted for three lives, at 10 per cent., upon fee-simple estates, unencumbered, and of great annual value, in a register county. He had also known annuities granted for four lives; and more would have been added, but for the danger of equity setting aside the transaction on account of the inadequacy of the consideration. Latterly, many annuities were granted for a term of years certain, not depending upon lives." On being asked whether, were there not laws limiting the rate of interest, better terms could or could not have been obtained, he answered, "I am decidedly of opinion that better terms could have been obtained; for there is a stigma which attaches to men who lend money upon annuities, that drives all respectable men out of the market. Some leading men did latterly embark in such transactions, but I never knew a man of reputation in my own profession lend money in such a manner, although we have the best means of ascertaining the safest securities, and of obtaining the best terms."

"The laws against usury," says Mr. Holland, of the house of Messrs. Baring Brothers and Company, "drive men in distress, or in want of money, to much more disastrous modes of raising it than they would adopt if no usury laws existed. The man in trade, in want of money for an unexpected demand, or disappointed in his returns, must fulfill his engagements, or forfeit his credit. He might have borrowed money at 6 per cent., but the law allows no one to lend it to

him; and he must sell some of the commodity he holds, at a reduced price, in order to meet his engagements. For example, he holds sugar which is worth 80s.; but he is compelled to sell it immediately for 70s. to the man who will give him cash for it, and thus actually borrows money at 12½ per cent, which, had the law allowed him, he might have borrowed from a money dealer at 6 per cent. It is known to every merchant that cases of this kind are common occurrences in every commercial town, and more especially in the metropolis. A man in distress for money pays more interest, owing to the usury laws, than he would if no such laws existed; because now he is obliged to go to some of the disreputable money-lenders to borrow, as he knows the respectable money-lender will not break the laws of his country. The disreputable money-lender knows that he has the ordinary risk of his debtor to incur in lending his money, and he has further to encounter the penalty of the law, for both of which risks the borrower must pay. If no usury laws existed, in common cases, and where a person is respectable, he might obtain a loan from the respectable money-lender, who would then only have to calculate his ordinary risk, and the compensation for the use of his money."

The committee admitted the force of this evidence by agreeing to the following resolutions: "1st. That it is the opinion of this committee, that the laws regulating or restraining the rate of interest have been extensively evaded, and have failed of the effect of imposing a maximum on such rate; and that, of late years, from the constant excess of the market rate of interest above the rate limited by law, they have added to the expense incurred by borrowers on real security, and that such borrowers have been compelled to resort to the mode of granting annuities on lives; a mode which has been made a cover for obtaining a higher rate of interest than the rate limited by law, and has further subjected the borrowers to enormous charges, or forced them to make very disadvantageous sales of their estates. 2d. That it is the opinion of this committee, that the construction of such laws, as applicable to the transactions of commerce as at present carried on, have been attended with much uncertainty as to the legality of many transactions of frequent occurrence, and consequently been productive of much embarrassment and litigation. 3d. That it is the opinion of this committee, that the present period, when the market rate of interest is below the legal rate, affords an opportunity peculiarly favorable for the repeal of the said laws."

In spite, however, of the recommendation of the committee, and the cogent evidence on which it was founded, the popular prejudice continued so strong, that it was not till 1859 that a statute was passed, the 2d and 3d Vict., cap. 87, which exempted all bills of exchange and promissory notes, not having more than twelve months to run, and all contracts for sums above £10 from the operation of the usury laws. It was supposed, or at all events argued, that the repeal of the usury laws would tempt such individuals as had money to lend, to indulge in those mean and discreditable practices which characterize the lowest class of money-dealers. But it was more reasonably contended, that in the event of the rate of interest being left to be adjusted by the free competition of the parties, there would be little employment for inferior dealers. Except when the market rate of interest was below the legal rate, the usury laws prevented all persons, whose credit was not extremely good, from obtaining loans from capitalists of the highest character, and forced them to have recourse to those who were less scrupulous. Supposing the market rate of interest to be 6 or 7 per cent., an individual in ordinarily good credit may, now that the usury laws are abolished, easily obtain a loan at that rate. But when the law declared that no more than 5 per cent. should be

* "Considerations on the Rate of Interest," by E. B. Sugden, Esq., Pamphleteer, vol. viii., p. 278.

taken, and, consequently, affixed a species of stigma to those lenders who bargained for a higher rate, the rich and more respectable capitalists being excluded from the market, borrowers were obliged to resort to those of an inferior character, who, in addition to the premium for the risk of entering into an illegal transaction, received an indemnification for the *odium* which, in such cases, always attaches to the lender. It is idle to attempt to secure individuals against the risk of imposition in pecuniary more than in any other species of transactions. And, although the object had been desirable, it could not be obtained by such inadequate means. The usury laws generated the very mischief they were intended to suppress. Instead of diminishing, they multiplied usurious transactions, and aggravated the evils they were designed to mitigate or remove.

Nothing can be more unreasonable than the clamor against money-lenders, because of their exacting a comparatively high rate of interest from prodigals and spendthrifts. This is the most proper and efficient check that can be put upon extravagance. Supposing the security of a prodigal and an industrious man to be nearly equal, and this is but seldom the case, the capitalist who lends to the latter in preference to the former, confers a service on the community. He prevents those funds which ought to be employed in supporting useful labor, and in adding to the public wealth, from being wasted in frivolous or pernicious pursuits.

But perhaps it will be said that this is mistaking the object of the usury laws; that they were not intended to force capitalists to lend to spendthrifts on the same terms as to industrious persons, but to protect the prodigal and unwary from the extortion of usurers, by making any stipulation between them for more than a given rate of interest null and void. But why all this solicitude about the least valuable class of society? Why fetter the circulation of capital among those who would turn it to the best account, lest any portion of it chance to fall into the hands of those who would squander it away? If the prevention of prodigality be of sufficient importance to justify the interference of the legislature, prodigals should be put under an *interdict*; for this is the only way in which it is possible to restrict them. It is not by borrowing money at high interest, but by contracting debts to dealers, on whose charge there is no check, that spendthrifts run through their fortunes. Bentham has justly observed, that so long as a man is looked upon as one who will pay, he can much more easily get the goods he wants than the money to buy them with, though he were content to give for it twice or three times the ordinary rate of interest. How contradictory, then, to permit prodigals to borrow (for it was really borrowing) the largest supplies of food, clothes, etc., at 20, 30, or even 100 per cent. interest, at the same time that we prohibited them, and every one else, from borrowing money at more than 5 per cent.? Instead of being of any service, this restriction was evidently injurious to the prodigal. It narrowed his choice, and drove him to a market where no disgrace is attached to the exaction of the most exorbitant interest, and where he could scarcely escape being ruined.

The outcry which is sometimes raised against capitalists for taking advantage of the necessities of industrious individuals, is seldom much better founded than that which is raised against them for taking advantage of the prodigal or simple. Parties borrow according to their character for sobriety, and punctuality in meeting their engagements, and according to the presumed state of their affairs at the time. To say that a capitalist takes advantage of the necessities of individuals, is, in most cases, equivalent to saying that he refuses to lend to persons in suspicious or necessitous circumstances on the same terms he would do were they in good credit, or were there no doubt of their

solvency. And were he to act otherwise, would he be considered fit to be intrusted with the management of his affairs?

But, as already seen, whatever may be the extortion of lenders, the usury laws did not check it. On the contrary, they compelled the borrowers to pay, over and above the common rate of interest, a *premium* to indemnify the lenders for the risks incurred in breaking them. They attempted to remedy what was not an evil, and what, consequently, should not have been interfered with; and in doing this, they necessarily created a real grievance. The wisdom of an act of Parliament which should compel the underwriters to insure a gunpowder magazine and a salt warehouse on the same terms, would not be very evident. Yet it would not be more absurd than to enact that the same rate of interest shall be charged on capital lent on good, on indifferent, and on bad securities. "It is in vain, therefore," to use the words of Locke, "to go about effectually to reduce the price of interest by law, and you may as rationally hope to set a fixed rate upon the hire of houses or ships, as of money. He that wants a vessel rather than lose his market, will not stick to have it at the market rate, and find means to do it with security to the owner, though the rate were limited by law; and he that wants money, rather than lose his voyage or his trade, will pay the natural interest for it, and submit to such ways of conveyance as shall keep the lender out of reach of the law." ("Considerations of the lowering of interest and raising the value of money, 1691," works, vol. ii., p. 7, 4to, 1777.) The case of Holland furnishes a striking proof of the correctness of the theory we have been endeavoring to establish. The rate of interest has been, for a very long period, lower in Holland than anywhere else in Europe; and yet it is the only country in which usury laws have been altogether unknown, where capitalists are allowed to demand, and borrowers to pay, any rate of interest. Strictly speaking, this applies only to the state of Holland previously to the revolution in 1795. The enactments of the Code Napoleon were subsequently introduced; but it appears, from the report of the Parliamentary Committee on the usury laws, that they have not been acted upon. Notwithstanding all the violent changes of the government, and the extraordinary disturbance of her financial concerns since 1790, the rate of interest in Holland has continued comparatively steady. During the whole of that period, persons who could offer unexceptionable security have been able to borrow at from 2 to 5½ per cent.; nor has the average rate of interest charged on capital advanced on the worst species of security ever exceeded 6 or 7 per cent., except when the government was negotiating a forced loan. But, in this country, where the law declared that no more than 5 per cent. should be taken, the rate of interest for money advanced on the best landed security varied, in the same period, from 5 to 16 or 17 per cent., or above five times as much as in Holland.

In France the usury laws were abolished at the Revolution; and it is stated that their abolition was not attended by any rise of interest.—STORCH, *Economie Politique*, tom. iii., p. 187. According to the Code Napoleon, only 6 per cent. is allowed to be charged on commercial loans, and 5 per cent. on those made on the security of real property. There is, however, no difficulty in evading the law. This is usually done by giving a *bonus* before completing the transaction, or, which is the same thing, by framing the obligation for the debt for a larger sum than is really advanced by the lender. None of the parties particularly interested can be called to swear to the fact of such *bonus* being given; so that the transaction is unimpeachable, unless a third party, privy to the settlement of the affair, be produced as a witness.—E.B. The reader is referred to M'CULLOCH'S *Essay on Interest and Exchange*, pub. in *Bankers' Mag.*, New York.

TABLES OF INTEREST AND ANNUITIES.

I.—TABLE SHOWING THE AMOUNT OF \$1 IMPROVED AT COMPOUND INTEREST, AT 3, 4, 4½, 5, 6, 7, 8, 9, AND 10 PER CENT., AT THE END OF EVERY YEAR FROM 1 TO 85.

Years.	3 per cent.	4 per cent.	4 1-2 per cent.	5 per cent.	6 per cent.	7 per cent.	8 per cent.	9 per cent.	10 per cent.
1	1.030000	1.040000	1.045000	1.050000	1.060000	1.070000	1.080000	1.090000	1.100000
2	1.060900	1.081600	1.092025	1.102500	1.123600	1.144900	1.166400	1.188100	1.210000
3	1.092727	1.124864	1.141166	1.157625	1.191016	1.225043	1.259712	1.295029	1.331000
4	1.125608	1.169858	1.192518	1.215506	1.262476	1.310796	1.360493	1.411531	1.464100
5	1.159274	1.216652	1.246181	1.276281	1.338225	1.402551	1.469322	1.538623	1.610510
6	1.194052	1.265919	1.302260	1.340095	1.418519	1.500730	1.586574	1.677100	1.771561
7	1.229872	1.315981	1.360861	1.407100	1.503630	1.605781	1.713824	1.828039	1.948717
8	1.266770	1.365569	1.422100	1.477455	1.593848	1.718186	1.850930	1.992562	2.143588
9	1.304773	1.423811	1.486095	1.551328	1.689487	1.838459	1.999004	2.171893	2.357947
10	1.343916	1.482044	1.552969	1.628894	1.790347	1.967151	2.158925	2.367368	2.598742
11	1.384233	1.539454	1.622853	1.710339	1.898298	2.104351	2.331639	2.580426	2.853116
12	1.425760	1.601032	1.695881	1.795581	2.012196	2.252191	2.518170	2.812664	3.138428
13	1.468538	1.665078	1.772196	1.885649	2.132928	2.409845	2.719623	3.065504	3.452271
14	1.512589	1.731676	1.851944	1.979081	2.269093	2.575834	2.937193	3.341727	3.797498
15	1.557967	1.800948	1.935282	2.075923	2.396558	2.759081	3.172169	3.642482	4.177248
16	1.604706	1.872981	2.022370	2.182574	2.540351	2.952163	3.425942	3.970805	4.594972
17	1.652477	1.947900	2.113376	2.292018	2.692772	3.155815	3.700018	4.327638	5.054470
18	1.702433	2.025816	2.208478	2.406619	2.854339	3.379932	3.996019	4.717120	5.559917
19	1.753606	2.106499	2.307360	2.526950	3.025599	3.616527	4.315701	5.141661	6.115909
20	1.806111	2.191128	2.411714	2.653297	3.207135	3.869654	4.660957	5.604410	6.727439
21	1.860294	2.278768	2.520241	2.785692	3.399563	4.140562	5.038833	6.108807	7.400249
22	1.916103	2.369913	2.633652	2.925260	3.603537	4.430401	5.435540	6.658600	8.140274
23	1.973586	2.464715	2.752166	3.071523	3.819749	4.740529	5.871463	7.257874	8.954302
24	2.032794	2.563304	2.876013	3.225099	4.048934	5.072966	6.411180	7.911088	9.840732
25	2.093777	2.665886	3.005434	3.385854	4.291870	5.427432	6.848475	8.623080	10.834705
26	2.156591	2.772469	3.140679	3.555072	4.549882	5.807352	7.389353	9.399157	11.915176
27	2.221289	2.883363	3.282009	3.734566	4.822345	6.213867	7.988061	10.245082	13.109994
28	2.287927	2.998708	3.429699	3.920129	5.111686	6.648388	8.627106	11.167139	14.420993
29	2.356565	3.118651	3.584036	4.116135	5.418387	7.114257	9.317274	12.172182	15.863992
30	2.427262	3.243397	3.745318	4.321942	5.743491	7.612255	10.026565	13.267678	17.434902
31	2.500000	3.373133	3.913357	4.538039	6.088100	8.145112	10.867669	14.461769	19.194342
32	2.575082	3.508058	4.099351	4.764941	6.453386	8.715270	11.738708	15.763828	21.13776
33	2.652335	3.648381	4.274080	5.003188	6.840589	9.323389	12.676049	17.152026	23.225154
34	2.731905	3.794316	4.463631	5.253347	7.251025	9.975113	13.690138	18.724410	25.547669
35	2.813862	3.946088	4.667347	5.516015	7.686066	10.676581	14.785344	20.413967	28.124366
36	2.898273	4.103992	4.877378	5.791816	8.147252	11.423942	15.968171	22.251225	30.912680
37	2.985226	4.268089	5.096360	6.081406	8.636087	12.223618	17.253625	24.253385	34.003894
38	3.074788	4.438813	5.326219	6.385477	9.154252	13.079271	18.625275	26.436690	37.404343
39	3.167026	4.616365	5.565899	6.704751	9.708507	13.994820	20.115297	28.815081	41.144777
40	3.262037	4.801020	5.813364	7.039988	10.285717	14.974457	21.724521	31.409320	45.259255
41	3.359898	4.993061	6.078100	7.391383	10.902361	16.022669	23.462483	34.236267	49.758151
42	3.460695	5.192738	6.351615	7.761557	11.557032	17.144256	25.339481	37.317531	54.678699
43	3.564516	5.400495	6.637438	8.149666	12.250454	18.344354	27.366640	40.676109	60.040069
44	3.671452	5.616515	6.936122	8.545150	12.985481	19.623459	29.559971	44.336959	66.264076
45	3.781595	5.841175	7.248248	8.958007	13.764610	21.002451	31.920449	48.327286	73.409488
46	3.895048	6.074322	7.574419	9.384253	14.590497	22.472623	34.474085	52.677671	81.795932
47	4.011895	6.317315	7.915268	9.930571	15.465916	24.045707	37.232012	57.417648	91.474581
48	4.132251	6.570528	8.271455	10.401269	16.398871	25.728906	40.210573	62.555237	102.71233
49	4.256219	6.833949	8.643671	10.921333	17.377504	27.529929	43.427418	68.217008	115.671867
50	4.383396	7.106388	9.028236	11.467399	18.420154	29.457025	46.901612	74.337520	130.890552
51	4.515423	7.390050	9.439104	12.040769	19.525363	31.519016	50.653741	81.049696	129.129988
52	4.651855	7.685858	9.863464	12.642408	20.696858	33.723347	54.706040	88.844169	142.242931
53	4.790412	7.994052	10.307738	13.274948	21.938698	36.086122	59.085244	96.295144	156.247225
54	4.931214	8.313114	10.771536	13.936606	23.255020	38.612150	63.809126	104.961707	171.171947
55	5.074348	8.643636	11.256308	14.635630	24.650321	41.315001	68.913856	114.082621	188.099142
56	5.220618	8.992221	11.762482	15.367412	26.129340	44.207051	74.426964	124.766005	207.965056
57	5.3701651	9.351910	12.292169	16.135738	27.697101	47.301545	80.381121	135.923455	228.761562
58	5.523440	9.725986	12.843177	16.942572	29.359297	50.612653	86.811611	148.162916	251.637718
59	5.680098	10.115026	13.423356	17.789700	31.120468	54.155539	93.756540	161.496598	276.014490
60	5.8391603	10.519627	14.027407	18.679185	32.987690	57.946426	101.257068	176.081291	304.481639
61	6.008251	10.940412	14.655641	19.613145	34.966952	62.002676	109.357623	191.874108	334.929808
62	6.180401	11.378029	15.318280	20.598402	37.064969	66.342964	118.106239	209.142777	366.422743
63	6.3547913	11.833150	16.007602	21.623492	39.288367	70.986464	127.554788	227.965628	400.250602
64	6.531051	12.306476	16.727444	22.704667	41.646199	75.959445	137.759117	248.432354	437.191563
65	6.709292	12.797335	17.480702	23.839900	44.149711	81.272861	148.779436	270.845062	478.070225
66	6.889482	13.306334	18.267334	25.031895	46.793666	86.961967	160.652234	295.222099	523.477797
67	7.071923	13.834112	19.080364	26.283490	49.601290	93.042928	173.536818	321.792088	574.845577
68	7.256936	14.380336	19.948385	27.597064	52.573767	99.562749	187.419758	350.753876	632.834335
69	7.4447205	14.927709	20.46662	28.977548	55.732009	106.532142	202.413383	382.321179	717.951718
70	7.6357121	15.517618	21.734335	30.426425	59.075930	113.983932	218.606405	416.730056	789.746956
71	7.8355856	16.194433	22.764421	31.947746	62.620485	121.968649	236.094915	454.235793	868.721652
72	8.040017	16.842262	23.788820	33.545134	66.377715	130.506455	254.982511	495.117015	955.588197
73	8.250017	17.515952	24.859317	35.222390	70.303478	139.611906	275.81112	539.677546	1.051.158199
74	8.465173	18.216591	25.977936	36.983510	74.529000	149.416610	297.411601	588.248225	1.156.268519
75	8.687895	18.945254	27.146996	38.832265	79.056920	159.76049	321.204529	641.190891	1.271.696371
76	8.914293	19.703064	28.366111	40.774320	83.800336	171.067340	346.900892	698.808073	1.399.084908
77	9.143792	20.491187	29.645198	42.813036	88.823856	183.042514	374.652963	761.798900	1.534.984393
78	9.376909	21.310634	30.979232	44.953638	94.158037	195.854993	404.622900	830.306001	1.699.899739
79	9.603601	22.163268	32.373293	47.213372	99.807541	209.664488	438.952616	905.093273	1.862.182013
80	9.840490	23.039799	33.830096	49.561441	105.795993	224.234387	471.954884	986.551668	2.048.400214
81	10.060117	23.971791	35.352450	52.089518	112.148753	239.307974	509.711221	1.075.341813	2.253.240236
82	11.285820	24.964131	36.943311	54.641433	118.923758	256.725050	550.488118	1.172.122086	2.473.664299
83	11.627588	25.927380	38.605780	57.373563	126.004720	274.696766	594.527163	1.277.613020	2.726.420655
84	11.974616	26.965004	40.343019	60.242241	133.565004	293.927540	642.083941	1.392.508192	2.999.062754
85	12.335708	28.049004	42.159455	63.254353	141.578904	314.500325	693.456448	1.517.932029	3.298.969029

TABLES OF INTEREST AND ANNUITIES.

II.—TABLE SHOWING THE PRESENT VALUE OF \$1 RECEIVABLE AT THE END OF ANY GIVEN YEAR FROM 1 TO 85, RECKONING COMPOUND INTEREST, AT 3, 4, 4½, 5, 6, 7, 8, 9, AND 10 PER CENT.

Years.	3 per cent.	4 per cent.	4-1/2 per cent.	5 per cent.	6 per cent.	7 per cent.	8 per cent.	9 per cent.	10 per cent.
1	.970878	.961588	.956987	.952880	.948896	.945179	.941692	.938413	.935309
2	.942595	.924566	.915729	.907029	.898996	.891483	.884438	.877813	.871564
3	.915141	.888996	.876296	.863837	.851619	.839629	.827938	.816513	.805314
4	.888487	.854304	.838561	.822702	.806719	.790609	.774358	.757943	.742344
5	.862608	.821927	.802451	.783266	.764369	.745749	.727392	.709286	.691419
6	.837484	.790814	.767595	.744625	.721906	.699434	.677199	.655189	.633394
7	.813091	.759917	.734828	.710681	.686474	.662206	.637976	.613773	.589586
8	.789409	.730690	.703185	.676889	.650692	.624494	.598294	.572089	.545879
9	.766416	.702586	.672904	.644608	.616399	.588177	.560042	.531892	.503727
10	.744093	.675564	.643927	.613918	.583994	.553949	.523883	.493796	.463688
11	.722421	.649580	.616193	.584679	.552678	.520692	.488722	.456767	.424827
12	.701379	.624597	.589663	.556887	.523679	.490438	.457164	.423856	.390514
13	.680951	.600574	.564271	.530291	.495889	.461464	.427016	.392544	.358049
14	.661117	.577475	.539972	.505067	.470000	.434961	.400049	.365164	.330297
15	.642861	.555264	.516720	.481017	.445246	.409506	.373796	.338116	.302457
16	.625166	.533903	.494469	.458111	.421840	.385549	.349237	.312904	.276550
17	.608016	.513973	.473776	.436926	.399644	.362331	.325006	.287669	.250321
18	.591394	.493623	.452800	.415220	.377000	.338749	.300476	.262181	.223864
19	.575286	.474442	.433301	.395738	.356692	.317561	.278344	.239041	.200652
20	.559675	.456866	.414642	.376889	.336800	.296674	.256511	.216311	.176074
21	.544549	.439883	.396787	.358942	.317800	.276561	.235324	.194089	.152856
22	.529899	.423355	.379300	.341484	.299300	.257029	.214761	.173496	.132234
23	.515724	.407326	.362300	.324517	.281300	.238029	.194761	.153496	.112234
24	.502024	.391121	.345100	.307344	.264100	.220829	.177561	.136296	.095034
25	.488799	.375116	.328100	.290360	.247100	.203829	.160561	.119296	.078034
26	.476049	.360689	.312700	.275000	.231700	.188429	.145161	.103896	.062634
27	.463774	.346816	.300000	.262300	.219000	.175729	.132461	.091196	.050034
28	.451974	.333776	.287000	.249300	.206000	.162729	.119461	.078196	.037034
29	.440649	.320651	.274000	.236300	.193000	.149729	.106461	.065196	.024034
30	.429799	.308313	.262000	.224300	.181000	.137729	.094461	.053196	.013034
31	.419424	.296866	.250500	.212800	.169500	.126229	.082961	.041696	.001634
32	.409524	.285500	.239000	.201300	.158000	.114729	.071461	.030196	.000534
33	.400099	.274121	.227500	.189800	.146500	.103229	.059961	.018696	.000034
34	.391149	.263552	.216800	.179000	.135729	.092461	.049196	.007696	.000000
35	.382674	.253415	.206500	.168700	.125429	.082161	.038896	.006196	.000000
36	.374674	.243663	.200000	.162000	.118729	.075461	.032196	.004696	.000000
37	.367149	.234296	.193700	.156300	.113029	.069729	.026461	.003196	.000000
38	.360099	.225225	.187700	.150000	.106729	.063461	.020000	.001696	.000000
39	.353524	.216420	.180600	.143200	.100000	.056729	.013461	.000196	.000000
40	.347424	.207859	.173900	.136400	.093729	.050000	.006961	.000000	.000000
41	.341799	.200000	.166500	.129300	.087000	.044229	.001461	.000000	.000000
42	.336649	.192866	.159800	.122800	.080300	.037529	.000461	.000000	.000000
43	.331974	.186351	.153700	.116800	.073629	.030829	.000000	.000000	.000000
44	.327774	.180466	.148200	.111500	.067729	.024129	.000000	.000000	.000000
45	.324049	.175116	.143300	.106700	.062829	.017429	.000000	.000000	.000000
46	.320799	.170225	.138900	.102400	.058929	.011529	.000000	.000000	.000000
47	.317924	.165786	.135000	.989000	.055029	.006629	.000000	.000000	.000000
48	.315424	.161696	.131600	.960000	.051129	.001729	.000000	.000000	.000000
49	.313299	.157951	.128600	.932000	.047229	.000229	.000000	.000000	.000000
50	.311524	.154556	.126000	.905000	.043329	.000000	.000000	.000000	.000000
51	.310099	.151500	.123800	.879000	.039429	.000000	.000000	.000000	.000000
52	.308924	.148786	.121900	.854000	.035529	.000000	.000000	.000000	.000000
53	.307999	.146311	.120200	.830000	.031629	.000000	.000000	.000000	.000000
54	.307324	.144076	.118600	.807000	.027729	.000000	.000000	.000000	.000000
55	.306899	.142076	.117100	.785000	.023829	.000000	.000000	.000000	.000000
56	.306624	.140296	.115700	.764000	.019929	.000000	.000000	.000000	.000000
57	.306499	.138725	.114400	.744000	.016029	.000000	.000000	.000000	.000000
58	.306524	.137351	.113200	.725000	.012129	.000000	.000000	.000000	.000000
59	.306699	.136176	.112100	.707000	.008229	.000000	.000000	.000000	.000000
60	.306924	.135196	.111100	.690000	.004329	.000000	.000000	.000000	.000000
61	.307299	.134400	.110200	.674000	.000429	.000000	.000000	.000000	.000000
62	.307824	.133786	.109400	.659000	.000000	.000000	.000000	.000000	.000000
63	.308399	.133351	.108700	.645000	.000000	.000000	.000000	.000000	.000000
64	.309024	.133076	.108100	.632000	.000000	.000000	.000000	.000000	.000000
65	.309699	.132951	.107600	.620000	.000000	.000000	.000000	.000000	.000000
66	.310424	.132976	.107200	.609000	.000000	.000000	.000000	.000000	.000000
67	.311199	.133151	.106900	.600000	.000000	.000000	.000000	.000000	.000000
68	.312024	.133476	.106700	.592000	.000000	.000000	.000000	.000000	.000000
69	.312899	.133951	.106600	.585000	.000000	.000000	.000000	.000000	.000000
70	.313824	.134576	.106600	.579000	.000000	.000000	.000000	.000000	.000000
71	.314899	.135351	.106700	.574000	.000000	.000000	.000000	.000000	.000000
72	.316024	.136276	.106900	.570000	.000000	.000000	.000000	.000000	.000000
73	.317199	.137351	.107200	.567000	.000000	.000000	.000000	.000000	.000000
74	.318424	.138576	.107600	.565000	.000000	.000000	.000000	.000000	.000000
75	.319699	.139951	.108100	.564000	.000000	.000000	.000000	.000000	.000000
76	.321024	.141476	.108700	.564000	.000000	.000000	.000000	.000000	.000000
77	.322399	.143151	.109400	.565000	.000000	.000000	.000000	.000000	.000000
78	.323824	.144976	.110200	.567000	.000000	.000000	.000000	.000000	.000000
79	.325299	.146951	.111100	.570000	.000000	.000000	.000000	.000000	.000000
80	.326824	.149076	.112100	.574000	.000000	.000000	.000000	.000000	.000000
81	.328399	.151351	.113200	.579000	.000000	.000000	.000000	.000000	.000000
82	.329924	.153786	.114400	.585000	.000000	.000000	.000000	.000000	.000000
83	.331499	.156386	.115700	.592000	.000000	.000000	.000000	.000000	.000000
84	.333124	.159151	.117100	.600000	.000000	.000000	.000000	.000000	.000000
85	.334799	.162076	.118600	.609000	.000000	.000000	.000000	.000000	.000000

TABLES OF INTEREST AND ANNUITIES.

III.—TABLE SHOWING THE AMOUNT OF AN ANNUITY OF \$1 PER ANNUM, IMPROVED AT COMPOUND INTEREST, AT 3, 4, 5, 6, 7, 8, 9, AND 10 PER CENT., AT THE END OF EACH YEAR FROM 1 TO 85.

Years.	3 per cent.	4 per cent.	4 1-2 per cent.	5 per cent.	6 per cent.	7 per cent.	8 per cent.	9 per cent.	10 per cent.
1	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
2	2.000000	2.040000	2.040000	2.050000	2.060000	2.070000	2.080000	2.090000	2.100000
3	3.000000	3.121600	3.121600	3.152500	3.183600	3.214600	3.245600	3.276600	3.307600
4	4.118627	4.246404	4.246404	4.278191	4.310125	4.342109	4.374143	4.406177	4.438211
5	5.309136	5.416923	5.416923	5.470110	5.523293	5.576476	5.629659	5.682842	5.736025
6	6.468410	6.602912	6.602912	6.667193	6.731474	6.795755	6.859936	6.924117	6.988298
7	7.669462	7.829224	7.829224	7.904505	7.979786	8.055067	8.130348	8.205629	8.280910
8	8.929236	9.212226	9.212226	9.300014	9.387802	9.475590	9.563378	9.651166	9.738954
9	10.159106	10.532795	10.532795	10.631114	10.729433	10.827752	10.926071	11.024390	11.122709
10	11.463879	12.006107	12.006107	12.232809	12.459511	12.686213	12.912915	13.139617	13.366319
11	12.807796	13.489351	13.489351	13.841179	14.202677	14.564175	14.925673	15.287171	15.648669
12	14.192080	15.025805	15.025805	15.464032	15.917127	16.380222	16.843317	17.306412	17.769507
13	15.617790	16.696383	16.696383	17.159913	17.639332	18.128751	18.618170	19.107589	19.597008
14	17.086824	18.519111	18.519111	19.025932	19.550662	20.085392	20.620122	21.154852	21.689582
15	18.595914	20.028588	20.028588	20.574057	21.135662	21.713497	22.297642	22.888087	23.474832
16	20.156851	21.824531	21.824531	22.419034	23.035492	23.673097	24.321852	24.981757	25.642812
17	21.761589	23.897512	23.897512	24.541074	25.208936	25.898392	26.598948	27.300604	27.993360
18	23.414425	25.645413	25.645413	26.355094	27.129355	27.880511	28.642267	29.404723	30.167979
19	25.116363	27.671229	27.671229	28.466562	29.309004	30.139903	30.986409	31.838515	32.596221
20	26.870874	29.775079	29.775079	30.371423	31.355954	32.255951	33.128452	34.013453	34.901054
21	28.676486	31.962902	31.962902	32.578137	33.571923	34.599272	35.648517	36.719662	37.802707
22	30.536780	34.247701	34.247701	34.893873	35.950220	37.005739	38.183388	39.383933	40.596478
23	32.454884	36.631789	36.631789	37.307030	38.430475	39.595923	40.856141	42.143296	43.445941
24	34.432670	39.118204	39.118204	40.059199	40.951577	42.176671	43.676759	44.997804	46.329849
25	36.469264	41.708509	41.708509	42.856210	43.727099	44.864512	46.249093	47.750594	49.100940
26	38.565042	44.411745	44.411745	45.770645	46.713454	47.955933	49.064740	50.859445	51.961765
27	40.720964	47.231214	47.231214	48.811324	49.869126	50.907066	51.458923	52.750763	53.999042
28	42.938023	49.675533	49.675533	51.039333	52.042533	53.069761	54.053530	55.098224	56.192696
29	45.218550	52.266236	52.266236	53.428093	54.322712	55.389793	56.446263	57.519444	58.648680
30	47.575416	54.984938	54.984938	56.007070	56.685843	57.958136	59.228211	60.500539	61.774923
31	50.002678	57.829385	57.829385	58.752833	60.700790	62.001677	63.291841	64.582006	65.872171
32	52.502759	60.799741	60.799741	61.866245	62.982829	64.308877	65.581853	66.864829	68.147780
33	55.077841	63.896527	63.896527	64.063771	65.306371	66.744105	67.984245	69.226385	70.471549
34	57.730177	67.125709	67.125709	66.352256	67.669559	69.183755	70.428765	71.680935	72.939085
35	60.463032	70.589204	70.589204	68.896130	70.230807	71.494780	72.748136	73.999401	75.253566
36	63.275944	74.285214	74.285214	71.669960	73.536323	74.920867	76.181840	77.432813	78.684766
37	66.174223	78.212244	78.212244	74.613444	76.138206	77.826519	79.156804	80.485089	81.813374
38	69.159449	82.379336	82.379336	77.783206	79.042016	80.842016	82.161545	83.481074	84.799603
39	72.234233	86.780150	86.780150	81.064424	82.109523	84.054523	85.402922	86.751321	88.099720
40	75.401260	91.425516	91.425516	84.549323	85.761966	87.935112	89.265519	90.600928	91.932337
41	78.662932	96.306530	96.306530	88.206688	90.639763	92.960870	94.382020	95.803170	97.224320
42	80.023196	101.331939	101.331939	92.047479	94.683751	97.150545	98.622240	100.090930	101.559620
43	85.483992	104.012332	104.012332	96.076404	98.903339	101.507577	103.076439	104.645300	106.214161
44	89.048409	111.412877	111.412877	101.918432	105.148006	109.750392	112.602851	115.555310	118.507769
45	92.719631	120.029392	120.029392	108.499665	112.700156	117.485514	120.419611	123.234168	126.048725
46	96.501457	129.985063	129.985063	116.082114	120.636164	125.508125	128.717163	131.926202	135.035241
47	100.396501	135.445390	135.445390	124.816233	129.119422	134.019812	137.224386	140.430512	143.641151
48	104.403896	146.526206	146.526206	134.857902	138.025393	143.564529	146.730093	150.001644	153.268283
49	108.540643	158.339734	158.339734	146.239557	148.426663	154.554401	158.099000	161.765548	165.032197
50	112.796567	162.667084	162.667084	158.508025	159.847996	166.335905	169.935112	173.600519	177.365926
51	117.190773	159.778767	159.778767	167.555665	170.815395	173.505555	177.166769	180.900933	184.618147
52	121.696197	167.164713	167.164713	178.974769	182.556165	185.251422	188.951971	192.652519	196.353067
53	126.347081	174.851900	174.851900	190.886634	194.459744	197.368305	201.280811	205.193267	209.105723
54	131.137495	182.943539	182.943539	203.778922	208.778922	212.748514	216.718106	220.687698	224.657290
55	136.071020	191.501713	191.501713	217.726181	223.726181	227.748514	231.760846	235.773198	239.785550
56	141.158763	199.505540	199.505540	232.848240	239.848240	243.860514	247.872846	251.885178	255.897510
57	146.388581	208.977622	208.977622	249.377110	256.377110	260.389422	264.401734	268.414046	272.426358
58	151.759033	218.946762	218.946762	267.229250	274.229250	278.241562	282.253874	286.266186	290.278498
59	157.283434	229.526569	229.526569	286.470597	293.470597	297.482909	301.495221	305.507533	309.519845
60	163.059437	239.996635	239.996635	297.979554	305.979554	309.991866	313.994178	317.996490	321.998802
61	168.945040	248.510913	248.510913	309.525362	317.525362	321.537674	325.549986	329.562298	333.574610
62	175.018391	259.407025	259.407025	321.184003	329.184003	333.206315	337.218627	341.230939	345.243251
63	181.263793	270.528754	270.528754	333.050223	341.050223	345.071935	349.084247	353.096559	357.108871
64	187.701707	282.661904	282.661904	345.098586	353.098586	357.120298	361.132610	365.144922	369.157234
65	194.338753	294.938981	294.938981	357.378381	365.378381	369.400000	373.412312	377.424624	381.436936
66	201.162741	307.767116	307.767116	370.185393	378.185393	382.201612	386.213924	390.226236	394.238548
67	208.191623	321.077900	321.077900	383.680377	391.680377	395.512839	399.425151	403.337463	407.349775
68	215.443551	334.920912	334.920912	400.000000	408.000000	411.831212	415.662424	419.493636	423.324848
69	222.966563	349.317749	349.317749	417.028617	425.028617	428.759829	432.491041	436.222253	439.953465
70	230.594064	364.290459	364.290459	434.869630	442.869630	446.500842	450.232054	453.963266	457.694478
71	238.511842	379.862077	379.862077	453.235515	461.235515	464.866727	468.497939	472.129151	475.760363
72	246.666724	396.056560	396.056560	472.182327	480.182327	483.813539	487.444751	491.075963	494.707175
73	255.067259	412.898322	412.898322	491.770757	499.770757	503.401969	507.033181	510.664393	514.295605
74	263.719277	430.441776	430.441776	512.070203	520.070203	523.691415	527.322627	530.953839	534.585051
75	272.300586	448.631867	448.631867	533.044362	541.044362	544.665574	548.296786	551.927998	555.559210
76	281.509781	467.576921	467.576921	554.813539	562.813539	566.434751	570.065963	573.697175	577.328387
77	291.264075	487.279666	487.279666	577.378110	585.378110	589.009322	592.640534	596.271746	600.002958
78	301.019977	507.770784	507.770784	600.000000	608.000000	611.631212	615.262424	618.893636	622.524848
79	311.082057	529.081403	529.081403	623.000000	631.000000	634.631212	638.262424	641.893636	645.524848
80	321.368019	551.247779	551.247779	646.556769	654.556769	658.187981	661.819193	665.450405	669.081617
81	332.000000	574.294776	574.294776	670.837795	678.837795	682.469007	686.100219	689.731431	693.362643
82	342.964026	598.266567	598.266567	695.740246	703.740246	707.371458	711.002670	714.633882	718.265094
83	354.252947	623.197230	623.197230	721.274264	729.274264	732.905476	736.536688	740.167900	743.799112
84	365.885936	649.125119	649.125119	747.598317	755.598317	759.229529	762.860741	766.491953	770.123165
85	377.869592	676.090124	676.090124	774.832336	782.832336	786.463548	790.094760	793.725972	797.35

TABLES OF INTEREST AND ANNUITIES.

IV.—TABLE SHOWING THE PRESENT VALUE OF AN ANNUITY OF \$1 PER ANNUM, TO CONTINUE FOR ANY GIVEN NUMBER OF YEARS, FROM 1 TO 85, RECKONING COMPOUND INTEREST, AT 3, 4, 4½, 5, 6, 7, 8, 9, AND 10 PER CENT.

Years.	3 per cent.	4 per cent.	4 1-2 per cent.	5 per cent.	6 per cent.	7 per cent.	8 per cent.	9 per cent.	10 per cent.
1	970874	961588	956938	952381	943896	934579	925926	917431	909091
2	1918470	1886095	1872668	1859410	1833893	1808018	1782825	1759111	1735537
3	2828611	2775091	2748964	2728248	2678012	2624816	2577097	2531295	2486852
4	3717098	3629895	3587526	3545851	3455106	3387211	3321217	3267920	3216985
5	4617191	4522187	4470352	4428772	4312364	4200197	4092710	4089651	4037087
6	5541791	5442135	5389782	5347592	5178244	5046850	4922880	4815919	4755261
7	6502928	6402055	6349701	6307511	6092981	5929289	5806370	5692958	5646419
8	7509692	7407345	7354991	7312801	7060794	6871209	6724639	6595419	6534926
9	8561069	8458382	8405991	8363801	8081692	7855232	7646888	7505247	7399426
10	9680208	9568026	9515635	9473445	9158166	8895582	8650091	8417658	8244567
11	9252624	9140442	9088051	9045861	8730582	8468097	8222606	8000173	7845061
12	9840404	9728222	9675831	9633641	9318362	9055877	8810386	8587953	8432841
13	10494855	10382673	10330282	10287892	9972613	9710128	9482637	9270204	9125092
14	11260783	11148601	11096210	11053820	10738541	10476056	10248565	10036132	9891020
15	11937985	11825803	11773412	11731022	11415743	11153258	10925767	10713334	10500901
16	12615102	12502920	12450529	12408139	12092860	11830375	11602884	11390451	11178018
17	18166118	18053936	18001545	17959155	17643876	17381391	17153900	16941467	16729034
18	18785313	18673131	18620740	18578350	18263071	18000586	17773095	17560662	17348229
19	14327399	14215217	14162826	14120436	13805157	13542672	13315181	13102748	12890315
20	14777475	14665293	14612902	14570512	14255233	14002748	13775257	13562824	13350391
21	15415024	15302842	15250451	15208061	14892782	14640297	14412806	14200373	14000000
22	15989917	15877735	15825344	15782954	15467675	15215190	15002700	14790267	14587834
23	16486808	16374626	16322235	16279845	15964566	15712081	15499648	15287215	15084782
24	16983741	16871559	16819168	16776778	16461499	16209014	16006523	15804090	15601657
25	17480674	17368492	17316101	17273711	16958432	16705947	16503514	16301081	16108648
26	17977607	17865425	17813034	17770644	17455365	17202880	17000447	16798014	16595581
27	18474540	18362358	18309967	18267577	17952298	17699813	17497380	17294947	17092514
28	18971473	18859291	18806900	18764510	18449231	18196746	17994313	17791880	17589447
29	19468406	19356224	19303833	19261443	18946164	18693679	18491246	18288813	18086380
30	19965339	19853157	19800766	19758376	19443097	19190612	18988179	18785746	18583313
31	20462272	20350090	20297700	20255310	19940031	19687546	19485113	19282680	19080247
32	20959205	20847023	20794632	20752242	20436963	20184478	19982045	19779612	19577179</

In Hamburg the rate of interest is quite unrestricted; or, if there be a written law restraining it, it has become obsolete. The rate, therefore, varies according to circumstances. Occasionally it has been at 7, 8, and even 10 per cent.; and in 1799, a period of great mercantile embarrassment and insecurity, it was as high as 14 per cent. Generally, however, the rate of discount on good bills does not exceed 3 or 4 per cent.—*Report on Usury Laws*, p. 46.

In Russia the legal rate of interest is 6 per cent. But as Russia is a country capable of much improvement, and where there are very great facilities for the advantageous employment of capital, the market rate of interest is invariably higher than the statute rate, and the law is constantly and easily evaded.—*Report on Usury Laws*, p. 46; and *Storch*, tom. iii., p. 207.

The previous statements apply only to the cases of interest arising out of loans made by one party to another. But there are cases in which interest may become due without being stipulated for, by unnecessary or unjustifiable delays in the payment of debts, or by trustees, agents, or other parties coming into possession of property belonging to others, etc., and in these it is necessary to obviate litigation, that the interest to be charged should be fixed by law. This legal rate had better be somewhat below the ordinary market rate, and may be adjusted from time to time as circumstances may require. But, except in cases of this sort, there is no more reason for interfering to regulate the rate of interest, than there is for interfering to regulate premiums of insurance.

Distinction of Simple and Compound Interest.—When a loan is made, it is usual to stipulate that the interest upon it should be regularly paid at the end of every year, half year, etc. A loan of this sort is said to be at simple interest. It is of the essence of such loan that no part of the interest accruing upon it should be added to the principal to form a new principal; and though payment of the interest were not made when it becomes due, the lender would not be entitled to charge interest upon such unpaid interest. Thus, suppose \$100 were lent at simple interest at 5 per cent., payable at the end of each year; the lender would, at the end of three or four years, supposing him to have received no previous payments, be entitled to \$15 or \$20, and no more.

Compound Interest.—Sometimes, however, money or capital is invested so that the interest is not paid at the periods when it becomes due, but is progressively added to the principal; so that at every term a new principal is formed, consisting of the original principal and the successive accumulations of interest upon interest. Money invested in this way is said to be placed at *compound interest*. It appears only reasonable, when a borrower does not pay the interest he has contracted for at the period when it is due, that he should pay interest upon such interest. This, however, is not allowed by the law of England; nor is it allowed to make a loan at compound interest. But this rule is easily evaded by taking a new obligation for the principal with the interest included, when the latter becomes due. Investments at compound interest are also very frequent. Thus, if an individual buy into the funds, and regularly buy fresh stock with the dividends, the capital will increase at compound interest; and so in any similar case.

Calculation of Interest.—Interest is estimated at so much per cent. per annum, or by dividing the principal into 100 equal parts, and specifying how many of these parts are paid yearly for its use. Thus 5 per cent., or 5 parts out of 100, means that \$5 are paid for the use of \$100 for a year, \$10 for the use of \$200, \$2 50 for the use of \$50 for the same period, and so on.

Many attempts have been made to contrive expeditious processes for calculating interest. The following is one of the best: Suppose it were required to find the interest upon \$172 for 107 days at 5 per cent.

This forms what is called in arithmetical books a double rule of three question, and would be stated as follows:

$L. \text{ Days. } L. \quad L. \text{ Days.}$

$100 \times 365 : 5 :: 172 \times 107 = \text{the interest required.}$

Hence to find the interest of any sum for any number of days at any rate per cent., multiply the sum by the number of days, and the product by the rate, and divide by 36,500 (365×100); the quotient is the interest required. When the rate is 5 per cent., or 1-20th of the principal, all that is required is to divide the product of the sum multiplied by the days by 7300 (365, the days in a year, multiplied by 20). Five per cent. interest being found by this extremely simple process, it is usual in practice to calculate 4 per cent. interest by deducting 1-5th; 3 per cent. by deducting 2-5ths; 2½ per cent. by dividing by 2; 2 per cent. by taking the half of 4, and so on.

In calculating interest upon accounts current, it is requisite to state the number of days between each receipt or payment, and the date (commonly the 31st of December) to which the account current is made up. Thus, \$172 paid on the 15th of September, bearing interest to the 31st of December, 107 days. The amount of such interest may, then, be calculated as above explained, or by the aid of tables.

The 30th of June is, after the 31st of December, the most usual date to which accounts current are made up, and interest calculated. It is desirable, in calculating interest on accounts current, to be able readily to find the number of days from one day in any month to any day in any other month. This may be done with the greatest ease by means of the following table:

TABLE FOR ASCERTAINING THE NUMBER OF DAYS FROM ANY ONE DAY IN THE YEAR TO ANY OTHER DAY.

	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.
1	32	60	91	121	152	182	213	244	274	305	335	
2	33	61	92	122	153	183	214	245	275	306	336	
3	34	62	93	123	154	184	215	246	276	307	337	
4	35	63	94	124	155	185	216	247	277	308	338	
5	36	64	95	125	156	186	217	248	278	309	339	
6	37	65	96	126	157	187	218	249	279	310	340	
7	38	66	97	127	158	188	219	250	280	311	341	
8	39	67	98	128	159	189	220	251	281	312	342	
9	40	68	99	129	160	190	221	252	282	313	343	
10	41	69	100	130	161	191	222	253	283	314	344	
11	42	70	101	131	162	192	223	254	284	315	345	
12	43	71	102	132	163	193	224	255	285	316	346	
13	44	72	103	133	164	194	225	256	286	317	347	
14	45	73	104	134	165	195	226	257	287	318	348	
15	46	74	105	135	166	196	227	258	288	319	349	
16	47	75	106	136	167	197	228	259	289	320	350	
17	48	76	107	137	168	198	229	260	290	321	351	
18	49	77	108	138	169	199	230	261	291	322	352	
19	50	78	109	139	170	200	231	262	292	323	353	
20	51	79	110	140	171	201	232	263	293	324	354	
21	52	80	111	141	172	202	233	264	294	325	355	
22	53	81	112	142	173	203	234	265	295	326	356	
23	54	82	113	143	174	204	235	266	296	327	357	
24	55	83	114	144	175	205	236	267	297	328	358	
25	56	84	115	145	176	206	237	268	298	329	359	
26	57	85	116	146	177	207	238	269	299	330	360	
27	58	86	117	147	178	208	239	270	300	331	361	
28	59	87	118	148	179	209	240	271	301	332	362	
29	..	88	119	149	180	210	241	272	302	333	363	
30	..	89	120	150	181	211	242	273	303	334	364	
31	..	90	..	151	..	212	243	..	304	..	365	

By this table may be readily ascertained the number of days from any given day in the year to another. For instance, from the 1st of January to the 14th of August (first and last days included), there are 226 days. To find the number, look down the column headed January, to No. 14, and then look along in a

parallel line to the column headed August, you find 226, the number required. To find the number of days between any other two given days, when they are both after the first of January, the number opposite the first day must, of course, be deducted from that opposite to the second. Thus, to find the number of days between the 18th of March and the 19th of August, deduct from 281—the number in the table opposite to 19 and under August—72, the number opposite to 18 and under March, and the remainder, 159, is the number required, last day included. In leap years, one must be added to the number after the 28th of February.

When interest, instead of being simple, is compound, the first year's or term's interest must be found, and being added to the original principal, makes the principal upon which interest is to be calculated for the second year or term; and the second year's or term's interest being added to this last principal, makes that upon which interest is to be calculated for the third year or term; and so on for any number of years. But when the number of years is considerable, this process becomes exceedingly cumbersome and tedious, and to facilitate it tables have been constructed, which are subjoined to this article.

The first of these tables (p. 1074) represents the amount of \$1 accumulating at compound interest, at 3, 3½, 4, 4½, up to 10 per cent. every year, from 1 year to 85 years, in dollars and decimals of a dollar. Now, suppose that we wish to know how much \$500 will amount to in seven years at 4 per cent. In the column marked 4 per cent., and opposite to 7 years, we find \$1.31.5931, which shows that \$1 will, if invested at 4 per cent., compound interest, amount to \$1.31.5931 in 7 years; and, consequently, \$500 will, in the same time, and at the same rate, amount to $500 \times 1.31.5931$, or \$657.96.6. For the same purpose of facilitating calculation, the present value of \$1 due any number of years hence, not exceeding 85, at 3, 3½, 4, 4½, up to 10 per cent., compound interest, is given in the tables, pp. 1074–1077. The use of these tables is precisely similar to the one above. Let it, for example, be required to find the present worth of \$500 due 7 years hence, reckoning compound interest at 4 per cent.; opposite to 7 years, and under 4 per cent., 75.291781, the present worth of \$1 due at the end of 7 years; and multiplying this sum by \$500, the product being \$379.95.89, is the answer required. These tables are in part from *Tables of Interest, Discount, and Annuities*, by JOHN SMART, Gent., 4to., London, 1726. They are carried to eight decimal places, and enjoy the highest character in England and on the Continent, for accuracy and completeness. The original work is now become scarce.

ANNUITIES. 1. *Annuities certain.*—When a sum of money is to be paid yearly for a certain number of years, it is called an annuity. The annuities usually met with are either for a given number of years, which are called *annuities certain*; or they are to be paid so long as one or more individuals shall live, and are thence called *contingent annuities*.

By the amount of an annuity at any given time, is meant the sum to which it will then amount, supposing it to have been regularly improved at compound interest during the intervening period.

The present value of an annuity for any given period, is the sum of the present values of all the payments of that annuity.

See JONES on *Annuities*, London, 2 vols., 8vo; *Ency. Brit.*, 8th ed.; *BANKERS' Mag.*, vols. v., vi., vii., New York, 1854–1857; J. R. McCULLOCH, *Essays on Exchange, Interest, &c.*, New York, 1857; *Assurance Magazine*, London, 1854–1857; *Report to British Parliament on Usury Laws*; STORCH, *Economie Politique*, iii.; MADOX, *History of the Exchequer*; *Considerations on the State of the English Currency*; HUME's *Essay on Interest*; *Essay on the Governing Causes of the Rate of Interest*.

The uses of these tables are numerous, and they are easily applied. Suppose, for example, it were required to tell the amount of an annuity of \$50 a year for 17 years, at 4 per cent., compound interest.

Opposite to 17 (Table, p. 1074) in the column of years, and under 4 per cent., is 23.69751,239, being the amount of an annuity of \$1 for the given time at the given rate per cent.; and this multiplied by 50 gives \$1184.87.56195, the amount required.

Suppose, now, that it is required what sum one must pay down to receive an annuity of \$50, to continue for 17 years, compound interest at 4 per cent.?

Opposite to 17 years (Table, p. 1076) and under 4 per cent., is 12.16566,886, the present value of an annuity of \$1 for the given time and at the given rate per cent.; and this multiplied by 50, gives \$608.28.3443, the present value required.

When it is required to find the time which must elapse, in order that a given sum, improved at a specified rate of compound interest, may increase to some other given sum, divide the latter sum by the former, and look for the quotient, or the number nearest to it, in table No. I., under the given rate per cent., and the years opposite to it are the answer: thus,

In what time will \$523 amount to \$1087.27.94, at 5 per cent., compound interest?

Divide 1087.27.94, etc., by 523, and the quotient will be 2.0789, etc., which under 5 per cent. in table I., is opposite to 15 years, the time required.

If it had been required to find the time in which a given annuity, improved at a certain rate of compound interest, would have increased to some given sum, the question would have been answered by dividing, as above, the given sum by the annuity, and looking for the quotient (not in table No. I., but) in table No. III., under the given rate per cent., it would be found on a line with the time required; thus,

A owes \$1000, and resolves to appropriate \$10 a year of his income to its discharge; in what time will the debt be extinguished, reckoning compound interest at 4 per cent.?

1000 divided by 10 gives 100, the number in table No. III. under 4 per cent., and nearest to this quotient is 99.8265, etc., opposite to 41 years, the required time. Had the rate of interest been 5 per cent., the debt would have been discharged in somewhat less than 37 years. This example is given by Dr. Price (*Annuities*, 6th ed., vol. ii., p. 289); and on this principle the whole fabric of the sinking fund was constructed. Of the abstract truth of the principle there can not, indeed, be a doubt. But every thing depends on the increasing sums annually produced being immediately invested on the same terms; and this, when the sum is large, and the period long, is altogether impracticable.

Let it next be required to find an annuity which, being increased at a given rate of compound interest during a given time, will amount to a specified sum: in this case we divide the specified sum by the amount of \$1 for the time and rate given, as found in the Table III., and the quotient is the answer.—Thus, What annuity will amount to \$1,087.27.94 in 15 years at 5 per cent. compound interest? Opposite to 15 years in Table III., and under 5 per cent., is 21.5785, etc., the amount of \$1 for the given time and rate; and dividing 1087.27.94, etc., by this sum, the quotient 50.887, etc., is the annuity required. *Deferred annuities* are those which do not commence till after a certain number of years; and *reversionary annuities*, such as depend upon the occurrence of some uncertain event, as the death of an individual, etc. The present value of a deferred annuity is found by deducting, from the value of an annuity for the whole period, the value of an annuity to the term at which the reversionary annuity is to commence.—Thus, What is the present value of an annuity of \$50 to continue for 25 years, commencing at 7 years from the present time,

interest at 4 per cent. ? According to Table No. IV., the value of an annuity of \$1 for 25 years at 4 per cent. is 15.62207,995, and that of \$1 for 7 years is 6.00205,467, which being deducted from the other, leaves 9.62002,528, which multiplied by 50 gives \$481, the answer required. Supposing the annuity, instead of being for 25 years, had been a perpetuity, it would have been worth \$1,250, from which deducting \$300 10c., the value of an annuity for 7 years at 4 per cent., there remains \$949.90, the value of the reversion. For a selection of problems that may be solved by Table of annuities certain, see SMART'S *Tables*, pp. 20-109.

2. *Life Annuities.*—After what has been stated in the article on INSURANCE (GENERAL PRINCIPLES OF), respecting tables of mortality, it will be easy to see how the value of a life annuity is calculated. Supposing—to revert to the example given before INSURANCE, that it were required to find the present value of \$1, the receipt of which is dependent on the contingency of a person, now 56 years of age, being alive 10 years hence, taking the Carlisle table of mortality, and interest at 4 per cent.: Now, according to that table, of 10,000 persons born together, 4000 attain to 56, and 2894 to 66 years of age. The probability that a person, now 56 years, will be alive 10 years hence, is, consequently, 2894 : 4000; and the present value of \$1, to be received certain 10 years hence being \$0.675564, it follows, that if its receipt be made to depend on a life 56 years of age, attaining to 66 years, its value will be reduced by that contingency to $2894 \times \$0.675564 = \0.48877 . If, then, we had to find the present value of an annuity of \$1, secured on the life of a person now 56, we should calculate in this way the present value of each of the 48 payments, which, according to the Carlisle table, he might receive, and their sum would, of course, be the present value of the annuity.

This statement is enough to show the principle on which all calculations of annuities depend; and this also was, in fact, the method according to which they were calculated, till Mr. Simpson and M. Euler invented a shorter and easier process, deriving from the value of an annuity at any age, that of an annuity at the next younger age. There is a considerable discrepancy in the sums at which different authors, and different insurance offices, estimate the present value of life annuities payable to persons of the same age. This does not arise from any difference in the mode of calculating the annuities, but from differences in the tables of mortality employed. These can only be accurate when they are deduced from multiplied and careful observations made, during a long series of years, on a large body of persons; or when the average numbers of the whole population, and of the deaths at every age, for a lengthened period, have been determined with the necessary care. It is to be regretted, that governments who alone have the means of ascertaining the rate of mortality by observations made on a sufficiently large scale, have been singularly inattentive to their duty in this respect. And until a very few years since, when Mr. Finlayson was employed to calculate tables of the value of annuities from the ages of the nominees in public tontines, and of individuals on whose lives government had granted annuities, all that had been done in this country to lay a solid foundation on which to construct the vast fabric of life insurance, had been the work of a few private persons, who had, of course, but a limited number of observations to work upon.

The celebrated mathematician, Dr. Halley, was the first who calculated a table of mortality, which he deduced from observations made at Breslau, in Silesia. In 1724 M. de Moivre published the first edition of his tract on *Annuities on Lives*. In order to facilitate the calculation of their values, M. de Moivre assumed the annual decrements of life to be equal; that is, he supposed that out of 86 (the utmost limit of life on his hy-

pothesis) persons born together, one would die every year till the whole were extinct. This assumption agreed pretty well with the true values between 30 and 70 years of age, as given in Dr. Halley's table; but was very remote from the truth in the earlier and later periods. Mr. Thomas Simpson, in his work on *Annuities and Reversions*, originally published in 1742, gave a table of mortality deduced from the London bills, and tables founded upon it of the values of annuities. But at the period when this table was calculated, the mortality in London was so much higher than in the rest of the country, that the values of the annuities given in it were far too small for general use. In 1746 M. Deparcieux published, in his *Essai sur les Probabilités de la Durée de la Vie Humaine*—a work distinguished by its perspicuity and neatness—tables of mortality deduced from observations made on the mortuary registers of several religious houses, and on lists of the nominees in several tontines. In this work, separate tables were first constructed for males and females, and the greater longevity of the latter rendered apparent. M. Deparcieux's tables were a very great acquisition to the science, and are decidedly superior to some that are still extensively used. Dr. Price's famous work on *Annuities*, the first edition of which was published in 1770, contributed powerfully to direct the public attention to inquiries of this sort, and was, in this respect, of very great utility. Of the more recent works, the best are those of Mr. Baily and Mr. Milne, which, indeed, are both excellent. The latter, besides all that was previously known as to the history, theory, or practice of the science, contains much new and valuable matter; and to it we beg to refer such of our readers as wish to enter fully into the subject.

The table on which Dr. Price laid the greatest stress was calculated from the burial registers kept in the parish of All Saints, in Northampton, containing little more than half the population of the town. There can be no doubt, however, as well from original defects in the construction of the table, as from the improvement that has since taken place in the healthiness of the public, that the mortality represented in the Northampton table is, and has long been, decidedly above the average rate of mortality in England. Mr. Morgan, indeed, the late learned actuary of the Equitable Society, contended that this is not the case, and that the society's experience shows that the Northampton table is still remarkably accurate. But the facts Mr. Morgan disclosed in his "Views of the Rise and Progress of the Equitable Society," p. 42, published in 1828, are quite at variance with this opinion; for he there states, that the deaths of persons insured in the Equitable Society, from 50 to 60 years of age, during the 12 years previously to 1828, were 389; whereas, according to the Northampton table, they should have been 545! And Mr. Milne has endeavored to show (*Art. Annuities*, new ed. of *Ency. Brit.*) that the discrepancy is really much greater.

The only other table used to any extent in England for the calculation of life annuities, is that framed by Mr. Milne, from observations made by Dr. Heysham on the rate of mortality at Carlisle. It gives a decidedly lower rate of mortality than the Northampton Table; and there are good grounds for thinking that the mortality which it represents is not very different from the actual rate throughout most parts of England; though it can not be supposed that a table founded on so narrow a basis should give a perfectly fair view of the average mortality of the entire kingdom.

In life insurance, the first annual premium is always paid at the commencement of the assurance, and the others at the beginning of each year, so long as the party assured survives. Hence, at the beginning of the assurance, the whole of the annual premiums payable for it exceed the value of an equal annuity on life by one year's purchase. And, therefore, when the value of an assurance in present money is given,

to find the equivalent annual premium during the life, the whole present value must be divided by the number of years' purchase an annuity on the life is worth, increased by 1. Thus, for an assurance of \$100 on a life of 40 years of age, an office, calculating by the Carlisle table of mortality, and at 4 per cent. interest, requires \$58.446 in present money. Now, according to that table and rate of interest, an annuity on a life just 40 years of age is worth 15.074 years' purchase, so that the equivalent annual premium is $\frac{\$58.446}{15.074 \times 1} = \3.325 . The annual premium may, however, be derived directly from the value of an annuity on the life, without first calculating the total present value of the assurance. See Mr. Milnes *Treat. on Annuities*, or art. *Annuities*, in new edition of *Ency. Brit.*

"In order to exhibit the foundation upon which tables of life annuities and insurance have been founded in this and other countries, we have given, in a portion of the preceding tables, the rate of mortality that has been observed to take place among 1000 children born together, or the numbers alive at the end of each year, till the whole become extinct, in England, France, Sweden, etc., according to the most celebrated authorities. The rate of mortality at Carlisle, represented in this table, is less than that observed anywhere else: the rates which approach nearest to it are those deduced from the observations already referred to, of M. Deparcieux, and those of M. Kersseboom, on the nominees of life annuities in Holland. In order to calculate from this table the chances which a person of any given age has of attaining to any higher age, we have only to divide the number of persons alive at such higher age, given in the column of the table selected to decide the question, by the number of persons alive at the given age, and the fraction resulting is the chance. We have added, by way of supplement to this table, Mr. Finlayson's table (No. VI.) of the rate of mortality among 1000 children born together, according to the decrement of life observed to take place among the nominees in government tontines and life annuities in this country, distinguishing males from females. The rate of mortality which this table exhibits is decidedly less than that given in the Carlisle table; but the lives in the latter are the average of the population, while those in the former are all picked. The nominees in tontines are uniformly chosen among the healthiest individuals; and none but those who consider their lives as good ever buy an annuity. Still, however, the table is very curious; and it sets the superiority of female life in a very striking point of view. Tables VII. and VIII. give the *expectation of life*, according to the mortality observed at Northampton and Carlisle; the former by Dr. Price, and the latter by Mr. Milne. The next table, No. IX., extracted from the *Second Report of the Committee of the House of Commons on Friendly Societies*, gives a comparative view of the results of some of the most celebrated tables of mortality, in relation to the rate of mortality, the expectation of life, the value of an annuity, etc. The coincidence between the results deduced from M. Deparcieux's table and that for Carlisle, is very striking. And to render the information on these subjects laid before the reader as complete as the nature of this work will admit, we have given tables (Nos. X.-XV.) of the value of an annuity of £1 on a single life, at every age, and at 3, 4, 5, 6, 7 and 8 per cent., according to the Northampton and Carlisle tables; we have also given tables of the value of an annuity of £1 on 2 equal lives, and two lives differing by five years, at 3, 4, 5, and 6 per cent., according to the same tables. It is but seldom, therefore, that our readers will require to resort to any other work for the means of solving the questions that usually occur in practice with regard to annuities; and there are not many works in which they will find so good a collection of the tables." We subjoin one or two examples of the mode

of using the tables of life annuities. Suppose it were required, what ought a person aged 45, to give to secure an annuity of \$50 a year for life, interest at 4 per cent., according to the Carlisle table? In Table No. XI., under 4 per cent., and opposite 45, is 14.104, the value of an annuity of \$1, which being multiplied by 50 gives \$705.20, or the value required. According to the Northampton table, the annuity would only have been worth \$614.15. The value of an annuity on two lives of the same age, or on two lives different by five years, may be found in precisely the same way. Some questions in *reversionary* life annuities admit of an equally easy solution. Thus, suppose it is required to find the present value of A's interest in an estate worth \$100 a year, falling to him at the death of B, aged 40, interest 4 per cent., according to the Carlisle table? The value of the perpetuity of \$100 a year, interest 4 per cent., is \$2500; and the value of an annuity of \$100 on a person aged 40, interest 4 per cent., is \$1507.40, which, deducted from \$2500, leaves \$992.60, the present value required. A person aged 30 wishes to purchase an annuity of \$50 for his wife, aged 25, provided she survives him; what ought he to pay for it, interest at 4 per cent, according to the Carlisle table? The value of an annuity of \$1 on a life aged 30 is \$16.852; from which subtracting the value of an annuity of \$1 on two joint lives of 25 and 30, 14.339, the difference, $2.513 \times 50 = 125.650$, the sum required. For the solution of the more complex cases of survivorship, which do not often occur in practice, recourse may be had to the directions in Mr. Milne's *Treatise on Annuities*, and other works of that description. To attempt explaining them here would lead us into details quite inconsistent with the object of this work." See *Com. Dict.*, art. INTEREST, by J. R. McCULLOCH; *Bankers' Mag.*, N. Y., 1858-6; the Interest Tables now in use in New York city, are by Delisser, Six and Seven per Cent. 4to \$4; PRICE, 8vo; OATES, 8vo.

Invoice, an account of goods or merchandise sent by merchants to their correspondents at home or abroad, in which the peculiar marks of each package, with other particulars, are set forth.

The revenue laws of the United States require two consular certificates only to invoices of foreign merchandise imported into this country (the owners of which reside abroad)—one authenticating the invoice, the other as to the value in Spanish or American dollars of the currency in which the invoice is made out. Where consular certificates to invoices of goods destined for the United States are required, they are to be granted only by the consular officer within whose consular jurisdiction such goods have been manufactured or prepared for exportation. A practice, it is understood, has extensively prevailed of transmitting invoices to a consular officer at the port of shipment for the usual consular certificates, whose certificate must often necessarily be given without due knowledge of their accuracy or details. Thus, invoices of goods manufactured or prepared for shipment in Switzerland have sometimes heretofore been sworn to at Havre; invoices from Lyons have been verified at Marseilles; and those from the Prussian provinces of the Rhine, at the ports of Holland and Belgium. It is manifest that great abuses must spring from such a practice, the meaning and intent of the law being to require those who have an accurate knowledge of the contents of invoices, and the prices of goods comprising the same, personally to depose to their valuation. All consular officers of the United States are strictly enjoined to conform to this rule, and report to the Treasury Department any violation of it which may come within their knowledge. Under the provisions of the act of Congress of 1st March, 1823, the invoices of all imported goods subject to *ad valorem* duty belonging to persons not residing in the United States, must be sworn to and verified by consular certificates; the oath must be taken by the owner or manufacturer

of the goods, or a member of the firm owning or manufacturing them, and not by a clerk or other subordinate.

In all cases where the oaths to invoices are not taken before the United States' consul, but before some public officer duly authorized to administer oaths in the country where the goods shall have been purchased, the official certificate of such officer must be authenticated by a consular officer of the United States. If there be no consular officer of the United States in the country from which the merchandise shall have been imported, the authentication must be executed by a consul of a nation at the time in amity with the United States, if there be any such residing there. If there be no such consul, the authentication must be made by two respectable merchants, if any such there be, residing at the port from which the merchandise shall have been imported.

It is proper that the oath taken by foreigners should be administered to them, not only in their own language, so that they may fully understand the nature and import of it, but also in the form practiced in their own country, which would probably be considered by them as more solemn and of a more binding nature than if administered in a form to which they have not been accustomed. The attention of consular officers is also directed to the 8th and 11th sections of the act of Congress of the 1st March, 1823, in which it will be seen that a consular certificate is required in all cases of invoices of goods exported by the *manufacturers* thereof, in whole or in part for their account, notwithstanding another owner in part may reside in the United States. This provision of the law of 1823, there is reason to believe, has been hitherto overlooked in many instances. If a consular officer ascertains and has reliable evidence of the falsity of an oath, administered either by himself or by a local magistrate whose certificate he has authenticated, he should notify the Treasury Department, which will transmit to him the original invoice and oath, to be used, if deemed expedient, in a prosecution for perjury.

It is to be remarked that, by the act of 3d March, 1801, invoices of all goods imported into the United States *subjected to a duty ad valorem* are required to be "made out in the currency of the place or country from whence the importation shall be made; and shall contain a true statement of the actual cost of such goods in such foreign currency or currencies, without any respect to the value of the coins of the United States, or foreign coins which now are, or shall be, by law, made current within the United States in such foreign place or country." Hence, invoices of free goods are not required to be made out in the currency of the country from whence the goods may be imported; but whenever invoices of such goods may be made out in the currency of the country, and said currency is depreciated, and its value not fixed by any law of the United States, a consular certificate of the value of such currency must, as before intimated, accompany the same.

There is nothing in the law or instructions of the Treasury Department to prohibit invoices of free goods from being made out in the currency of the United States, or that of any other country where its value is fixed by our laws. Invoices of *ad valorem* or free goods, when made out in a foreign depreciated currency, or a currency the value of which is not fixed by the laws of the United States, whether the importer or owner resides in this country or abroad, must in each case be accompanied by a consular certificate, showing the value of such currency in Spanish or United States silver dollars. Applications are frequently made to the Treasury Department for permission to enter merchandise where the invoices are not accompanied by the needful consular certificates in the cases where such certificates are by law required. That Department has heretofore acted with great leniency and indulgence in such cases, but experience has

shown the necessity for a more rigid course in future; and, in all cases where such consular certificates should accompany the invoices, any penalty which may be incurred for want of them will be regularly enforced.

Consuls abroad, by due attention and vigilance, can do much toward checking and preventing the numerous frauds which are undoubtedly practiced upon the revenue, if they will report to the collectors of the customs of the United States all those invoices where, in their opinions, undervaluations have been made, and by otherwise keeping the collectors or this Department generally and fully advised on this subject; and they are earnestly requested to do so, and to consider it one of the most important services which they can render in connection with the faithful collection of the revenue. An erroneous impression exists with many foreign shippers of goods to the United States, that the consuls before whom the oath to invoices is either taken or verified have no power to examine the details of such invoices, but simply to verify the fact of such oath being taken before them, or by an officer in authority known to them as such. This is not the fact; and consular officers are expected before verifying invoices to satisfy themselves of their correctness.

For the purpose of carrying out a particular system of revenue duties, the government of the United States requires that the accuracy of certain invoices should be ascertained and verified; and a reasonable time for consuls to accomplish that object, by an examination of such invoices, can not be justly denied to them. Consular officers are not supposed to be practically acquainted with the market prices or value of all merchandise within their district, or of the precise weights, tares, measures, bounties, etc., included therein; but inquiry and experience will soon enable them to render efficient aid to the revenue officers of the United States, by ascertaining errors or frauds, and promptly informing the Treasury Department, as well as the collector of the port to which the goods may be destined, of every instance where an exporter persists in refusing to correct his invoice, when apprised of its defects, and that it will be subject to revision at the custom houses of the United States.

CERTIFICATE TO INVOICE.

Foreign Owner's oath, where goods, wares, or merchandise, have been actually purchased.

I, _____, do solemnly and truly swear, that the goods, wares, or merchandise described in the invoice now produced, and hereunto annexed, were actually purchased for my account, or for account of myself and partners in the said purchase: and that said invoice contains a true and faithful account of the actual cost thereof, and of all charges thereon; and that no discounts, bounties, or drawbacks, are contained in the said invoice but such as have been actually allowed on the same.

Sworn to and subscribed before me, at _____, the _____ day of _____, A.D. 18____, and of the independence of the United States the _____: and I do further certify, that I am satisfied that _____, who subscribes the foregoing oath, is the person he represents himself to be; that he is a credible person; and that the statements made by him under said oath (or affirmation, as the case may be) are true.

[L. S.]

U. S. Consul.

CERTIFICATE TO INVOICE.

Foreign manufacturer or owner's oath, in cases where goods, wares, or merchandise, have not been actually purchased.

I, _____, of _____, do solemnly and truly swear, that the invoice now produced, and hereunto annexed, contains a true and faithful account of the goods, wares, or merchandise therein described at their market value at _____, at the time the same were (procured or manufactured, as the case may be), and of all charges thereon; and that the said invoice contains no discounts, bounties, or drawbacks, but such as have been actually allowed.

Sworn and subscribed before me, at _____, the _____ day of _____, A.D. 18____, and of the independence of the United States of America the _____: and I further certify, that I am satisfied that _____, who subscribes the foregoing

oath, is the person he represents himself to be; that he is a credible person: and that the statements made by him under said oath (or affirmation, as the case may be) are true.

[L. s.]

U. S. Consul.

Consular Certificate of the value of currency.

I, _____, consul of the United States of America, do hereby certify, that the true value of the currency of the _____ of _____, in which currency the annexed invoice of merchandise is made out, is _____ cents, estimated in American or Spanish silver dollars.

Ionian Islands, the name given to the islands of Corfu, Paxo, Santa Maura, Ithaca, Cephalonia, Zante, Cerigo, and their dependent islets. With the exception of Cerigo, which lies opposite to the south-eastern extremity of the Morea, the rest lie pretty contiguous, along the western coasts of Epirus and Greece; the most northerly point of Corfu being in lat. $39^{\circ} 48' 15''$ N., and the most southerly point of Zante (Cape Kieri, on which there is a light-house) being in lat. $37^{\circ} 38' 35''$ N. Kapsali, the port of Cerigo, is in lat. $36^{\circ} 7' 30''$ N., long. 23° E. The area and population of the different islands may be estimated as follows:

Islands.	Area in sq. miles 15 to a degree.	Population in 1852.
Corfu.....	10.76	79,581
Cephalonia.....	16.20	70,870
Zante.....	5.60	41,992
Santa Maura.....	4.25	18,966
Ithaca and Calamos.....	8.32	11,264
Cerigo and Cerigotto.....	4.50	12,886
Paxo and Antipaxo.....	1.90	5,111
Total.....	47.12*	240,620

* This is equal to 1001.8 English square miles of 60.15 to the degree.

Soil and Climate.—These are very various. Zante is the most fruitful. It consists principally of an extensive plain, occupied by plantations of currants, and having an air of luxuriant fertility and richness. Its climate is comparatively equal and fine, but it is very subject to earthquakes. Corfu and Cephalonia are more rugged and less fruitful than Zante; and the former, from its vicinity to the snowy mountains of Epirus, and the latter from the Black Mountain (the Mount Enos of antiquity) in its interior, are exposed in winter to great and sudden variations of temperature; the frost sometimes damaging to a great extent the oranges and vines of these islands and those of Santa Maura. The latter is, in the hot season, exceedingly unhealthy—a consequence of the vapors arising from the marshes and the shallow seas to the north-east. Cerigo is rocky and sterile; it is subject to continued gales, and the current seldom permit its waters to remain unruffled.

These islands have undergone many vicissitudes. Corfu, the ancient Corcyra, was famous in antiquity for its naval power, and for the contest between it and its mother state Corinth, which eventually terminated in the Peloponnesian war. Ithaca, the kingdom of Ulysses; Cephalonia, sometimes called Dulichium, from the name of one of its cities; Zante, or Zacynthus; Santa Maura, known to the ancients by the name of Leucas or Leucadia, celebrated for its promontory, surmounted by a temple of Apollo, whence Sappho precipitated herself into the ocean; and Cerigo, or Cythera, the birth-place of Helen, and sacred to Venus;—have all acquired an immortality of renown.

For upward of 400 years these islands remained subject to Venice, constituting the Venetian Levant. By the treaty of Paris, 5th November, 1815, between England and Russia, it was agreed that the Ionian Islands should regulate their own internal organization, with the approbation of the protecting power, which should be represented by a lord high commissioner; that the merchant flag of the new States should be acknowledged as that of a free and independent State; and that Austria should enjoy equal

commercial privileges with Great Britain in its commerce with the republic. This treaty was acceded to by all the representatives of the allied powers, then negotiating at Paris, and by the Grand Sultan and the King of the Two Sicilies. The ports of the islands are Corfu, Cephaloni, Zante, Santa Maura, Ithaca, Cerigo, and Paxo. These are free ports, at which all kinds of merchandise may be stored in designated warehouses, free of any duties or charges, except rent, portage, and other minor expenses, which are regulated by special tariffs. There is no treaty between the United States and the Ionian republic, and the commercial intercourse between the two countries is subject to the various restrictions which apply to non-equalized vessels. The restrictions are higher tonnage duties, light duties, port charges, etc.

The following items will illustrate these discriminations: Charges for clearance, including bill of health, muster-roll, anchorage, and light duties, on an Ionian or equalized vessel of from 250 to 300 tons; \$8 10; charges, etc., including as above, for a non-equalized vessel of from 250 to 300 tons, \$10 84.

Other restrictions and discriminations exist in favor of equalized flags, especially in the transhipment of merchandise from one port to another, which confer such advantages on vessels coming under this category, as to preclude all competition on the part of those belonging to the other class. Merchandise transhipped, as above, in the former, is exempt from every extra charge; in the latter, three fourths of the original duty is exacted on all merchandise paying specific duties, and five per cent. on such as pay ad valorem duties. These discriminating duties amount, in the aggregate, to about 14 per cent. against non-privileged vessels. There entered, in the year 1851, into all the Ionian ports, 1435 vessels, measuring 169,144 tons; and there cleared 1401 vessels, measuring 164,780 tons; making, in all, 2836 vessels, measuring 333,924 tons.

The flags of these vessels represented 14 different nations, among which the United States is not included. Indeed, it is but seldom that a United States' vessel is found in any of the Ionian ports, nor can we look for any direct trade between the two countries so long as the present restrictions exist. Their removal can be effected by treaty or convention only; and negotiations to this end, under the constitution of the Ionian republic, must originate at London, as all diplomatic questions and conventions between these islands and foreign States must be conducted by the government of the protecting power.

Manufactures, etc.—These islands possess few manufactures properly so termed. The wives of the villani, or peasants, spin and weave a coarse kind of woolen cloth, sufficient in great part for the use of their families. A little soap is made at Corfu and Zante. The latter manufactures a considerable quantity of silk gros-de-Naples and handkerchiefs; the art of dyeing is, however, too little studied, and the establishments are on too small a scale. The peasantry, in general, are lazy, vain, delighting in display, and very superstitious. Those of Zante and Cephalonia are more industrious than the Corfiotes; in the first, particularly, their superior condition is probably to be ascribed, in part at least, to the nobles residing more on their estates in the country, and contributing, by their example, to stimulate industry. In Corfu, the taste for the city life, which prevailed in the time of the Venetian government, still operates to a great degree. The Corfiote proprietor resides but little in his villa; his land is neglected, while he continues in the practice of his forefathers, who preferred watching opportunities at the seat of a corrupt government, to improving their fortunes by the more legitimate means of honorable exertion and attention to their patrimony. In this respect, however, a material change for the better has taken place during the last 20 years.

Imports of Grain, etc.—Great part of the land is

held under short tenures, on the *metayer* system, the tenant paying half the produce to the landlord. Owing to the nature of the soil, and the superior attention given to the culture of olives and currants, the staple products of the islands, most part of the grain and cattle required for their consumption is imported. The hard wheat of Odessa is preferred, and large sums are annually sent to the Black Sea in payment. The Parliament, in March, 1833, repealed the duties on the introduction of corn; and the grain monopoly of Corfu, which had been established in favor of government, in order to provide against the possibility of a general or partial scarcity, was then also suffered to expire. These two sources of revenue, while they existed, did not probably produce less than £20,000 annually. They are similarly dependent upon Greece and Turkey for supplies of butcher's meat; a small number only of sheep and goats being bred in the islands. Oxen, whether for agriculture or the slaughter-house, are principally brought from Turkey. The beeves eaten by the troops are six weeks or two months walking down from the Danube, and the provinces that skirt it, to the shores of Epirus, where they remain in pasture until fit for the table.

Exports.—The staple exports from these islands are oil, currants, wine, soap, salt, and Valonia. The first is produced in great abundance in Corfu and Paxo, and in a less quantity in Zante, Santa Maura, and Cephalonia. Corfu has, in fact, the appearance of a continuous olive wood; a consequence, partly, of the extraordinary encouragement formerly given to the culture of the plant by the Venetians. Although there is a harvest every year, the great crop is properly biennial; the tree generally reposing for a year after its effort. (In France and Piedmont the period of inactivity is two and three years.) During five or six months, from October till April, the country, particularly in Corfu, presents an animated appearance, persons of all ages being busily employed in picking up the fruit. The average price may be about £1 11s. per barrel. Under the old Venetian system, the oil could only be carried to Trieste. It is charged with an *ad valorem* duty of 18 per cent., payable on the export. The quality might be much improved by a little more care in the manufacture, the trees being generally finer than in any other country. Currants, originally introduced from the Morea, are grown in Zante, Cephalonia, and Ithaca, but principally in the first. The plant is a vine of small size and delicate nature, the cultivation of which requires much care. Six or seven years elapse after a plantation has been made before it yields a crop. In the beginning of October, the earth about the roots of the plants is loosened, and gathered up in small heaps, away from the vine, which is pruned in March; after which the ground is again laid down smooth around; the blight called the "brina," and rainy weather in harvest produce great mischief. The currants are gathered toward September, and after being carefully picked, are thrown singly upon a stone floor, exposed to the sun in the open air. The drying process may occupy a fortnight or longer, if the weather be not favorable. A heavy shower or thunder-storm (no unfrequent occurrence at that season), not only interrupts it, but sometimes causes fermentation. The fruit is then only fit to be given to animals. Should it escape these risks, it is deposited in magazines called "*scraglie*," until a purchaser casts up.

The exports of these islands are raisins, olives, olive-oil, honey, soap, silk, and wine; and the imports are coffee, sugar, wines, brandy, grain, cured fish, manufactures of wood, wool, cotton, iron, etc. Currants and raisins constitute the heaviest articles of export from these islands, the annual produce of currants amounting to some 12,000,000 pounds; but of late years the producers have had to contend with diseases called "the blight," for which sulphur has proved to be the

only efficient remedy. Notwithstanding the partial failure of the crops from this cause, for four consecutive years, the exports of currants in 1855 show an active and remunerating trade. The following summary for this year will give some idea of the extent of the currant trade of the republic:

	Exported to		Distilled.		Existing in stores.	Total.
	England.	Trieste.	Pounds.	Pounds.		
Zante.....	701,931	85,867	1,002,702	.....	.....	1,790,000
Cephalonia.....	4,868,400	435,486	576,118	120,000	.....	5,999,999
Ithaca.....	.....	46,000	4,000	.....	.....	50,000
Santa Maura.....	.....	.....	.....	.....	.....	10,000
Total.....	5,570,331	566,553	1,582,815	120,000	.....	7,849,999

Salt may be obtained in considerable quantities in Corfu, Zante, and Santa Maura, for exportation; the latter island alone produced it until the late act of Parliament, which provided that government should let the salt-pans in all the islands to those bidders who should offer, by sealed tenders, to supply it at the lowest rate to the consumer, paying at the same time the highest price to government. No export duty is charged upon it. These statements show that heavy duties are levied upon the exportation of the staple products of the islands—an objectionable system, and one which, if it is to be excused at all, can only be so by the peculiar circumstances under which they are placed. There is no land-tax or impost on property in the Ionian Islands, such as exists in many other rude countries; and, supposing it were desirable to introduce such a tax, the complicated state of property in them, the feudal tenures under which it is held, and the variety of usages with respect to it, oppose all but invincible obstacles to its imposition on fair and equal principles. At the same time, too, a large amount of revenue is required to meet the expenses of the general and local governments, to maintain an efficient police, and to prevent smuggling and piracy. However, we can not help thinking that some very material retrenchments might be made from the expenditure; and it is to this source, more, perhaps, than to any other, that the inhabitants must look for any real or effectual relief from their burdens.

The Duties on Exports from the Ionian Islands are regulated by acts dated 8th June, 1835, 25th April, 1837, and 29th May, 1847. Oil and currants pay 18 per cent. *ad valorem*. Wine (excepting that of the Cephalonia Wine Company), 6 per cent. *ad valorem*. Soap, 8 per cent. *ad valorem*. Valonia, 6 per cent. *ad valorem*. All other articles free. N. B.—Oil shipped in vessels under Ionian colors for the purpose of being conveyed from one island to another of the States must pay only 7 per cent. *ad valorem*.

ACCOUNT OF THE REVENUE OF THE IONIAN ISLANDS IN 1851 AND 1852, SPECIFYING THE DIFFERENT ITEMS, AND THE AMOUNT OF EACH.

Duties.	Revenue in 1851.	Revenue in 1852.
Customs.....	£30,040	£22,118*
Export duty—		
On olive oil.....	20,735	11,106*
“ currants.....	84,491	18,618*
“ Island wines.....	454	670
Import duty—		
On foreign wines and spirits...	1,872	1,120
“ tobacco.....	2,909	2,583
“ grain.....	28,504	22,141
Stamp duties.....	12,481	10,860
Sale of gunpowder (monopoly)...	725	879
Receipts for tariff dues—		
Health Office.....	4,749	4,216
Post Office.....	2,205	2,043
Executive Police.....	2,683	2,251
Judicial.....	1,076	571
Free port warehouse rents.....	1,208	1,223
Mortgage and registration dues...	507	398
Printing office receipts.....	345	263
Freights of gov't steam packets...	2,250	1,823
Receipts for public instruction...	1,599	1,551
Miscellaneous.....	811	598
Total.....	£144,086	£99,081

* The diminution of the duties was wholly owing to the failure in the crops of oil and currants.

ACCOUNT OF THE EXPENDITURE OF THE IONIAN ISLANDS
IN 1851 AND 1852, SPECIFYING THE DIFFERENT ITEMS,
AND THE AMOUNT OF EACH.

Heads of expenditure.	1851.	1852.
Military protection (paid by Eng.)	£225,000	£225,000
Lord H. Commissioner's civil list.	14,448	13,000
Legislative Assembly.	811	4,720
Civil establishment.	42,618	40,460
Judicial establishment.	15,629	15,366
Education.	11,894	11,499
Rents of public offices.	1,566	1,662
Public works.	2,351	722
Packet service, coals, repairs, etc.	4,580	2,643
Collection of revenue, including paper for stamps.	1,889	432
Health office, lazarettos and light-houses.	1,922	1,880
Post offices.	387	838
Executive police.	1,460	1,949
Courts of justice.	1,558	2,069
Contingent expenditure of gen- eral and local governments.	20,028	14,434
Total.	£145,596	£136,119

ACCOUNT OF THE QUANTITIES AND VALUES OF THE PRINCIPAL
ARTICLES EXPORTED FROM THE IONIAN ISLANDS
IN 1852.

Articles exported.	Quantities.	Value.
Olive oil, bar. of 16 imp. gal.	27,178	£261,652
Currants, lbs.	7,883,908*	75,014
Wine, barrels	39,062	9,512
Spirits, " "	720	554
Salt, bushels	109,797	1,145
Hides, number	6,087	1,788
Casks of currants.	8,779	2,382
Barrels for oil, inc. butts	6,240	932
Soap, lbs.	1,291,687	16,693
All other articles.	13,877	8,083
Foreign manufactures.	....	8,717
Total.	....	182,872
Merchandise in transit.	....	223,454

* A very bad season. In favorable years the exports amount to 15,000,000 or 16,000,000 lbs.

ACCOUNT OF THE QUANTITIES AND VALUES OF THE VARIOUS
ARTICLES IMPORTED INTO THE IONIAN ISLANDS IN 1852.

Articles.	Quantities.	Value.
Produce, sugar, lbs.	1,855,807	£230,738
Coffee, " "	695,383	15,617
Drugs, gums, etc.	....	10,256
Manufactures, " "	....	114,468
Raw silk, lbs.	95	88
Raw cotton, " "	50,555	1,256
Wool, " "	23,824	280
Hemp and flax, " "	52,583	1,143
Staves for large casks, No.	393,572	5,795
Hoops, " "	344,070	2,410
Iron, lbs.	296,880	17,251
Timber, " "	9,541	8,703
Firewood, pass.	923,832	201,646
Wheat, kilogs.	167,828	23,189
Indian corn, " "	73,558	6,751
Barley and oats, " "	18,644	3,248
Beans and other pulse, " "	1,131,084	4,387
Potatoes, lbs.	891,727	9,219
Rice, " "	271,544	2,543
Maccaroni, " "	372,817	3,252
Flour, " "	31,828	313
Biscuits, " "	474,452	5,754
Cheese, " "	71,767	2,885
Butter, " "	23,745	823
Salt meat, " "	1,035,519	9,192
Stock fish and baccala, " "	59,018	4,230
Bottarga and Cavlare, " "	1,244,826	16,964
Sardinas and anchovies, " "	9,614	4,862
Onions and garlic, mill.	17,197	952
Dried fruits, " "	682	4,299
Poultry, No.	1,154	3,200
Wines, foreign, barrels	9,966	82,741
Spirits, " "	2,023	2,678
Horned cattle, No.	316	2,071
Horses, mules, and asses, " "	89,142	5,894
Sheep, goats, and pigs, " "	290,521	6,328
Tobacco, lbs.	....	12,878
Rye, kilogs.	....	585,238
All other articles, " "	....	198,128
Total.	....	....
Value of merchandise in transit	....	....

Ports.—The principal ports in the Ionian republic are Corfu and Zante, in the islands of the same names, and Argostoli in Cephalonia. The city and port of Corfu lie on the east side of the island, on the canal

or channel between it and the opposite continent, which is here about five miles wide. The citadel, which projects into the sea, is furnished with a light-house, 240 feet high; the latter being in lat. $39^{\circ} 37' N.$, long. $19^{\circ} 56' E.$ The town is but indifferently built. Population about 18,000, exclusive of the military. The fortifications are very strong, both toward the sea and the land. The canal has deep water throughout; its navigation, which is a little difficult, has been much facilitated by the erection of a light-house on the rock of Tignoso in the northern entrance, where the channel is less than a mile in width; and by the mooring of a floating light off Point Leschino, in the southern entrance. Ships anchor between the small but well-fortified island of Vido and the city, in from 12 to 17 fathoms water. The port, or rather gulf, of Argostoli in Cephalonia, lies on the south-west side of the island. Cape Aji, forming its south-western extremity, is in lat. $38^{\circ} 8' 40'' N.$, long. $20^{\circ} 23' 30'' E.$ Cape San Nicolo, forming the other extremity, is about $\frac{1}{2}$ miles from Cape Aji, and between them, within about $\frac{1}{2}$ mile of the latter, is the small islet of Guardiani, on which is a light-house. From this islet the gulf stretches N. $\frac{1}{2}$ W., from seven to eight miles inland. The town of Argostoli lies on the west side of a haven on the east side of the gulf formed by Point Statura. The situation is low and rather unhealthy. Population about 5000. Its appearance and police, particularly the latter, have been much improved since its occupation by the English. There is deep water and good anchorage ground in most parts of the gulf. The best entrance is between Cape San Nicolo and Guardiani, keeping rather more than a mile to the eastward of the latter, on account of a reef that extends N. E. and S. W. from it nearly that distance.

The port and city of Zante are situated on the eastern side of the island, in lat. $37^{\circ} 27' N.$, long. $20^{\circ} 54' 42'' E.$ The city, the largest in the Ionian Islands, extends along the shore for nearly $\frac{1}{2}$ mile, but it is nowhere above 200 yards in breadth, except where it ascends the hill on which the citadel is erected. The style of building is chiefly Italian; and the interior of the city displays every where great neatness, and even a certain degree of magnificence. Population estimated by Dr. Burgess at about 20,000. It has a mole or jetty of considerable utility, at the extremity of which a light-house is erected; and a lazaretto, situated a little to the south-west. The harbor is capacious. Ships anchor opposite the town at from 500 to 1000 yards' distance, in from 12 to 15 fathoms, availing themselves of the protection of the mole when the wind is from the north-east. When the troops took possession of Zante, in 1810, the fortifications were found to be in very bad repair; but immense sums have since been expended upon their improvement and extension.

In 1853 566,817 tons of shipping entered the ports of the Ionian Islands, of which 27,316 were English. The others were Ionian, Greek, Turkish, etc.

Money.—Accounts are kept in sterling money, or in Spanish dollars and oboli, 100 oboli being = 1 doll. = 4s. 4d.; a doubloon = 1 dollar.—TATE'S *Cambist*.

Weights.—English weights and measures are sometimes made use of, though with Italian denominations; but the following are most generally used: The pound *peso grosso*, or great weight of 12 oz. = 7384 grains Troy; 94.8 lbs. = 100 lbs. avoirdupois. The pound *peso sottile*, or small weight used for precious metals and drugs, is 1-3d lighter than the foregoing; 12 oz. *peso sottile* corresponding to 8 oz. *peso grosso*.

The oke, used in the southern islands, weighs about 18,900 grains Troy, or 27.10 lbs. avoirdupois. The Levant cantar, or quintal, should contain 44 okes. The miglajao (1000 lbs.), for currants in Zante, is 1 per cent. lighter than other articles.

Measures of Length.—The Venetian foot is 12 oncé = $13\frac{1}{2}$ inches English. Passo = 5 Venetian feet. Braccio, for cloths, etc., = 27.8-16 inches English.

Do. for silks, = 25 3-18. Land is measured by the *misura* or 1-8 of a *moggio*, or *bacile*, 400 square *passi* being 1 *misura*, or *bacile*, about 3-10 of an acre English. Vineyards are measured by the *zappade*; 3 *zappade* (a computed day's work) being 1 *misura*. Firewood is measured by the square *passo*, usually, however, only 2 feet thick, this depending on the quality of the wood. Stone is measured by the *passo cubo*.

Measures of Capacity.—*Corn.*—Corfu and Paxo: *moggio* of 8 *misura*, about 5 Winchester bushels. Cephalonia: *bacile* should contain 80 lbs. *peso grosso*, best quality wheat. Santa Maura: *cado* of 8 *scrivelli*, 4 = 3 *mog.*; 1 *cado* = 3½ bushels English. Ithaca: 5 *bacile* = 1 *moggio*. Cerigo: *chiló*, the measure of Constantinople, = 1 bushel English.

Wine.—Corfu and Paxo: 32 *quartucci* = 1 jar, and 4 jars = 1 barrel = 18 English wine gallons. Cephalonia and Ithaca: 2 *quartucci* = 1 *boccale*; 4 *boccali* = 1 *secchio*; 6 *secchio* = 1 barrel = 18 English gallons. Zante: 13 1-3 *quartucci* = 1 *lire*; 40 *quartucci* = 1 jar; 3 jars = 1 barrel = 17 5-8 English wine gallons. Santa Maura: 22 *quartucci* = 1 *stamno*; 6 *stamni* = 1 barrel = 18 English wine gallons. Cerigo: 2 *agoston* = 1 *boccia*; 30 *boccio* = 1 barrel = 18 English wine gallons.

Oil.—Corfu and Paxo: 4 *quartucci* = 1 *miltro*; 6 *miltro* = 1 jar; 4 jars = 1 barrel = 18 English wine gallons. Cephalonia: 9 *pagliazzi* = 1 barrel = 18 English wine gallons. Zante: 9 *lire*, or 3 jars of 46 *quartucci* each = 1 barrel 5-8 English wine gallons. Santa Maura: 7 *stamni* = 1 barrel = 18 English wine gallons. Ithaca: 13 *pagliazzi* = 1 barrel = 18 English wine gallons. Cerigo: 24 *bozze* = 1 barrel = 14 0-5 English wine gallons. *Salt.*—Centinajo, about 4000 lbs. Venetian *peso grosso*. *Lime.*—Corfu, measure of 4 English cubic feet.

In compiling this article, we have consulted, besides the works referred to above, the *Voyage Historique Pittoresque*, etc., by SAINT SAUVEUR—a diffuse but valuable work. The account of Zante, in the last volume (tome iii., pp. 101-278), is particularly good. We have also looked into the *Voyage en Grèce* of SCROFANI, 3 tomes, Paris, 1801; the *Archives du Commerce*; the *Papers laid before the British Finance Committee*, etc. See *Westm. Rev.*, xxxviii., 413; *Monthly Rev.*, lxxxiii., 225, cii., 138; *Quar. Rev.*, xxix., 86; *Chris. Rev.*, xiv., 625; *Com. Rel. U. S.*, vol. i., 457, vol. ii., 171.

Iowa, one of the United States of North America, lies between north lat. 40° 40' and 43° 30', and west long. 90° 12' and 96° 53'. It is bounded north by Minnesota Territory, east by the Mississippi River, which separates it from the States of Illinois and Wisconsin, south by Missouri, and west by the Missouri and the great Sioux Rivers, the former of which separates it from the Indian Territory, and the latter from Minnesota. Greatest length from east to west, 307 miles; greatest breadth, 196 miles; area, 50,914 square miles.

The surface of Iowa is somewhat elevated and generally undulating. It has no mountains, nor even hills, of any great height. Table Mound, a conical elevation with a flat summit, three or four miles from Dubuque, is perhaps 500 feet high. On the borders of the rivers there are frequent "bluffs" which are generally from 40 to 130 feet high. The highest ground in the State is a plateau in the north-west, called *Coteau des Prairies*, which enters it from Minnesota. The southern part of the State abounds with grassy lawns and verdant plains, intersected by numerous rivers, the chief of which are the Des Moines, the Skunk, the Iowa, and the Red Cedar (a branch of Iowa) Rivers which flow in a south-east direction into the Mississippi. The banks of almost all of these rivers are skirted with belts of wood. The distinguishing feature, however, of Iowa is its unique and admirably diversified prairies, sometimes spreading out into

vast plains. The entire State is named "a rolling prairie" by the settlers, from the resemblance its surface bears to the rolling swell of the ocean. From the absence of wood, the scenery becomes wearisome and tame.

The soil of Iowa is in general fertile. Near the confines of the Coteau des Prairies the country is hilly and desolate; the high lands being covered with gravel support but a scanty vegetation, while the low grounds are marshy. It appears, however, from the surveys which have been made, that no State in the Union has a smaller proportion of inferior land. Dr. Owen, in his geological report, remarks that "the soil of Iowa is generally excellent, and of easy cultivation. The valleys—especially of the Red Cedar, Iowa, and Des Moines Rivers—present a body of arable land, which, taken as a whole, for richness in organic elements, for amount of saline matter, and due admixture of earthy silicates, affords a combination which belongs only to the most fertile upland plains." The climate is generally more healthful than most of the new States. The openness of the country renders it less liable than is usual to the influence of malaria; the air on the upland prairies is buoyant, and rendered free from all pernicious influences by the refreshing breezes that blow periodically over them. The rapid flow of its rivers also carries off in the valleys those miasmatic influences which otherwise tend to the production of disease. The winter is occasionally severe, but the severity is not so great as is usual in the same latitudes. The summer, also, is less oppressively hot.

Iowa is strictly an agricultural country. Its fine prairies and rich natural pastures afford peculiar facilities for rearing cattle and sheep. Wool-growing has accordingly become one of the staple employments of the settlers. The raising of hogs is an occupation equally common and profitable. The value of live stock in 1850 was estimated at \$3,660,000, and slaughtered animals at \$810,000. The amount of wool produced was 373,898 pounds. Considerable progress has recently been made in agriculture, as shown by the increase of various productions of the State. For instance, in 1840 there were only 154,693 bushels of wheat grown; in 1850, there were 1,540,581; in 1840, 216,385 bushels oats; in 1850, 1,524,345; in 1840, 1,406,241 bushels maize; in 1850, 8,656,799. All the other productions common to similar latitudes are grown in Iowa, and have increased in an equal or greater proportion.

Manufactures have, until recently made little progress in the State. Having only existed for little more than 10 years as an independent State, time has not been afforded to develop its manufacturing resources. Possessing within itself abundance of the two grand elements for manufacturers—coal and water power—there can be no doubt that Iowa will yet be distinguished as a manufacturing State. In 1850 the number of manufacturing establishments, producing each to the value of \$500 annually and upward, was 482. Of these there were three for the manufacture of cast iron, 14 tanneries, and one woolen factory. The others are chiefly employed in the manufacture of articles for ordinary and domestic purposes and agricultural implements. The home-made manufactures in the year ending 1st June 1850, were valued at \$220,000.

The minerals of Iowa are not of great variety. The vast bituminous coal-field of the State occupies most of its central and southern portions. For upwards of 200 miles the River Des Moines passes through this great deposit, the area of which has been estimated at about 20,000 square miles embracing a country equal in extent to more than one half of the State of Indiana. The beds of coal, which are 100 feet in thickness, lie near the surface, and may be worked at small expense. The lead mines of Iowa are a continuation of those of Illinois and Wisconsin. The workings are

old and have been very productive. They occur in the north-east part of the State, Dubuque, one of the oldest settlements in North America, being the chief town of the lead-mining district. Dr. Owen, in his *Geological Survey*, remarks that the lead-mines of Iowa produce as much of that metal as the whole of Europe, except Great Britain, and that their capabilities are unbounded. Zinc is found chiefly in the form of electric calamine, in cellular masses in connection with the lead. This mineral occurs in some "diggings" also, in a state of carbonate, and in others, as a sulphuret. Copper is found in the same localities as zinc. It has recently been discovered in Cedar county in considerable quantities. Iron-ore is abundantly distributed, but as yet, only a small quantity of it has been converted into metal. In the geological survey of the State above referred to, it is affirmed that its resources and capabilities are such that 10,000 laborers and miners might be profitably employed within its boundaries. Iowa has no direct foreign commerce, but its trade with the ports of the Atlantic and the Mexican Gulf is very considerable, and rapidly increasing. The exports consist of agricultural and mining products. The home traffic of this State is also very considerable. The facilities which it possesses, both for internal trade and foreign commerce are very abundant, and in a short time will be greatly increased. A railroad of 180 miles in length has been projected between Dubuque, the capital of the lead-mining district, and Keokuk, the chief port of the State for foreign trade. Keokuk, Davenport, Lyons, and Dubuque will also shortly be connected by railroads with the interior. Besides these, which will radiate through the State in various directions, the grand trunk line is proposed to be carried from this city westward to Council Bluffs on the Missouri, and will form a part of the great Pacific line which is to terminate at San Francisco, in California. Through Iowa will also pass a branch of the great chain of north and south railroads connecting St. Louis with the extreme settlements of Minnesota Territory. When these are completed, both the home and foreign commerce of the State will be indefinitely increased. Congress has given 1,300,000 acres for the improvement of the Des Moines River, as far as Des Moines City—to be made navigable for large steamboats. In July, 1856, there were 108 miles of railroad finished, and 1110 proposed, for which Congress, in May, 1856, appropriated 4,320,000 acres. The valley of the Des Moines River contains at present half the population, as well as half the agricultural wealth of the State, and its prosperity may for some time depend as much upon the improvement of navigation on this river, as upon the execution of these projected railroads. The Des Moines rises in the Coteau des Prairies, in the south-west of Minnesota, and flowing through the State in general in a south south-east direction, divides it into two nearly equal sections, and after a course of 400 miles, falls into the Mississippi at the south-east extremity of the State, about four miles below Keokuk. Iowa has many other interior rivers which are navigable for various—some of them for considerable—distances. The Skunk is more than 200 miles in length, and flows through a fertile country. It pursues a course of 150 miles in a south-east direction nearly parallel to Des Moines. The Iowa, from which the State takes its name, has, in general, a south south-east direction, and after a course of upwards of 300 miles, discharges itself in the Mississippi by two mouths, forming a delta, the sides of which are about six miles long. It is navigable by steamboats at all seasons, to Iowa City, 80 miles from its mouth, and for boats of light draught much further up. The Red Cedar (a branch of the Iowa), is navigable for 60 miles. The Wapsipinicon, the Makoquete, Turkey, and Upper Iowa Rivers have courses varying in length from 100 to 200 miles, and are navigable for distances of 20 to 60 miles. They

flow in an east or south-east direction into the Mississippi. The Great Sioux, an important tributary of the Missouri, forms the north-west boundary of the State; its length is estimated at 800 miles. The tributaries of the Missouri in this State are of minor importance. The Mississippi borders the State for its whole length on the east, and is navigable in time of high water for steamboats, to the mouth of the St. Peters, in Minnesota.

Ipecacuanha (Fr. *Ipecacuanha*; Ger. *Americianische brechwurzel*; It. *Ipecocanna*; Port. *Cipo de camaras*, *Ipecacuanha*; Sp. *Ipecacuana*, *Raiz de oro*), the root of a perennial plant (*Cephaelis ipecacuanha*), growing in Brazil and other parts of South America. It is from its color usually denominated *white*, *gray*, or *ash-colored*, and *brown*. Little of the first variety is found in the shops. The gray and brown varieties are brought to this country in bales from Rio Janeiro. Both are in short, wrinkled, variously bent, and contorted pieces, which break with a resinous fracture. The gray is about the thickness of a small quill, full of knots and deep circular fissures, that nearly reach down to a white, woody, vascular cord that runs through the heart of each piece; the external part is compact, brittle, and looks smooth; the brown is smaller, more wrinkled, of a blackish-brown color on the outside, and whitish within: the white is woody, and has no wrinkles. The entire root is inodorous; but the powder has a faint disagreeable odor. The taste is bitter, sub-acrid, and extremely nauseous. In choosing ipecacuanha, the larger roots, which are compact and break with a resinous fracture, having a whitish gray, somewhat semi-transparent appearance in the outside cortical part, with a pale straw-colored medullary fibre, are to be preferred. When pounded, ipecacuanha forms the mildest and safest emetic in the whole materia medica. Though probably employed in America from time immemorial, it was not introduced into Europe till the time of Louis XIV., when one Grenier, a French merchant, brought 150 pounds of it from Spain, with which trials were made at the Hôtel Dieu. Helvetius first made known its use in dysentery, for which Louis XIV. munificently rewarded him by a *douceur* of 25,000 francs.—*Thomson's Dispensatory*; *Thomson's Chemistry*.

Ireland, one of the largest of the European islands, is situated to the west of Great Britain, from which it is separated by a narrow channel called the Irish Sea and St. George's Channel on the east, and is bounded on its other sides by the Atlantic Ocean, through which it can maintain a direct communication with the continents of Europe, Africa, and America. The advantageous position, the fertility of the soil, and the salubrity of the climate, have conferred upon Ireland commercial facilities which are capable of being greatly increased. How far these natural advantages have been made available toward the internal improvement of the island itself, and the general benefit of the empire of which it forms an important part, may be best ascertained from the following details of its history and statistics.

Ireland is rhomboidal in shape, and placed at the eastern extremity of the Atlantic Ocean, which washes its northern, western, and southern shores, while its eastern coast is separated from the adjacent island of Great Britain by the Northern Channel, which at one point is only 13½ miles wide, the Irish Sea, about 130 miles in width, and St. George's Channel, which is 69 miles wide between Dublin and Holyhead, and somewhat less at its southern extremity. Its geographical position is between N. lat. 51° 26' and 55° 21', and W. long. 5° 20' and 10° 26', comprising, therefore, 3° 55' of lat., and 5° 6' of long.—the degrees of latitude being the same as those under which are situated the dissimilar climates of Berlin, Hamburg, Rotterdam, Leipzig, Warsaw, part of Hudson's Bay, the Straits of Belleisle, and Petropaulowski, in Kams-

chatka, which latter is nearly under the same parallel of latitude as Wicklow. The largest diagonal line that can be drawn within the island, viz., from Tor Head, in Antrim, to Mizen Head, in Cork, measures 302 miles; and the shorter, from Carnsore, in Wexford, to Erris Head, in Mayo, is 210 miles in length. The breadth of the country, from Dundalk to Ballyshannon is 85 miles; from Dublin to the head of Gal-

way Bay, 110 miles; and the indentations of the coast by harbors, arms of the sea, and mouths of rivers are so numerous, that scarcely an acre of land in the country is more than 50 miles from the sea or good navigation. The territorial divisions, and the acreable extent of Ireland, which, next to Great Britain, is the largest island in Europe, appear in the following table:

Territorial Divisions.			ACREABLE EXTENT, According to the Ordnance Survey and Census Report.					Annual amount of Griffith's Valuation.
Provinces.	No. of Baronies.	No. of Parishes.	Of arable land.	Of uncultivated land.	Of plantations.	Of towns and villages.	Of water.	
Leinster.....	124	1,008	3,961,198	781,886	115,944	15,569	51,624	4,876,211
Munster.....	75	824	3,874,613	1,893,477	180,415	14,693	151,881	6,064,579
Ulster.....	70	891	3,407,539	1,764,370	79,788	8,790	214,956	5,475,498
Connaught.....	47	392	2,220,960	1,906,002	48,940	3,877	212,864	4,892,048
Total.....	316	2,592	13,464,300	6,295,785	374,492	42,929	680,325	20,508,261
								11,439,575

Several coal-fields exist in Ireland, resting on a limestone basis. In Ulster, the district of Coal Island, in the county of Tyrone, produces coal of good quality, extensively used in the neighborhood; the small coal-field at Ballycastle in Antrim, is of no economical importance. The province of Connaught affords beds of coal in Leitrim, Roscommon, and Sligo, but rarely exceeding three or four inches in thickness. The Munster coal-fields are in the counties of Cork, Kerry, and Limerick. The chief coal-district, however, is that of Leinster, in Carlow, Kilkenny, and the Queen's County. This coal, as well as that of the Munster district, is anthracite; that of Connaught is bituminous. The native coal is only used in the districts where it is raised, and neither the quantity nor the quality has been found such as to interfere with the importation of coal from Great Britain, which probably exceeds 1,000,000 of tons annually.

More notable in Ireland are the unstratified igneous rocks, of which many varieties are found. Trap-rocks exist in various parts of the country, but more especially in Antrim, where they are found in great variety. The basaltic columns of Fairhead and the Giant's Causeway form one of the most interesting geological districts in the British empire. The trap-rocks often repose on the indurated chalk of Antrim, especially in Rathlin Island and at Cushendole. At the latter place beds of trap and the chalk alternate. Of quartz rock, the chief development in Ireland is in Mayo and Donegal; it appears, also, in the peninsula of Howth and Dublin, the summits of the Sugar-Loaf Mountains, and Bray Head, in Wicklow, and in the district of Forth, in Wexford. No tertiary formation has been discovered in Ireland, except the clays containing lignite or wood-coal on the southern shore of Lough Neagh.

The elevation of the surface of Ireland is stated in the following table from the Land Tenure Commissioners' map:

	Square miles.
Between sea-level and 250 feet in height.....	13,242
" 250 and 500 feet.....	11,797
" 500 " 1000 ".....	6,797
" 1000 " 2000 ".....	1,589
Above 2000 feet in height.....	824
Total.....	32,509

The highest peaks in the chief mountain groups are:

	Feet.
Carntual, M'Gillicuddy's Reeks, Co. Kerry....	3,414
Lugnaquilla, Wicklow.....	3,089
Slieve Donard, Mourne Mountains, Co. Down.....	2,796
Mulree, Co. Mayo.....	2,688
Comeragh, Co. Waterford.....	2,597
Errigal, Co. Donegal.....	2,462
Trosnan, Co. Antrim.....	1,810

If the possession of numerous fine bays and harbors made a country great as a commercial and maritime power, Ireland would be second to none in Europe. Pre-eminent even in Ireland is the magnificent harbor of Cork, securely land-locked, protected by strong batteries, and used as the only naval station on the Irish coast. Baltimore Harbor, Skull, Cape Clear, Crookhaven, Dunmanus and Bantry Bay, are all of sufficient

depth and capacity for large vessels. On the western coast are Berehaven, Kenmare River, Valentia, Ventry, Smerwick, Brandon Bay, the estuary of the Shannon, Galway Bay, Roundstone Bay, Ardhear or Clifden, Ballynakill and Killery Harbors, Clew, Blackrod, and Killala Bays, with many others of less importance. On the northern coast are Milroy Harbor, and the fine gulfs of Lough Swilly and Lough Foyle. The eastern coast has been less favored by nature, and furnishes only one bay, with sufficient depth of water for the largest vessels, that of Strangford. The Bay of Dublin, which is much exposed, contains the fine artificial Harbor of Kingstown. Belfast, Newry, Drogheda, Wicklow, Arklow, and Wexford, have all been converted into ports, but are naturally deficient in the requisites for good harbors. Between Wexford and Cork is the fine Estuary of Waterford, formed by the confluence of the Rivers Suir, Nore, and Barrow. Altogether, Ireland possesses 14 harbors for the largest ships, 17 for frigates, from 30 to 40 for merchant vessels, with many good summer roadsteads, and an infinity of small harbors for fishing-boats. The islands off the coast of Ireland are numerous, but generally of small size; the largest are Rathlin and Tory in the north; Achill, Clare, the South Arran Islands, and Valentia, in the west; and Whiddy and Cape Clear in the south.

Lakes.—The lakes in Ireland are numerous. Lough Neagh, in Ulster, is the largest inland lake in the United Kingdom, and is only exceeded in Europe by Lake Ladoga in Russia, Lake Vener in Sweden, and the Lake of Geneva. According to the Ordnance Survey it covers 98,255 statute acres. The River Bann, passing through it, affords the means of lowering its surface, which is 48 feet above the sea at low water; but as its deepest part is beneath the level of low water, total drainage would be impracticable. Tradition states that it was once dry land, and that the tops of buildings may at times be seen in it—a legend which has been made use of by Moore in one of his melodies. Lough Neagh contains but one islet, Ram Island, remarkable only for a round tower, and as contributing to break the sameness of the surface of the lake, which, being surrounded by shores almost as level as itself, and generally bare of wood, has little or none of the picturesque beauty which renders Lough Erne and Killarney so delightful. Its vicinity to the five counties of Ulster, Antrim, Down, Armagh, Tyrone, and Londonderry, each of which its waters touch, presents great advantages for internal trade by inland navigation; steam vessels have been placed upon the lake, and, in conjunction with Coal Island, Newry, Ulster, and Lagan Canals, Lough Neagh, with its 100 miles of coast, promises to increase in importance as a centre of internal traffic. Lough Erne, the next in size, lies wholly within the county of Fermanagh. Its total length is upward of 40 miles, but its greatest breadth is not more than 8. Strictly speaking, it consists of two lakes, about 5 miles apart; the more inland measuring about 14 miles in length, and that nearer the

sea, 25. They are connected with each other by a fine river flowing from the upper or southern, into the lower or northern lake. On the island formed by the division of this river into two branches, the chief part of the town of Enniskillen is built. The upper lake covers 9278 statute acres, and contains about 90 islands; the lower and larger lake contains nearly 28,000 statute acres and numerous islets. Its coasts are studded with numerous seats and villas of much beauty. Lough Corrib and Lough Mask, in the west of Connaught, are separated from each other by an isthmus not more than 3 miles broad. The former of these lakes covers an area of 43,484 acres, and the latter, 22,219. It discharges its waters into Galway Bay by a short but broad and rapid river, which skirts the town of Galway. Its level is but 14 feet above that of the sea, and works have long been in progress to connect the navigation of the bay with that of the two great lakes above it. Means of connecting them by water communication has not yet been effected. Further north, and about 3 miles from Ballina, is the narrow lake of Lough Conn, 12 miles long. The lakes of Killarney, in Kerry, have long been celebrated for their picturesque scenery. They are small as compared with the larger lakes of Ireland; the lower lake covers 5001 acres, the middle lake 680 acres, and the upper lake only 480 acres. Lough Derg, in the south of Donegal, is small, but of great celebrity from an islet in it, called St. Patrick's Purgatory, which has been resorted to from time immemorial as a place of penance by pilgrims of the Roman Catholic persuasion. This lake is not to be confounded with the great Lough Dearg lying on the course of the Shannon, which contains 29,570 acres. Lough Gill, in Sligo, Lough Shelin to the north of Meath, and Lough Oughter, in Cavan, are also worthy of notice for their scenic beauties. There are many other lakes of small size in most parts of Ireland, but chiefly in the counties of Cavan, Westmeath, and Longford.

Ireland contains not only the largest lake, but also the largest river in the United Kingdom—the Shannon, which, rising in the mountains on the confines of Fermanagh and Leitrim, flows through Lough Allen, and thence in a south-western direction, separating Connaught from Leinster, till, arriving at Limerick, it turns westward, and discharges itself into the Atlantic, through a fine estuary, which, at its entrance between the Capes of Loophead and Kerryhead, is 8 miles wide. It is navigable for large vessels to Limerick, and for vessels of smaller tonnage to within 5 miles of its source in Lough Allen. Its centre length measures 240 miles, and in consequence of the small amount of its fall, which does not exceed 150 feet, its current is very slow and often imperceptible. During its passage from Lough Allen to Limerick it expands into the large lakes of Lough Reagh, 15 miles, and Lough Dearg, 21 miles in length, and studded with numerous islets. The Blackwater rises near Charleville, and, flowing south-eastward, discharges itself into the Atlantic at Youghal, after forming the boundary between the counties of Cork and Waterford. Between the latter county and that of Wexford is the estuary of the Suir, the Nore, and the Barrow, all of which have their sources not far from each other in the central range of the Slievebloom Mountains; and, after diverging so that their streams enrich a great portion of the provinces of Leinster and Munster, unite again near the city of Waterford. The Slaney rises in the mountains of Wicklow, and empties itself into St. George's Channel at Wexford. The Boyne, famous for its historical recollections as well as for its natural advantages, has its sources in the central elevated plain of Leinster, and, flowing north-eastward, falls into the Irish Sea at Drogheda. The Bann rises in the Mourne Mountains, flows northward through Lough Neagh, and, after separating the counties of Londonderry and Antrim, flows into the Atlantic at

Coleraine. The Foyle is formed by the union of the streams of the Poe, the Mourne, the Finn, and the Derg, which, flowing from different parts of the interior of Ulster, discharge their combined waters into Lough Foyle near Londonderry. The Erne, which flows from Lough Erne, has a short but rapid course to the Atlantic westward, and discharges its great body of waters into Donegal Bay, over a ledge of rocks rising 10 feet above the level of the ordinary tides. The other rivers, though numerous, amounting nearly to 100, are small, and mostly confined to the counties that give them birth. The Liffey, which rises in the mountain-land of Wicklow, and, after a circuitous course through Kildare, discharges itself into the Irish Sea, is remarkable for nothing except that the metropolitan city of Dublin is seated on its banks.

The extent of country forming the basin from whence each of the principal rivers derives its supply, is as follows:

	Sq. miles.		Sq. miles.
Shannon.....	4-544	Lee.....	735
Barrow, Nore, and Suir	8-400	Liffey.....	568
Galway, includ. Loughs		Blackwater, N.....	526
Corrib and Mask.....	1-874	Maine and Inney.....	511
Erne.....	1-585	Feale and Galle.....	479
Foyle.....	1-476	Roughly.....	475
Bann and Maine.....	1-266	Ovoca.....	281
Blackwater, S.....	1-219	Bandon.....	228
Boyne and Blackwater	1-086	Lagan.....	227
Moy.....	1-083	Avonmore.....	200
Slaney.....	815		

Ireland was once so thickly covered with timber as to receive the name of the Island of the Woods. During the early periods of its connection with England, its extensive and impenetrable forests formed a main obstacle to the progress of the English troops. Westminster Hall is said to be roofed with oak cut in the woods of Shillelagh. Numerous trunks of large trees are constantly found in the bogs. Even in mountain tracts, devoted for a long succession of years to the pasturage of sheep, timber trees shoot up spontaneously wherever the land is secured from the intrusions of cattle. Many places, where the vestige of a plantation is not to be seen, retain names of which the word "wood" forms a component part; and in localities where the most attentive culture will not suffice to keep any tree or shrub alive on account of the western blasts, large trees are found imbedded in the bogs. The different kinds of timber found in the bogs of Ireland are confined to oak, fir, yew, holly, saw, and birch. Two centuries ago, when Ireland was covered with forests, there were numerous small iron-works, in which wood charcoal was employed, and vast quantities of wood used until the country was gradually stripped of its supply, and the working of iron was consequently abandoned. The extension of agricultural improvement, and more especially the timber act, which gives the tenant at the expiration of his lease, a pecuniary interest in the trees he has planted, are gradually removing this defect, the consequence of ages of disturbance and desolation; but trees in large quantities are generally found in Ireland only in the vicinity of the residences of the gentry, except in some favored spots, which are well wooded.

Minerals.—Ireland is reputed to contain much lead, copper, and iron, but notwithstanding many attempts to work the metallic mines discovered in the country, few have been found sufficiently productive to repay the necessary outlay of capital. Toward the close of the last century, gold was discovered, accidentally, in the streams flowing from the Mountain of Croghan Kinsela, on the confines of Wicklow and Wexford. The metal was found in lumps and small pieces down to the minutest grain. Many of the peasants having ruined themselves by leaving their proper occupations to join the search, the government, to put an end to the fruitless quest, took up the enterprise, and only relinquished it after satisfying the seekers of its worthlessness. "The gold is associated with magnetic iron-stone, sometimes in masses of half a hundred weight;

also iron pyrites, brown and red hematite, wolfram, manganese, and fragments of tinstone in crystals, together with quartz. From the nature of these attendant minerals, of which most are known to occur in the quartz veins of the adjacent mountain, it was hoped that by tracing up the rivulets to their sources, and laying bare in various directions the underlying rock, the metalliferous veins might be discovered, from the disintegration of which the sand and soil of the bed of the streams had been produced. All such trials proved useless, and the question as to the source from whence the gold in those streams in Wicklow has been derived, remains still unanswered."—Sir R. KANE'S *Industrial Resources of Ireland*. Copper ores are distributed throughout the clay-slate districts in a great number of localities more or less abundantly. The principal mines are those of Ballymurtagh, Conoree, Cronebane and Tigroney, and Ballygahan, in Wicklow county; the Knockmahon, Kilduane, Bonmahon, and Balinasilla, in the Waterford district; Allihies or Berehaven, Audley, and Cosheen, and Skull, in the south-western district; and the mines of Hollyford and Lackamor, in the western district.

The total quantity and value of copper ore from Ireland, sold in Swansea, where it is smelted, were, in

Years.	Tons.	Value.	Years.	Tons.	Value.
1836.....	21,819	£168,865	1847.....	14,857	£96,380
1840.....	19,550	127,911	1848.....	12,808	82,089
1843.....	17,509	117,625	1849.....	10,425	63,794
1844.....	18,597	77,622	1850.....	10,021	69,594
1845.....	18,490	97,122	1851.....	10,577	77,718
1846.....	17,471	106,078	1852.....	12,171	104,822

Lead is more extensively diffused through Ireland than copper. The granitic district of Wicklow contains numerous veins; the principal are those of Glendalough, Glenmalur, Glendasane or Lughanure, and Ballycorus. The clay-slate districts also yield numerous indications of this metal, but few of the mines have proved profitable. Those still worked are at Clonliff, Newtownards, and Rathmullen, in Down county; Bond and Newry, in Armagh county; Castleblayney, in Monaghan county; Kenmare, in Kerry county; Kilbricken and Ballyhickey, in Clare county; Shallee, in Limerick county; and Bantry, in Cork county. A vein at Clontarf, near Dublin, was worked until the mine was filled with water by the ingress of the sea. At Ballycorus, where the lead ores from the mines of the Mining Company of Ireland are smelted, the quantities of ore worked up in 1851 from Lughanure mines was 674 tons, which produced 460 tons of lead, equal to nearly 69 per cent. The proportions of silver to a ton of lead are generally found to be, from the mine of Lughanure, 8 oz.; Caine, 12 oz.; Ballyhickey, 15 oz.; Shallee, 25 oz.; Kilbricken, 120 oz.; Tollyratty, near Strangford, 10 oz. The average of silver extracted from the lead ore raised by the Mining Company of Ireland in 1851, was 7 oz. to the ton of lead; the total quantity 3860 oz.; producing £1029 6s. 8d.

Native silver was found in a bed of iron ochre in

Cronebane, but the deposit has been long since exhausted. Sulphuret of silver was found in the lead ore at Ballycorus some years since, and the Mining Company of Ireland have resumed operations to prove this valuable discovery. Tinstone has been found in the auriferous soil of Wicklow, but no veins or workable deposits have been discovered. Other minerals, useful in manufactures and the arts, and found in quantities in various parts of the country, are manganese, antimony, zinc, nickel, iron pyrites, alum, clays of various kinds, building stone, marble, flags, and roofing slates. Mineral springs, chiefly chalybeate, are numerous in many parts of the country. Those of chief note for their medicinal qualities are at Mallow, in Cork, resembling the hot wells of Bristol; Ballynahinch, in Down; Swanlinbar, in Cavan; Castletown, near Limerick; and Lucan, near Dublin.

The following is the result of the different estimates and census inquiries into the number of the population of Ireland at various periods:

Year.	Pop.
1652 Sir William Petty.....	350,000
1673 " ".....	1,320,000
1695 Captain South.....	1,084,102
1712 Thomas Dobbs.....	2,099,094
1718 " ".....	2,169,048
1728 " ".....	2,317,374
1726 " ".....	2,309,106
1731 Established Clergy.....	2,010,221
1754 Tax Collectors.....	2,372,634
1760 Dr. Burgho, Hibern. Dominican.....	2,317,384
1767 Tax Collectors.....	2,544,276
1777 " ".....	2,690,556
1785 " ".....	2,845,932
1788 Gervais P. Bushe.....	4,040,000
1791 Tax Collectors.....	4,206,612
1792 Dr. Beaufort.....	4,088,226
1805 Thomas Newenham.....	5,395,456
1811 Parliamentary return.....	5,937,856
1821 " ".....	6,801,827
1831 " ".....	7,767,401
1834 Commissioners of Public Instruction.....	7,948,940
1841 Parliamentary return.....	8,175,124
1851 " ".....	6,552,336

Few countries in the world have increased in population so rapidly as Ireland during the first 40 years of the present, and the conclusion of the last century. Arthur Young, in his *Tour through Ireland*, in 1766, observed that it everywhere evinces the marks of a rapid increase of population. It is generally supposed that the number of the people increases in the ratio of food and comforts, and that an increase of population is a convincing proof of the advancing prosperity of a nation. The effect of the failure of the potato crop in depopulating the country would show that the population of Ireland had outstripped the progress of wealth, and the increase of industry, and had reduced their wants to the lowest point without procuring an addition to the comforts of life corresponding to the increase of the population.

The following table exhibits the population of each portion of the country, according to the census of 1821, 1831, 1841, and 1851, together with the house accommodation at the latter period:

Provinces.	1821.	1831.	1841.	1851.			Families.	Houses in 1851.			
				Males.	Females.	Total.		Inhabited.	Uninhabited.		Total.
									Built.	Build- ing.	
Leinster.....	1,757,492	1,909,718	1,973,781	813,462	859,129	1,672,591	321,991	258,002	17,566	592	276,160
Munster.....	1,935,612	2,227,152	2,396,161	904,657	952,755	1,857,412	320,250	267,116	19,360	473	296,949
Ulster.....	1,998,494	2,286,622	2,386,373	976,288	1,035,473	2,011,766	380,731	351,873	20,647	534	373,054
Connaught.....	1,110,229	1,343,914	1,418,859	496,105	514,106	1,010,211	184,030	169,308	7,605	285	177,193
Total.....	6,801,827	7,767,401	8,175,124	3,190,507	3,861,463	6,551,970	1,207,002	1,046,294	65,178	1,384	1,118,356

The chief impediment to improvement in the condition of the people of Ireland during the present century has been the redundancy of the population. In a country almost wholly dependent on the cultivation of the soil, there were in 1841 as many as 335 persons to each square mile of arable land. Perhaps, with the exception of China there was no other country in the world so densely peopled, and certainly none where the population was so disproportioned to the

means of employment. This great density of population was necessarily accompanied by an extreme competition for land and employment, with the absence of all inducements to the acquirement of skill, and in consequence of the low rate of remuneration for labor, and high rents, the impossibility of any accumulation of capital in the hands of the cultivators of the soil. The following table shows the density of the population in 1841, and its remarkable decrease in 1851:

TABLE SHOWING THE DENSITY OF POPULATION IN 1841, AND ITS REMARKABLE DECREASE IN 1851.

Provinces.	Rural population.		No. of persons to the square mile.							
			Of arable land.			Of the entire rural district.		Of the entire area (including the town population).		
	1841.	1851.	1841.	1851.	Decrease between 1841—51.	1841.	1851.	Decrease between 1841—51.	1841.	1851.
Leinster.....	1,581,106	1,191,684	247	189	58	202	157	45	259	220
Munster.....	2,009,220	1,466,099	332	218	114	212	165	57	263	196
Ulster.....	2,160,698	1,749,707	466	280	126	253	205	48	279	235
Connaught.....	1,398,635	926,269	386	241	145	195	135	60	207	147
Total.....	7,089,659	5,338,709	385	236	99	217	164	53	251	202

NUMBER OF PERSONS BY OCCUPATIONS IN 1841 AND 1851, CLASSIFIED ACCORDING AS PRODUCERS, MANUFACTURERS, AND TRADERS.

Ocupations.	1841.	1851.
Ministering to food:		
Producers.....	1,854,141	1,461,776
Manufacturers.....	18,995	18,035
Traders.....	85,935	52,103
Total.....	1,904,071	1,531,914
Ministering to clothing:		
Cloth manufacturers.....	669,224	278,223
Leather-workers.....	57,833	49,900
Clothes-makers.....	167,993	267,225
Traders.....	6,269	11,184
Total.....	901,324	606,532
Ministering to lodging, etc.:		
Workers in stone.....	30,204	27,177
“ wood.....	64,086	48,195
“ metal.....	44,197	45,083
Miscellaneous.....	23,736	20,749
Traders.....	2,098	5,265
Total.....	164,366	146,469
Ministering to health.....	6,871	7,148
“ charity.....	253	1,598
“ justice.....	19,541	26,862
“ education.....	16,814	17,407
“ religion.....	7,192	8,393
Total.....	50,671	61,718
Unclassified:		
Ministering to arts.....	8,495	2,674
“ trade.....	59,549	54,470
“ traveling.....	18,975	49,743
Miscellaneous.....	409,409	394,208
Total.....	491,428	494,995
General total.....	3,511,860	2,841,623

Ireland is naturally, both from soil and climate, a pastoral country, and it was not until the commencement of the last century that efforts were made to introduce an attention to tillage on an extended scale. Primate Boulter, when one of the Lords Justices, pressed strongly on the British government the necessity of enforcing a tillage system; and for this purpose proposed a law, in 1727, to compel landlords to till five acres out of every hundred in their possession, exclusive of meadows and bogs; and also to release tenants to the same extent from the penal covenants against tillage, inserted in their leases. Mr. McCulloch observes, in his *Statistical Account of the British Empire*, that the luxuriance of the pastures in Ireland and the heavy crops of oats raised, even with the most wretched cultivation, attest the extraordinary

fertility of the soil. Strong retentive clay soils, sandy soils, chalky and gravelly soils, and several other descriptions of soil common in England, are seldom or never met with in Ireland, which affords no great diversity as compared with Great Britain. Mr. Wakefield describes the soils of Ireland as follows:—“A great portion of the soil of Ireland throws out a luxuriant herbage, springing from a calcareous subsoil without any considerable depth. This is one species of the rich soil of Ireland, and is found throughout Roscommon, in some parts of Galway, Clare, and other districts. Some places exhibit the richest loam I ever saw turned up with a plow; this is the case throughout Meath in particular. Where such soil occurs, its fertility is so conspicuous, that it appears as if nature had determined to counteract the bad effects produced by the clumsy system of its cultivators. On the banks of the Fergus and Shannon, the land is of a different kind, but equally productive, though the surface presents the appearance of marsh. These districts are called *caucasses*: the substratum is a blue silt deposited by the sea, which seems to partake of the qualities of the upper stratum, for this land can be injured by no depth of plowing.”

The prevalent soil is a fertile loam, resting on a rocky substratum, chiefly of limestone. The depth, though in general not great, is in some parts such as to admit of a fresh vegetable mold being repeatedly thrown up by successive plowings to a greater depth. This occurrence is most striking in Meath, and in the district of the counties of Tipperary and Limerick, long distinguished by the name of the Golden Vale, from its extraordinary fertility. In some parts, particularly in Galway, the rock shows itself above the surface in ridges like waves, the interstices being filled with rich mold, which produces a thick, close sward, extremely grateful to sheep. Large tracts of grazing land similar to the Downs in England are unusual; the only tract of any extent of such description is the Curragh of Kildare, which has been used, time immemorial, for a sheep walk. The mountains are capable of tillage to a considerable height; and their summits, with the exception of a few of the very highest, are fit for pasturage in summer.

The quantity of arable land in 1841, according to the return of the Census Commissioners, was 13,464,300 acres, and in 1851, 14,802,581 acres; and the proportion per cent. of cultivated and uncultivated surface, etc., at those two periods was as follows:

Provinces.	Total area in statute acres.	Division of surface.									
		Arable land.		Uncultivated.		Plantations.		Towns.		Water.	
		Proportion per cent.		Proportion per cent.		Proportion per cent.		Proportion per cent.		Proportion per cent.	
		1841.	1851.	1841.	1851.	1841.	1851.	1841.	1851.	1841.	1851.
Leinster.....	4,876,211	81.23	82.80	15.01	13.67	2.38	2.09	0.32	0.38	1.06	1.06
Ulster.....	6,064,579	63.39	71.08	31.22	24.48	2.15	1.71	0.24	0.23	2.50	2.50
Munster.....	5,475,438	62.23	72.95	32.22	21.89	1.46	1.07	0.16	0.16	8.93	8.93
Connaught.....	4,892,048	50.57	56.01	43.39	38.12	1.10	0.93	0.09	0.09	4.85	4.85
Total.....	20,508,271	64.71	71.14	30.25	24.14	1.80	1.47	0.21	0.22	3.03	3.03

The laws which prohibited the exportation of Irish woollens to foreign countries, and to the British colonies, were repealed in 1779. By the Act of Union, the duties on woollens imported into either island were confined to those called “old and new draperies;” and the high duties of Charles II. were reduced to 8^d. per yard on the old, and 2^d. on the new draperies. By

the same act, England relaxed her monopoly so far as to permit the export of wool and woollen yarn duty free to Ireland. Previous to the Union, when the import of English wool was prohibited, the manufacture of Ireland was confined to the coarsest description of goods, for which alone the Irish wool was suited. Previous to the introduction of carding machinery the

manufacture of woollens was inconsiderable, but immediately after the Union, machinery worked by water power became general, and the trade increased, but the combinations of workmen and protecting duties rendered the Irish manufacturers unable to compete with those of Great Britain, and the trade continued

limited to the demand for home consumption. Flannels are made in Wicklow, and blankets in Kilkenny. Frieze of the coarsest kind is in some parts manufactured by the peasantry for domestic consumption, and the supply of the adjoining district.

TABLE SHOWING THE EXTENT OF LAND UNDER CROPS FOR EACH COUNTY AND PROVINCE IN IRELAND, IN 1854 AND 1855, AND THE NUMBER OF ACRES UNDER EACH SPECIES OF CROP.

Provinces.	Wheat.	Oats.	Barley, bere, rye, beans, and peas.	Potatoes.	Turnips.	Other green crops.	Flax.	Meadow and Clover.	Total extent under crops.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Leinster..... { 1854	169,325	553,556	127,341	204,820	96,745	31,383	2,820	479,629	1,665,599
{ 1855	187,698	553,077	115,585	203,005	105,790	30,848	2,142	502,544	1,705,684
{ Inc.		Dec.	Dec.	Inc.	Inc.	Dec.	Dec.	Inc.	Total inc.
Increase or decrease { in Leinster..... {	18,373	479	11,756	3,185	9,045	520	678	22,915	40,085
Munster..... { 1854	151,570	364,479	100,699	256,449	114,912	25,425	5,452	360,088	1,379,024
{ 1855	157,766	380,246	93,357	254,944	124,948	25,595	4,294	385,771	1,426,921
{ Inc.		Inc.	Dec.	Dec.	Inc.	Inc.	Dec.	Inc.	Total inc.
Increase or decrease { in Munster..... {	6,196	15,767	7,342	1,505	10,036	170	1,158	25,783	47,897
Ulster..... { 1854	65,592	841,372	39,803	330,896	85,334	25,371	139,402	283,726	1,811,496
{ 1855	70,127	890,171	39,425	318,167	100,372	24,274	87,904	284,964	1,815,404
{ Inc.		Inc.	Dec.	Dec.	Inc.	Dec.	Dec.	Inc.	Total inc.
Increase or decrease { in Ulster..... {	4,535	48,799	373	12,729	15,038	1,097	51,498	1,238	3,908
Connaught..... { 1854	24,797	285,891	19,311	197,495	32,179	16,618	3,729	134,471	714,491
{ 1855	29,913	294,461	19,193	200,413	35,387	14,382	2,766	138,458	734,988
{ Inc.		Inc.	Dec.	Inc.	Inc.	Dec.	Dec.	Inc.	Total inc.
Increase or decrease { in Connaught..... {	5,116	8,570	118	2,918	3,208	2,236	963	3,987	20,492
Total..... { 1854	411,284	2,045,293	287,154	939,660	329,170	98,777	151,403	1,257,864	5,570,610
{ 1855	445,509	2,117,955	267,565	981,529	366,497	95,094	97,106	1,311,737	5,632,992
{ Inc.		Inc.	Dec.	Inc.	Inc.	Dec.	Dec.	Inc.	Total inc.
Increase or decrease { in Ireland..... {	34,225	72,657	19,559	8,181	37,327	3,683	54,297	53,873	112,882

Linen.—The same legislative measure which was intended to discourage the woolen manufacturer stated, that “if the Irish turned their industry and skill to the settling and improving of the linen manufacture, they should receive all the countenance, favor, and protection for its encouragement, and promotion to all the advantage and profit they might be capable of deriving from it.” This declaration should not lead to the inference that the manufacture had been previously unknown or disregarded in Ireland. On the contrary, the use of linen was so prevalent among the higher orders, that sumptuary laws were enacted to check its excessive use. The unfortunate Earl of Strafford seems also to have anticipated the views of the British manufacturers on the subject. Instead of extinguishing the woolen trade by exclusive duties, he labored to foster that of linen. He imported flax seed in large quantities from Holland, and held out premiums to induce Flemings and Dutchmen acquainted with the manufacture to settle in Ireland. On these laudable objects he spent upward of £30,000 of his private fortune; and his example was followed by the Duke of Ormond. Still, however, the woolen manufacture prevailed, particularly in the south and west, where the climate and extensive pasturage for sheep insured a copious and cheap supply of the raw material. In the same spirit, an act was passed by the English Parliament in 1696, to encourage foreign linen manufacturers to settle in Ireland; and with that view all articles made of flax or hemp in this country were admitted into England duty free—a privilege which is estimated to have given that branch of trade an advantage of 25 per cent. over other nations in the English market. The Irish Parliament responding to the sentiments and wishes of that of England, promised that “it would heartily endeavor to establish the linen and hempen manufacture, so as to render it useful to both kingdoms;” adding, that “it hoped to find such a temperament in respect to the woolen trade here, that the same may not be injurious to England.” The “temperament” here announced was evinced most effectually by laying prohibitory duties on the export of its own woollens, thus accepting the compact on the part of Ireland, and giving the country an in-

controvertible claim upon England for a perpetual encouragement of that branch which was to be nurtured in lieu of the natural staple of the country. In furtherance of the measures mutually agreed on between both kingdoms, a board of trustees for the encouragement of the linen manufacture was established in 1710, consisting of a number of individuals of influence in each province. Under its control a code of regulations was devised and maintained, which extended to the most minute particulars of the processes, and had the effect for many years of securing the fabric a decided preference both in the home and foreign market. A large sum was annually granted to this board for premiums and the supply of wheels and other implements, which was continued till the year 1830, when the grants were discontinued, and the board ceased to act. The flax seed is chiefly imported. Little is grown in the country, as, notwithstanding all the exertions made by the grower, the plant raised from it is considered of inferior quality.

Flax.—The first flax-spinning machinery erected in Ireland was at Cork in 1805. About 1825, English and Scotch yarns were first imported into Ireland, and undersold the spun article. The use of machinery gradually increased, and the linen manufacture soon became extinguished in the south and west, and concentrated in the north. In 1821 the yarns were all made by hand. With one or two trifling exceptions, not a spinning factory was to be seen. In 1849 there were upward of 70. In 1819, with the existence of bounties on the export of linens, and heavy duties on the admission of foreign flax and linen fabrics, only 40 millions of yarns were exported from Ireland. In 1849 these exports had increased to 75 millions. The question became not as to whether the employment of linen-weavers by extensive manufacturers, and confining them to the mere process of weaving, was or was not more advantageous than the old system, where the producer of the raw material, the weaver of the cloth, and the merchant who disposed of it, were the same individual; but whether it would be more profitable to alter the system or lose the trade.

The following tables show the value of the brown or unbleached linen sold in the several linen markets

in Ireland during a period of four years, as furnished by the returns of the seal-masters and inspectors of the Linen Board to Parliament in 1825. The sums stated in the former of these tables are the first cost paid to the manufacturer by the country purchaser; the value of most of the linen sold is afterward considerably increased by the process of bleaching and other treatment.

TOTAL OF BROWN OR UNBLEACHED LINEN SOLD IN IRELAND.

Years.	Leinster.	Ulster.	Munster.	Connaught.	Total.
	£	£	£	£	£
1822	285,854	2,066,122	68,870	117,664	2,538,510
1823	336,698	2,127,529	82,202	130,914	2,677,343
1824	207,638	1,968,180	95,195	140,856	2,411,869
1825	192,888	2,109,809	110,420	168,090	2,580,707
Total.	1,022,578	8,271,140	356,687	557,524	10,207,929

Since 1825 no returns have been kept. The number of yards of linen exported from Ireland was:

Year.	To Great Britain.	To foreign parts.	Total.
1800.....	No separate returns.		35,676,908
1801.....	84,622,898	3,288,704	37,911,602
1809.....	38,018,884	4,147,515	37,166,399
1813.....	35,018,884	3,926,731	38,945,615
1817.....	50,290,321	5,940,254	56,230,575
1821.....	45,519,509	4,011,630	49,531,139
1825.....	52,560,926	2,553,589	55,114,515
1835.....	.....	.....	60,916,592

The apparent amount of exports of linen from Ireland is now small, arising from the fact, that nearly all is sent by cross-channel steamers to the English and Scotch ports, whence it is transhipped to foreign countries. The entire export from Ireland to Great Britain and all foreign countries reaches about 106,000,000 yards; value, £4,400,000. The following table shows a comparison of the production and value of the yarns made, and amount of wages paid, in an interval of ten years:

	Bundles of yarn produced.	Value.	Wages paid.
1840.....	5,000,000	£1,500,000	£208,000
1850.....	7,400,000	1,942,500	817,000

The cotton manufacture was introduced in 1777, and became an object of attention to the Irish Parliament, which endeavored to secure a monopoly of the home market by high import duties and bounties. The first cotton mills were erected at Prosperous, in the county of Kildare, and in Belfast, about the year 1784. From that period till the Union, it thrived, in consequence of the measures adopted to prevent foreign competition. At the Union it was arranged that the then existing duties should continue for eight years, after which they were to be gradually lowered, by eight annual reductions, in such manner that, after the year 1816, they should stand at 10 per cent. *ad valorem*. The progress of the manufacture has been very slow as compared with that of Great Britain. The alteration of the scale of duties materially affected the home demand, and the immense capital and great superiority of the British artist have contributed much to secure to his manufacture a preference in the foreign market. In 1822 the quantity of cotton wool imported was 3,755,024 lbs., and of cotton yarn, 1,197,294 lbs.; leaving a total quantity of 4,576,816 lbs. of cotton yarn consumed, after allowing 10 per cent. for waste, etc., on the cotton imported.

Silk and Lace.—The silk manufacture was introduced into Ireland in 1693, by French emigrants after the revocation of the Edict of Nantes. Its seat was the city of Dublin, where it was maintained by the aid of protecting duties. Some feeble attempts to fix it in the country parts failed completely. The last of these was so lately as 1825, when a company was formed for the purpose of fixing the trade on a secure basis in the south of Ireland, by earing the silk-worm there, and thus having the benefit of the raw material for the labor of producing it; but after considerable expense had been incurred for the purchase of ground

and the planting of mulberry-trees, the scheme was relinquished as hopeless. One branch of the manufacture, a fabric of mixed worsted and silk, known by the name of tabinet, or Irish poplin, is in considerable demand, both at home and elsewhere, for the richness and beauty of the texture. It is almost the only branch now flourishing. The general trade has been nearly annihilated by the removal of the protecting duties in 1821, after which, in consequence of the combination of the workmen to keep up the rate of wages, the Irish manufacturer became unable to compete successfully with the English trade. The manufacture of lace is carried on to some extent in Limerick, and of late years a great source of employment for females has been introduced in the working of patterns on muslin with the needle.

Metals.—Manufactures in metal exist only to a small extent; and the making of glass, which was once carried on largely, has declined.

Provisions.—The provision trade, together with the exportation of the agricultural produce of the country, has always been, and will probably long remain, the principal commercial business carried on in Ireland. This export trade is mainly with Great Britain, to Liverpool, Bristol, and Glasgow, from Belfast, Dundalk, Drogheda, Newry, Waterford, Limerick, and more particularly from Cork and Dublin. In 1825, 181,276 barrels of beef and pork, 362,278 cwt. of bacon and hams, 474,161 cwt. of butter, and 85,279 cwt. of lard, were exported. Since that period the provision trade has vastly increased; but in consequence of the cessation of the duties on the cross-channel trade, there are no means of accurately ascertaining the present extent of the trade.

The following table shows the number of gallons of Irish spirits brought to charge since 1840, and the amount of duty:

Years.	Gallons.	Duty.
1840.....	10,815,709	£1,261,882
1841.....	7,401,051	936,126
1842.....	6,485,448	864,725
1843.....	5,290,650	904,908
1844.....	5,546,483	852,418
1845.....	6,451,187	860,151
1846.....	7,605,196	1,014,026
1847.....	7,952,076	1,060,276
1848.....	5,737,687	804,984
1849.....	8,126,507	948,057
1850.....	6,973,833	929,777
1851.....	7,408,086	957,774
1852.....	7,550,518	1,006,735
1853.....	8,208,256	1,094,434
1854.....	8,136,362	1,273,151

The principle of extracting the largest possible amount of revenue from the duty on spirits having been adopted, the rate was raised in 1855 to 6s. 2d. per gallon, when the number of gallons brought to charge declined to 6,228,856, and the maximum rate of duty productive to the revenue appears to have been attained, if not exceeded. There are breweries in most of the large towns in Ireland, the produce of which has superseded the use of beer imported from Great Britain, and also furnishes a quantity sufficient for a large export trade, which has of late years much increased.

The external trade of Ireland branches out into two great divisions, the cross-channel trade with Great Britain, and the commerce with foreign nations. The relative importance of each port, as respects its commercial character, will appear from the first and second tables following, which contain a specification of the number and tonnage of vessels that entered and cleared out coastwise, from and to the British colonies and foreign countries in 1853, in each of the ports of Ireland; while the progress of domestic navigation will appear from the third and fourth tables, containing a summary, in triennial periods, of the tonnage of ships belonging to and registered at the different ports in Ireland, and of the number and tonnage of those employed in the cross-channel trade.

NUMBER AND TONNAGE OF SAILING VESSELS AND STEAM VESSELS THAT ENTERED AND CLEARED OUT COASTWISE AT EACH OF THE PORTS IN IRELAND IN THE YEAR 1853.

PORTS.	SAILING VESSELS.				STEAM VESSELS.			
	Inward.		Outward.		Inward.		Outward.	
	Vessels.	Tonnage.	Vessels.	Tonnage.	Vessels.	Tonnage.	Vessels.	Tonnage.
Belfast.....	5,168	470,065	1,180	198,561	1,477	198,511	1,899	412,604
Cork.....	2,080	170,291	1,513	94,769	265	104,876	257	101,329
Drogheda.....	559	42,462	265	19,757	208	80,240	256	94,142
Dublin.....	5,110	396,392	2,510	129,787	1,436	440,446	1,608	493,192
Londonderry.....	588	39,000	256	15,320	468	148,815	464	146,693
Newry.....	697	42,937	193	11,791	145	40,686	135	38,266
Waterford.....	905	72,891	736	50,955	169	49,357	177	50,400
Other ports.....	2,999	133,877	1,912	127,255	690	201,396	896	122,844
Total.....	18,101	1,417,465	8,570	648,195	4,860	1,434,827	4,692	1,459,410

NUMBER AND TONNAGE OF SAILING VESSELS THAT ENTERED AND CLEARED OUT FROM AND TO THE COLONIES AND FOREIGN PORTS AT EACH OF THE PORTS OF IRELAND (INCLUDING THEIR REPEATED VOYAGES), DISTINGUISHING BRITISH AND IRISH FROM FOREIGN VESSELS, IN THE YEAR 1853.

PORTS.	FROM AND TO BRITISH COLONIES.								FROM AND TO FOREIGN PLACES.							
	Inward.				Outward.				Inward.				Outward.			
	British & Irish.		Foreign.		British & Irish.		Foreign.		British & Irish.		Foreign.		British & Irish.		Foreign.	
	Ves.	Ton'ge.	Ves.	Ton'ge.	Ves.	Ton'ge.	Ves.	Ton'ge.	Ves.	Ton'ge.	Ves.	Ton'ge.	Ves.	Ton'ge.	Ves.	Ton'ge.
Belfast.....	57	17,968	94	7,921	81	10,472	12	8,048	160	22,603	205	33,157	69	13,840	211	40,869
Cork.....	29	14,952	5	1,342	54	15,691	16	8,353	157	23,665	224	50,164	61	11,422	207	49,216
Dublin.....	61	20,545	22	7,244	26	9,154	13	8,905	157	21,726	175	31,583	51	13,886	181	34,393
Limerick.....	39	11,206	..	..	85	12,419	4	1,210	99	22,656	98	24,994	29	6,875	71	13,952
Waterford.....	22	6,029	..	..	25	8,274	13	8,346	51	10,819	96	20,136	24	5,149	88	18,652
Other ports.....	78	70,700	9	2,537	43	18,923	11	2,615	226	38,007	337	58,166	85	28,626	202	39,101
Total.....	309	90,356	60	19,344	220	69,958	69	17,477	850	144,586	1,135	218,155	319	74,251	945	201,628

ACCOUNT OF THE TONNAGE BELONGING TO AND REGISTERED AT THE IRISH PORTS AT DIFFERENT TRIENNIAL PERIODS, WITH THE INCREASE BETWEEN THE FIRST AND LAST PERIODS.

Name of port.	Years. 1840, 1841, 1842.	Years. 1843, 1844, 1845.	Years. 1846, 1847, 1848.	Years. 1849, 1850, 1851.	Increase between first period 1791-36- 99, and last period, 1849-50- 61.
Ballina.....	Tons.	Tons.	Tons.	Tons.	Tons.
Belfast.....	149,809	154,402	202,011	226,414	213,352
Coleraine.....	..	..	2,795	1,090	..
Cork.....	101,349	115,658	145,127	149,465	186,041
Drogheda.....	14,507	14,692	19,287	20,524	17,523
Dublin.....	94,742	105,101	126,238	128,192	89,697
Dundalk.....	..	..	7,971	8,918	..
Galway.....	..	..	11,443	12,170	..
Limerick.....	42,247	42,387	43,155	39,646	36,256
Londonderry.....	26,155	23,507	27,844	23,383	20,527
Newry.....	32,720	35,018	35,714	30,743	18,251
Ross.....	..	..	25,324	25,371	..
Skibbereen.....	..	..	..	8,649	..
Sligo.....	13,030	9,358	14,296	13,112	12,766
Strangford.....	..	..	..	5,626	..
Tralee.....	..	..	979	8,180	2,640
Waterford.....	60,846	66,547	81,926	69,237	60,308
Westport.....	..	..	785	624	..
Wexford.....	26,093	24,583	25,318	27,059	20,205
Other ports.....	8,291	40,283	11,280	..	..
Total.....	569,294	681,981	781,943	791,525	627,571

NUMBER AND TONNAGE OF VESSELS EMPLOYED IN THE INTERCOURSE BETWEEN GREAT BRITAIN AND IRELAND, WHICH ENTERED INWARD AND CLEARED OUTWARD WITH CARGOES, AT THE PORTS OF THE UNITED KINGDOM DURING FOUR YEARS.

	1852.		1853.		1854.	
	Vessels.	Tonnage.	Vessels.	Tonnage.	Vessels.	Tonnage.
Inward.....	9,406	1,762,197	9,840	1,931,939	10,606	2,042,146
Outward.....	13,676	2,409,905	19,244	2,594,555	20,685	2,819,395

These tables exhibit the great preponderance of the cross-channel trade, which has been greatly augmented since the introduction of steam navigation. The earliest attempts at establishing a company for this purpose were made in Dublin about the year 1816. Two small vessels were fitted up, but the construction of their machinery was faulty, their dimensions were too small, and the effort proved abortive. The cross-channel trade, with the exception of that in coal, is almost wholly carried on by means of steam-vessels; but since 1825, when the trade between Great Britain and Ireland was placed upon the footing of a coasting

trade, no separate returns have been made out at the custom-house of the quantity and value of the exports and imports.

Fisheries.—The coasts of Ireland abound with fish; and Sir William Temple observed, "that the fishery of Ireland, if improved, would prove a mine under water, as rich as any under ground." Arthur Young also remarks, "that there is scarcely a part of Ireland but what is well situated for some fishery of consequence; and that her coasts, of innumerable creeks and river mouths, are the resort of vast shoals of herrings, cod, ling, hake, and mackerel.

Revenue.—Before the arrival of the English, the revenues of Ireland were paid in cattle; and even after that period the custom prevailed for several centuries in the parts less subject to foreign influence. Traces of it have been met with so late as the reign of Elizabeth. The new government, under the English, introduced the method of raising money by subsidies. John exacted a subsidy from the Irish clergy, and established the court of exchequer for the general management of the revenue. The same method was continued during the reigns of Henry III., and the first Edwards; but the income thus extracted from the people proved so inadequate to meet the expenditure, that recourse was had to the legalized extortion of coyne and livery, which was the levying of man's meat and horse's meat for the soldiery in time of service. The amount of the regular revenue, in the reign of Edward III., is stated by Walsingham and Holingshead to have been £30,000; but Sir John Davis, who collected his information from the pipe-rolls, and other authentic sources, reduces it to £10,000. The most remarkable financial measure of Richard II. was a tax upon absentees. In 1433, the eleventh of Henry VI., the revenue was reduced to £2,339 18s. 6d., while the expenses of the government were £2,348, 16s. 11½d., thus exceeding the income by £18, 17s. 5½d. At the latter end of the same reign, the Duke of York, when sent over as lord-lieutenant with extraordinary powers, not only obtained the whole revenue, but stipulated for an additional supply from England of 4,000 marks for the first year, and £2,000 for every year thereafter. Edward IV. raised money by the imposition of duties on all merchandise sold in Ireland except hides. In the 15th year of Henry VII. a duty of one shilling in the pound was laid on all merchandise imported and exported, except wine and oil; and

a tax, by way of subsidy, of 13s. 4d. on every hide of land. During this reign the revenue seldom exceeded £5000. Henry VIII. increased the revenue by the suppression of monasteries. The laws against absentees were also enforced. During the first 15 years of Elizabeth, the revenue was £120,000, or £8000 per annum, while the expenses amounted to £490,779, 7s. 6½d. In 1599, at the close of Tyrone's rebellion, £600,000 were spent in six months; and Sir Robert Cecil affirmed that Ireland had cost the queen £3,400,000 in ten years' time. In the pacific reign of James the customs increased from £50 to £3000, and at the close of his reign to £9700. The wardships and other feudal rights produced about £10,000, notwithstanding which the income was inadequate to the expenditure. To defray the expense of the army, an order of baronets was established by which £98,500 were raised, in addition to which £247,433 were remitted from England to clear off the debts incurred by Elizabeth. The Irish Parliament granted the same king a subsidy of 2s. 8d. in £1 on every personal estate of £3 annual value, and 4d. in £1 on every real estate of £1 value; an act of liberality with which James was so much pleased, that he declared "he would hereafter hold his Irish subjects in equal favor with those of his other kingdoms." In the succeeding reign Strafford raised the customs to four times their previous amount. In the same reign the first mention is made of an excise tax. Thurloe, however, in his state papers, mentions that the revenue for two years ending in 1657, amounted to £137,558, while the expenditure was £142,509. When the Irish Parliament met after the Restoration, it granted, first, an hereditary revenue to the king, his heirs, and successors; second, an excise for maintaining the army; third, the subsidy of tonnage and poundage for the navy; and, fourth, a tax of 2s. each on hearths, in lieu of the feudal burdens, which were then abolished. After the Revolution, the information respecting this important element of the national statistics becomes more precise and satisfactory.

The revenue, from the landing of Schomberg in 1689 till the end of the reign of William, was as follows, the total on the previous military expenditure of the war with James having amounted to £3,861,655:

Year.	Revenue.	Year.	Revenue.
1689.....	£3,894	1696.....	£213,584
1690.....	93,910	1697.....	548,967
1691.....	274,949	1698.....	601,346
1692.....	893,926	1699.....	701,982
1693.....	444,183	1700.....	766,690
1694.....	430,534	1701.....	697,855
1695.....	438,304	1702.....	551,286

During the earlier part of Anne's reign the income exceeded half a million, but in her latter days it was less productive. In the reign of George I. the state of the revenue continued nearly as in the preceding reign. In that of George II. there was a surplus, which was applied, not always judiciously, to public works. The national debt of Ireland, incurred by an excess of expenditure beyond the income of the country, increased with great rapidity toward the close of the last century and till the year 1817, when it ceased to form a separate item in the public accounts, in consequence of the consolidation of the British and Irish exchequers. Its progressive increase since the Revolution is exhibited in the following table:

PUBLIC DEBT OF IRELAND.

1716.....	£16,106	1770.....	£628,888
1720.....	87,511	1780.....	1,067,565
1730.....	220,730	1790.....	1,586,067
1740.....	296,988	1800.....	22,245,190
1750.....	205,117	1810.....	75,240,790
1762.....	223,488	1817.....	134,602,769

The following table gives an account of the gross revenue levied in Ireland, in each year from 1840 to 1853; distinguishing the expenses of collection and the other payments out of the revenue in its way to the exchequer; also an account of the amount of repayments into the exchequer on account of advances for public works, employment of the poor, distress, etc., in Ireland, for the like period.

GROSS REVENUE LEVIED IN IRELAND, IN EACH YEAR FROM 1840 TO 1853.

Years.	REVENUE.			CHARGES.				Total Charges.	Payments on account of Public Works, etc.	Payments on account of Revenue.
	Balances outstanding.	Gross revenue.	Total Income.	Charges of collection.	Payments to the Exchequer.	Payments on account of Revenue.	Balances at the end of the year.			
1840.....	£220,509	£4,107,866	£4,328,375	£542,716	£235,808	£2,559,462	£190,389	£4,328,375	£253,688	£2,913,100
1841.....	190,389	4,118,689	4,309,078	537,615	35,643	3,536,192	199,628	4,309,078	438,441	3,969,638
1842.....	199,628	4,156,892	4,356,520	536,707	37,256	3,562,492	220,065	4,356,520	371,577	3,984,943
1843.....	220,065	4,099,062	4,319,127	534,838	36,550	3,574,917	172,827	4,319,127	384,794	3,934,333
1844.....	172,827	4,406,509	4,579,336	528,700	35,438	3,845,260	169,938	4,579,336	420,470	4,158,866
1845.....	169,938	4,667,462	4,837,400	539,124	34,654	4,096,838	166,769	4,837,400	394,305	4,443,095
1846.....	166,769	4,619,622	5,086,391	533,351	34,017	4,239,821	179,203	5,086,391	370,238	4,716,153
1847.....	179,203	4,454,462	4,633,665	546,499	35,560	3,840,920	210,636	4,633,665	514,481	4,119,184
1848.....	210,636	4,521,958	4,732,644	566,701	35,764	3,970,448	159,731	4,732,644	357,117	4,375,527
1849.....	159,731	4,291,807	4,451,538	545,958	38,141	3,711,804	156,135	4,451,538	621,155	3,830,383
1850.....	156,135	4,237,656	4,418,820	618,744	36,813	3,618,911	144,351	4,418,820	505,021	4,113,999
1851.....	144,352	4,382,000	4,526,352	561,821	34,072	3,672,888	157,574	4,526,352	360,195	4,166,157
1852.....	157,574	4,424,785	4,582,359	561,207	33,019	3,820,186	167,946	4,582,359	466,329	4,116,030
1853.....	167,946	4,752,233	4,886,444	580,713	30,460	4,113,449	156,821	4,886,444	445,889	4,440,555

NETT REVENUE OF IRELAND IN EACH YEAR FROM 1840 TO 1854, DISTINGUISHED UNDER THE DIFFERENT HEADS OF REVENUE.

Years.	Customs.	Excise.	Stamps.	Property and Income tax.	Post Office.	Miscellaneous.	Imprest and other Moneys.	Repayments of Advances for Public Works.	Total.
1840.....	£2,030,159	£1,177,407	£439,722	....	£6,664	£6,929	£5,581	£253,688	£4,013,100
1841.....	1,990,257	1,097,913	435,771	....	....	7,411	5,935	438,441	3,969,638
1842.....	1,990,824	1,110,842	491,851	....	3,000	5,245	2,216	371,577	3,984,943
1843.....	1,960,493	1,082,722	521,951	....	3,000	5,059	1,677	384,794	3,934,333
1844.....	2,126,149	1,147,940	545,593	....	16,000	6,590	2,639	420,470	4,265,730
1845.....	2,091,631	1,408,471	558,569	....	22,000	6,347	9,816	394,305	4,473,792
1846.....	2,258,043	1,467,060	578,767	....	29,000	6,063	5,988	357,117	4,692,468
1847.....	2,009,133	1,152,932	567,996	....	59,000	5,698	46,160	434,924	4,325,544
1848.....	2,009,773	1,321,915	539,224	....	39,000	4,335	2,000	304,927	4,275,875
1849.....	1,941,122	1,231,548	502,073	....	26,000	6,638	3,923	621,155	4,332,459
1850.....	1,827,239	1,312,123	462,691	....	....	5,744	6,063	505,021	4,113,999
1851.....	1,854,263	1,348,911	451,534	....	5,000	9,000	4,470	327,499	4,000,632
1852.....	1,856,160	1,473,082	474,374	....	....	7,732	3,329	466,329	4,286,515
1853.....	1,924,511	1,703,621	474,430	29,976	....	7,206	3,651	475,445	4,621,870
1854.....	1,852,103	2,208,580	453,512	549,011	10,000	5,202	4,812	351,281	5,494,807

The circulating medium in Ireland was, until lately, subject to a great variety of alterations. Without entering into the disputed question of the existence of a

mint in Ireland established by the Ostemen or Danes, the first certain account of a mint there is that established in 1210, by King John, who caused pennies,

halfpennies, and farthings to be coined and made current by proclamation. Further coinages were made by Henry III. and by Edward I., who added the title of *DOMINUS HIBERNIE* to that of *REX ANGLIE* on his Irish coinage. It consisted of groats, halfpence, and farthings. The first important alteration as to value was in the latter part of the reign of Edward III. who caused the ounce of silver to be cut into 26 deniers or pennies, instead of 20, as before, which caused the depreciation of $8\frac{1}{2}$ per cent. in the Irish, as compared with the British currency, which existed until the final assimilation of the two currencies in 1825. Henry VI., or rather the Duke of York, his lieutenant in Ireland, had mints in Dublin and Trim, in which both silver and copper money were coined.

In the beginning of the subsequent reign of Edward IV. the value of silver coins was raised to double their previous amount. The consequence was an enormous increase of price in all the necessaries of life; to remedy which, the Irish Parliament enacted, that the master of the mint should strike, in the Castles of Dublin and Trim, and in the town of Drogheda, five kinds of silver coins; the gross (or groat), the demi-gross, the denier (or penny), the demi-denier, and quadrant (or farthing); eleven groats to weigh an ounce troy, and each, unclipped, to pass for fourpence. A few years afterward, the price of silver was again raised so excessively, that the difference between the Irish and English groat was 50 per cent. in a pound of bullion. In the reign of Henry VII. the difference between the two coinages was one third. Soon after the accession of Henry VIII. the coin in Ireland was so clipped, defaced, and scarce, that the Earl of Surrey, then lord-lieutenant, sued for his recall, in consequence of the want of money to carry on the war against the Irish. Elizabeth ordered the ounce of silver to be cut into 60 pennies, so that the coin of that name was reduced in weight from the 20th to the 60th part of an ounce. The total value of the money coined in Ireland by that princess, is said to have been £94,577 10s. 6d. English, which, at the rate of 16d. Irish, for a shilling English, amounts to £118,222 9s. 4½d. Irish. The Irish shilling, or harp, as it was called, from the impression on its reverse, was worth ninepence English. By a proclamation issued in the fifth year of James I. the same proportion of values was continued. In 1713 English money was current in Ireland at an increased value; the English five-shilling crown-piece passing for six shillings and eightpence, and the other coins in proportion. The exchange between Dublin and London was 21s. Irish for 15s. English, with 6d. or 8d. per pound extra, payable in London. By a proclamation in 1637, the name of Irish money was ordered to be abolished, and all payments were reduced to English sterling money. About 1672, small change was so scarce in Ireland, that towns and private dealers were obliged to issue copper tokens. Jame II., on his arrival in Dublin in 1688, issued a proclamation, by which the English guinea was to pass current at £1 4s., the crown-piece at 5s. 5d., and all lesser coins in the same proportion. In 1690, he depreciated still further the value of the coin, by the issue of pieces of base metal, which were to pass at a nominal value far above their intrinsic worth; so that the coins issued of the nominal value of £965,375 according to some, but, according to others, of £1,596,799, were really worth no more than £6495, estimating the metal at 4d. per pound. On the accession of William, this coinage was cried down. In 1725, the new gold coin of Portugal was made current in Ireland, the largest coin, or Portugal piece, being rated at £4. About the same time, in consequence of the scarcity of small change, Wood obtained his patent for the issue of a copper currency, which was prevented by the literary exertions of Dean Swift in his celebrated publications called the *Drapier's Letters*. In 1780, the acts of Parliament prohibiting the carrying of gold or silver into

Ireland were repealed. At that time the value of precious metals in circulation as specie, or hoarded, was estimated at £3,000,000 Irish. No further legislative change took place until the assimilation of the Irish and English currency in 1825, previously to which, however, the want of a metallic circulation was so severely felt, particularly during some periods of the French war, that private bankers and traders issued notes or tickets for small sums, from 5s. down to twopence-halfpenny; and also copper tokens. The evils of this combined pressure of the scarcity of legal and the abundance of counterfeit coin, was ultimately remedied by the issue of stamped dollars estimated at 6s., and by silver tokens of 10d. and 5d., by the bank of Ireland, which circulated freely until they were replaced by the issue of a pure standard coinage of silver from the royal mint.

The amount of subscriptions raised in England for the relief of sufferers by the famine of 1822 having exceeded the expenditure, the surplus was intrusted to a committee in London, and was retained under the name of the Irish Reproductive Loan Fund, as a permanent fund for organizing loan societies, ultimately originated the present loan fund system, under which small sums are advanced to industrious individuals of the working classes, to be repaid by instalments, with interest, and which was placed under the control of a commission in 1836 by the Act 6th and 7th Will. IV., chap. 55. The rate of discount on loans, made chargeable by it at 6d. in the pound, has been reduced to 4d. in the pound by the Act of 6th and 7th Vict., c. 91, which placed the general control over all charitable loan societies and charitable pawn or deposit offices under the superintendence of the "Loan Fund Board." The number of funds, with their capital and circulation since the commencement of the system, has been

Years.	No. of funds.	Capital.	Circulation.
1838	50	.....	£180,526
1839	224	.....	816,473
1840	215	.....	1,164,046
1841	268	£270,507	1,483,598
1842	268	124,920	1,691,871
1843	298	409,343	1,650,968
1844	259	417,584	1,702,918
1845	255	444,427	1,807,457
1846	250	408,842	1,770,897
1847	228	270,613	868,647
1848	177	217,119	717,865
1849	160	189,187	649,934
1850	132	182,501	662,794
1851	123	186,240	712,073
1852	113	186,271	739,056
1853	112	212,398	842,803
1854	115	214,785	870,024

Pawn offices, on the plan and under the name of the French *Monts de Piété*, were opened in several towns of Ireland in 1841, with the object of advancing money on pledges at rates more moderate than those of the licensed pawnbrokers; but all have since been discontinued. By means of navigable rivers and canals, Ireland possesses extensive inland navigation. For the details of the various canals, see CANALS. The railway from Dublin to Kingstown, which was opened at the latter end of 1834, was the first, and for several years the only railway in Ireland.

Banks.—The entire banking business of Ireland, until 1783, was in the hands of private individuals, who often issued notes to an amount not only far beyond their respective capitals, but exceeding, in a great degree, what the wants of the country required, or its credit could support. To remedy the evil effects of a system so pernicious, a national bank was established in that year, with similar privileges to those of the Bank of England in respect to the restriction of more than six partners in a private bank. The injury that Ireland has sustained from the repeated failure of banks may be mainly attributed to this injudicious regulation. The loss that the country has suffered by the failure of banks may be described in a few words. On the ex-

piry of the Bank of Ireland's charter in 1838, it was continued by act of Parliament from year to year until 1845, since which time it has been regulated by the new Banking Act, 8th and 9th Vict., c. 37, according to the following principles:—The bank to continue the banker of government, which is to pay for the 10 subsequent years $\frac{3}{4}$ per cent. on the debt it owes to the bank. The proceedings of the establishment to be

under the same rule which has been applied by Parliament to other banking institutions, and to make weekly returns, similar to those of the Bank of England under the new act, containing a full development of its affairs, the amount of its bullion, and the variations in the quantity. The joint-stock banks now doing business are as follows. Those marked (*) do not issue their own notes:

Name.	When Instituted.	No. of branches.	Capital.	Capital paid up.	Paid up per share.	Reserved fund.	Fixed issue.
Bank of Ireland.....	1783	23	£3,000,000	£2,000,000	£100	£1,144,000	£3,738,428
*Hibernian Joint-Stock Co., Dublin.....	1824	2	1,000,000	250,000	25	63,000	.....
Provincial Bank of Ireland.....	1825	38	2,000,000	540,000	25	162,216	927,667
Northern Banking Co., Belfast.....	1825	11	500,000	150,000	30	59,778	243,440
Belfast Banking Company.....	1827	22	500,000	125,000	25	.....	231,611
National Bank.....	1835	45	1,000,000	450,000	22½	40,826	761,577
Ulster Banking Company, Belfast.....	1836	18	1,000,000	187,000	24	.....	311,079
Clonmel National Bank.....	1836	2	30,000	16,235	24	.....	66,428
Carriek-on-Suir National Bank.....	1836	..	40,000	4,962	24	.....	24,084
*Royal Bank, Dublin.....	1836	..	1,044,250	209,175	10	60,000	.....

THE ANNUAL AVERAGE OF THE SEVERAL BANKS OF ISSUE IN IRELAND FOR THE YEARS 1846 TO 1854.

Years.	Certified issue of all the banks.	Notes of £5 and upward.	Notes under £5.	Total issue of all the banks.	Gold held.	Silver held.	Total specie held by all the banks.
1846.....	£6,354,494	£2,121,259	£4,144,461	£7,265,721	£2,106,004	£394,258	2,440,266
1847.....	6,354,494	2,844,049	770,176	5,880,425	1,263,517	491,953	1,755,475
1848.....	6,354,494	2,439,121	2,389,563	4,823,992	1,038,919	502,975	1,536,893
1849.....	6,354,494	2,204,474	2,105,502	4,310,288	1,039,476	528,738	1,541,094
1850.....	6,354,494	2,197,117	2,315,401	4,512,443	1,017,036	375,322	1,315,439
1851.....	6,354,494	2,113,077	2,349,870	4,462,909	987,408	318,574	1,255,985
1852.....	6,354,494	2,215,503	2,602,935	4,818,238	994,548	249,028	1,243,576
1853.....	6,354,494	2,517,570	3,132,883	5,650,455	1,393,867	152,729	1,576,600
1854.....	6,354,494	2,372,007	3,423,597	6,295,607	1,745,329	218,711	1,959,043

COMMERCE OF THE UNITED STATES WITH IRELAND, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	\$389,577	\$4,069	\$393,646	\$636,154	\$193	\$2,688	12,812	2,201
1822.....	770,176	....	770,176	806,024	....	5,978	18,153	2,047
1823.....	714,037	37,644	751,631	547,738	4,425	....	12,932	2,479
1824.....	913,532	8,673	922,205	431,575	....	288	20,541	1,761
1825.....	1,247,550	20,669	1,268,219	612,272	....	....	19,438	1,821
1826.....	775,137	6,684	781,821	672,994	....	....	14,436	1,359
1827.....	637,120	....	637,120	550,129	....	....	8,247	1,859
1828.....	394,450	810	395,260	711,041	....	....	6,026	3,730
1829.....	327,728	366	328,094	362,511	....	....	4,833	2,502
1830.....	261,687	....	261,687	381,333	....	....	4,594	2,570
Total....	\$6,330,994	\$78,915	\$7,009,909	\$5,762,071	\$4,618	\$3,899	117,657	21,868
Sept. 30, 1831.....	\$589,941	....	\$589,941	\$261,564	....	....	7,838	2,306
1832.....	152,913	\$4,115	157,028	491,891	....	....	1,791	....
1833.....	120,482	....	120,482	152,250	....	....	1,406	1,343
1834.....	139,914	189	190,103	274,712	....	....	2,620	245
1835.....	403,604	....	403,604	542,890	....	....	4,272	760
1836.....	343,845	3,854	347,699	503,356	....	....	2,835	240
1837.....	9,393	....	9,393	131,776	....	....	551	134
1838.....	38,535	....	38,535	75,162	....	....	472	166
1839.....	330,719	....	330,719	150,689	....	....	1,362	332
1840.....	217,762	....	217,762	98,349	....	....	2,732	351
Total....	\$2,397,608	\$3,158	\$2,405,766	\$2,687,669	....	....	25,929	5,927
Sept. 30, 1841.....	\$60,872	....	\$60,872	\$31,921	....	....	1,391	....
1842.....	49,963	....	49,963	102,700	....	....	631	880
9 mos. 1843.....	208,502	1,180	209,682	43,535	....	....	982	2,197
June 30, 1844.....	42,591	....	42,591	88,034	....	....	191	736
1845.....	103,471	....	103,471	104,857	....	....	1,412	937
1846.....	1,077,003	5,463	1,082,471	85,774	....	....	14,743	6,804
1847.....	12,397,633	81,433	12,429,186	590,240	....	\$52,171	124,600	101,067
1848.....	2,379,291	1,303	2,380,594	415,923	....	116,945	17,410	34,779
1849.....	3,916,842	22,526	3,938,368	376,793	....	....	53,901	46,165
1850.....	1,025,031	42,693	1,067,724	293,763	....	....	10,014	22,972
Total....	\$21,260,774	\$104,638	\$21,365,427	\$2,138,610	....	\$199,116	225,250	216,637
June 30, 1851.....	\$593,683	\$1,200	\$593,883	\$235,933	....	....	3,142	12,618
1852.....	573,250	100	573,350	152,533	....	....	4,116	9,460
1853.....	613,512	59,272	672,034	153,118	....	....	3,432	14,955
1854.....	1,006,017	86,435	1,092,502	229,335	....	....	9,120	14,432
1855.....	1,209,633	332,851	1,542,484	152,293	....	....	12,927	25,562
1856.....	4,800,021	74,709	4,874,730	89,032	....	....	35,735	19,089

Savings-banks were introduced into Ireland in 1810. The greatest amount deposited was in 1845, previous to the years of distress consequent on the famine; and the fluctuations which have since taken place appear in the annexed table:

Years.	Depositors.	Amount.	Years.	Depositors.	Amount.
1845.....	96,422	\$2,921,531	1850.....	47,937	\$1,291,798
1846.....	93,553	2,855,827	1851.....	49,554	1,347,617
1847.....	80,351	2,410,720	1852.....	52,142	1,447,315
1848.....	43,512	1,334,296	1853.....	55,630	1,536,010
1849.....	45,543	1,200,273			

The internal traffic of the country is carried on chiefly by wheel-carriage roads. Their condition, both as to lines of direction and mode of construction, is excellent. Materials for the construction and repairs of roads are very generally distributed throughout the whole island, either in quarries, ridges, and masses of gravel, or in the beds or channels of rivers and streams. The limestone, which is the general substratum of the greater part of the country, is the best material for their formation; and the system known

under the name of macadamizing was long and successfully practiced on many of the leading lines of road in Ireland before it was thought of in Great Britain.

The progress and condition of the Irish railway system from 1836 to 1854, inclusive, may be seen in the following tables, compiled from the Board of Trade Returns:

Years ending 30th June.	Miles open on the 1st January in each year.	No. of passengers.	Receipts.		
			From passengers.	From goods.	Total.
1836 (15 mos.)	6	1,287,800	£25,816	£105	£25,421
1837	6	1,184,428	81,901	44	81,945
1838	6	1,243,972	33,318	270	33,588
1839	6	1,341,208	34,409	307	34,716
1840	18½	1,358,761	86,171	414	86,590
1841	18½	1,629,924	41,002	466	41,468
1842	18½	2,046,903	54,219	2,520	56,739
1843	21½	2,074,444	56,548	6,802	63,350
1844	31½	2,588,096	62,608	8,286	71,494
1845	65	3,481,707	104,762	14,936	119,898
1846	65	3,610,506	105,469	13,274	123,743
1847	120½	3,866,294	149,551	35,000	184,551
1848	209½	4,374,749	211,598	66,215	271,808
1849	423	6,059,947	290,604	127,462	418,066
1850	515	5,495,796	339,076	174,959	514,035
1851	580	5,663,603	365,608	198,459	564,062
1852	666	6,166,127	435,910	243,609	679,519
1853	771	7,074,475	537,259	249,310	831,569
1854	865	6,711,170	521,671	352,806	874,477

E. B.

Iris, or Orris-Root Plant (*iris florentis*), a perennial, native of Carniola, and common in the gardens of Europe, the root of which is remarkable for communicating an odor like that of violets, and produces the orris of the shops. The flowers, which put forth in spring, are noted for the graceful curve of their petals, as well as for the brilliancy of their hues. It has a thick, tuberous, creeping stem, usually called its root, which, externally, is brown and yellowish, is white within, and sends out numerous fibres—the true roots—from the lower part. When these are pared off, the stem appears full of round spots. Independent of the value which would be derived from the roots of this plant, it would be highly desirable to cultivate it for the purposes of ornament, in all parts of the country where it would thrive.

Iron (Dan. *Jern*; Du. *Yzer*; Fr. *Fer*; Ger. *Eisen*; It. *Ferro*; Lat. *Ferrum*, *Mars*; Pol. *Żelazo*; Por. *Ferro*; Rus. *Scheleso*; Sp. *Hierro*; Sw. *Jern*; Gr. *Σιδήρος*; Sans. *Loha*; Arab. *Hedeed*; Pers. *Ahun*), the most abundant and most useful of all the metals. It is of bluish-white color, and when polished has a great deal of brilliancy. It has a styptic taste, and emits a smell when rubbed. Its hardness exceeds that of most other metals; and it may be rendered harder than most bodies by being converted into steel. Its specific gravity varies from 7·6 to 7·8. It is attracted by the magnet or loadstone, and is itself the substance which constitutes the loadstone. But when iron is perfectly pure, it retains the magnetic virtue for a very short time. It is malleable in every temperature, and its malleability increases in proportion as the temperature augments; but it can not be hammered out nearly as thin as gold or silver, or even copper. Its ductility, is, however, more perfect; for it may be drawn out into wire as fine at least as a human hair. Its tenacity is such, that an iron wire 0·078 of an inch in diameter is capable of supporting 549·25 lbs. avoirdupois without breaking. *Historical Notice.*—Iron, though the most common, is the most difficult of all the metals to obtain in a state fit for use; and the discovery of the method of working it seems to have been posterior to the use of gold, silver, and copper. We are wholly ignorant of the steps by which men were led to practice the process required to fuse it and render it malleable. It is certain, however, that it was prepared in ancient Egypt, and some other countries, at a very remote epoch; but it was very little used in Greece till after the Trojan war. (See the admirable work of M. Goguet on the origin of Laws, Arts, &c.) Iron was found on Mount Ida by Dactyles,

owing to the forests of the mount having being burnt by lightning, 1432 B. C.—*Arundelian Marbles*. The Greeks ascribe the discovery of iron to themselves, and referred glass to the Phœnicians; but Moses relates that iron was wrought by Tubal-Cain. Iron furnaces among the Romans were unprovided with bellows, but were placed on eminences with the grate in the direction of the prevailing winds. Swedish iron is very celebrated, and Daunemora is the greatest mine of Sweden. British iron was cast by Ralph Page and Peter Baude, in Sussex, in 1543.—*Reymer's Federa*. Iron-mills were first used for slitting iron into bars for smiths by Godfrey Rochs, in 1590. Tinning of iron was first introduced from Bohemia in 1681. There are upward of 800,000 tons of iron produced annually in England.—*Haydn*. There are many varieties of iron, which artists distinguish by particular names; but all of them may be reduced under one or other of the three following classes; *cast or pig iron, wrought or soft iron, and steel*. 1. Cast or pig iron is the name given to this metal when first extracted from its ores. The ores from which iron is usually obtained are composed of oxyd of iron and clay. The object of the manufacturer is to reduce the oxyd to the metallic state, and to separate all the clay with which it is combined. This is effected by a peculiar process; and the iron, being exposed to strong heat in furnaces, and melted, runs out into molds prepared for its reception, and obtains the name of cast or pig iron. The cast iron thus obtained is distinguished by manufacturers into different varieties, from its color and other qualities. Of these the following are the most remarkable:

White cast iron, which is extremely hard and brittle, and appears to be composed of a congeries of small crystals. It can neither be filed, bored, nor bent, and is very apt to break when suddenly heated or cooled.

Gray or mottled cast iron, so called from the inequality of its color. Its texture is granulated. It is much softer and less brittle than the last variety, and may be cut, bored, and turned on the lathe. Cannons are made of it.

Black cast iron is the most unequal in its texture, the most fusible, and least cohesive, of the three.

Wrought or soft iron is prepared from cast iron by a process termed a refinement or finery. The wrought iron manufactured in Sweden is reckoned the finest in the world.

Steel consists of pieces of wrought iron hardened by a peculiar process. The Swedish iron imported into this country is mostly used in the manufacture of steel.—*THOMSON'S Chemistry*.

Uses of Iron.—To enumerate the various uses of iron would require a lengthened dissertation. No one who reflects for a moment on the subject can doubt that its discovery and employment in the shape of tools and engines has been of the utmost importance to man; and has done more, perhaps, than anything else to accelerate his advance in the career of improvement. Locke has the following striking observations on this subject: "Of what consequence the discovery of one natural body and its properties may be to human life, the whole great continent of America is a convincing instance: whose ignorance in useful arts, and want of the greatest part of the conveniences of life, in a country that abounds with all sorts of natural plenty, I think may be attributed to their ignorance of what was to be found in a very ordinary despicable stone—I mean the mineral of iron. And whatever we think of our parts or improvements in this part of the world, where knowledge and plenty seem to vie with each other, yet to any one that will seriously reflect upon it, I suppose it will appear past doubt, that, were the use of iron lost among us, we should in a few ages be unavoidably reduced to the wants and ignorance of the ancient savage Americans, whose natural endowments and provisions came no way short of those of the most flourishing and polite nations; so that he who first

made use of that one contemptible mineral, may be truly styled the father of arts and author of plenty."—*Essay on the Understanding*, book iv., c. 12.

Iron, on account of its abundance, working qualities, and tenacity, is probably the most useful and valuable of metals. According to Dr. Ure, "it is capable of being cast into molds of any form, of being drawn into wire of any desired length or fineness, of being extended into plates or sheets, of being bent in every direction, of being sharpened, or hardened, or softened at pleasure. Iron accommodates itself to all our wants and desires, and even to our caprices. It is equally serviceable to the arts, the sciences, to agriculture, and war. The same ore furnishes the sword, the plowshare, the scythe, the pruning-hook, the needle, the graver, the spring of a watch or of a carriage, the chisel, the chain, the anchor, the compass, the cannon, and the bomb." It is a medicine of much virtue, and the only metal friendly to the human frame." In its primitive position it is commingled with the earth's strata in bountiful profusion; it is found in various combinations and conditions in every formation, and it is a constituent element of both animals and vegetables.

History.—Malleable iron appears to have been known from a remote antiquity. Its obvious utility and great superiority over the softer metals, then commonly used, combined with the expense of its reduction, caused it to be highly prized, though the extreme difficulty of working it by the rude methods then employed, greatly restricted its application. There are notices in Homer and Hesiod of the arts of reducing and forging iron; but cast-iron was then unknown—an imperfectly malleable iron being produced at once from the ores in the furnace. It is probable that the Greeks obtained most of their iron through the Phœnicians from the shores of the Black Sea, and from Laconia. It would be interesting to trace the gradual advances which have been made in the reduction of iron, from its discovery to the present time; to inquire into the circumstances which led to the successive changes in the processes, and into the principle on which those changes were founded; to examine into the differences in the products which from time to time ensued, and to notice the influence of these conditions on the extent and progress of the manufacture. Our knowledge of these changes, however, is scanty and imperfect, and we can only conjecture what was probably its early progress. The furnaces which were first employed for smelting iron were probably similar to those now called *air-bloomeries*. They were probably simple conical structures, with small openings below for the admission of air, and a large one above for the escape of the products of combustion, and would be erected on high grounds in order that the wind might assist combustion. The fire being kindled, successive layers of ore and charcoal would be placed in it, and the heat regulated by opening or closing the apertures below.

The process of reduction would consist of the de-oxydation of the ore and the cementation of the metal by long continued heat. The temperature would never rise sufficiently high to fuse the ore, and the product would therefore be an imperfectly malleable iron, mixed with scoriæ and unreduced oxyd. It would then be brought under the hammer, and fashioned into a rude bloom, during which process it would be freed from the greater portion of the earthy impurities. By such a process as this the Romans probably worked the iron ores of our own island; scoriæ, the refuse of ancient bloomeries, occur in various localities, in some cases identified with that people by the coincident remains of altars dedicated to the god who presided over iron. Mungo Park saw a rude furnace of this kind used by the Africans, and, indeed, with some modifications, it is still retained in Spain, and along the coasts of the Mediterranean, where rich specular

ores are worked. The advantages of an artificial blast would soon become manifest, and a pair of bellows, or a cylinder and piston would soon be applied to the construction mentioned above. Homer represents Hephestus as throwing the materials from which the shield of Achilles was to be forged into a furnace urged by 20 pairs of bellows (*phœat*). The inhabitants of Madagascar smelt iron in much the same way, their blowing apparatus, however, consisting of hollow trunks of trees, with loosely-fitting pistons.

The furnace corresponds to the *blast-bloomery*, and has, by successive improvements, developed into the blast furnace, now almost universally used, and into the *Catalan forge*, still employed in some districts. The application of the blast would offer considerable advantages; it would obviate the necessity of an elevated site, place the temperature more immediately under the direction of the smelter, and render the whole process more regular and certain. The method of reduction remained the same as before, but the product would differ considerably, for whenever the blast was sufficiently powerful, the iron would be *fused*, a partial carburation would take place, and the resulting metal would be a species of steel, utterly useless to the workmen of those days; hence, it seems necessary to infer, that a rude process of refining was invented, the metal being again heated with charcoal, and the blast directed over its surface, the carbon would be burnt out, and the iron become tough and malleable. The processes might perhaps form two successive stages of one operation, as at present practiced with the Catalan forge.

The increasing demand for iron, and the progress of internal communication, would lead the smelter to increase the size and height of his bloomery, and this, probably, would lead to a very unexpected result. The greater length through which the ore had to descend, would prolong its contact with the charcoal, and a higher state of carburation would ensue, the product being cast-iron—a compound till then perhaps unknown.

From the time that cast-iron became the product of the smelting furnace, the refining would be made a separate process, requiring a separate furnace and machinery. It would soon be found also that, as the furnace increased in height, the pressure of the superincumbent mass would render the materials so dense as to retard the ascent of the blast, and thus cause it to become soft and inefficient; hence the internal buttresses called *boshes* were first introduced to support the weight of the charge, relieving the central parts from the pressure, and permitting the free ascent of the blast. While the good quality of the iron and the regularity of the process were thus insured, increase of quantity was the result of improvements in the blowing apparatus, which was now enlarged and worked by water-power. With these modifications, the furnace was the same essentially as the blast-furnace now employed, though not so large; indeed until the introduction of coke at a much later period, the blast-furnace seldom exceeded 15 feet in height by 6 at the widest diameter. The more perfect operation of the blast-furnace allowed the reduction of the heaps of scoriæ, which had been gradually accumulating during the period that the blast-bloomeries had been in operation, and which contained 30 to 40 per cent. of iron. A new species of property was thus created; extensive proprietorships of Danish and Roman cinders were formed; large deposits of scoriæ, which for ages had lain concealed beneath forests of decayed oak, were dug up, and in Dean Forest it is computed that 20 furnaces, for a period of upward of 300 years, were supplied chiefly with the bloomery cinders as a substitute for iron ore.

At what period the complete transformation of the blast-bloomery into the blast furnace was effected, it is impossible to say. It was probably in the early part

of the 16th century, as we find that in the 17th the art of casting had arrived at a considerable degree of perfection, and in the reign of Elizabeth there was a considerable export trade of cast-iron ordnance to the Continent. In the forest of Dean are the remains of two blast furnaces, which formerly belonged to the kings of England, but they have been out of blast since the commencement of the struggle between Charles I. and his Parliament. Calculating from the quantity of scoria accumulated in their immediate neighborhood, which appear to have lain undisturbed for the last two centuries, Mr. Mushet has attempted to deduce the period of their erection, which he conceives to have been about the year 1550, in the time of Edward VI. Up to this period wood charcoal was the only material employed in smelting operations, but the wants of a constantly increasing population, not less than the great consumption of the blast furnaces themselves, created a scarcity of this essential material, and gave a check to the manufacture. To such an extent had the wood been destroyed, that the cutting down of timber for the use of the iron-works was prohibited by special enactments; and the forests of Sussex alone appear to have been exempt from the general decree of conservation. The number of furnaces in blast decreased three fourths, and the annual production, which but a short time before is said to have been 180,000 tons, was in 1740 reduced to only 17,350 tons.

James I. granted patents to iron-masters in various parts of the kingdom for using pit-coal in the manufacture of iron. The obstacles to its introduction, however, were numerous, and not easily overcome. The comparatively incombustible nature of coke, and its feeble chemical affinities, rendered a more powerful blast and a longer subjection to the heat indispensable to its successful adoption. Ignorance of the causes of failure operated long and seriously, but all difficulties were at length surmounted. An enlargement of the height of the furnace prolonged the contact of the ore and coke, and at last the employment of the steam-engine and improved blowing apparatus rendered the blast much more powerful and regular, and gave that impetus to the manufacture which has caused Great Britain to take the first rank in this branch of industry.

The first great improvement in the blowing apparatus was the substitution of large cylinders, with closely fitting pistons, for the bellows. The earliest of any magnitude were probably those erected by Smeaton at the Carron Iron-Works, in 1760. In 1783-4, Mr. Cort, of Gosport, introduced the processes of puddling and rolling, two of the most important inventions connected with the production of iron since the employment of the blast furnace. (See Addenda, A.) About this time the steam-engine of James Watt came into use, and along with it commenced a new era in the history of the iron trade and every other branch of industry. Its immense power, economy, and convenience of application, brought it at once into general employment. It was soon applied to pumping, blowing, and rolling; it enabled the mines to be sunk to a greater depth; refractory ores to be reduced with facility, and the processes of rolling, forging, etc., to be effected with a rapidity previously unknown. Of late years Scotland has made considerable progress in the iron manufacture. The introduction of railway communication, and the invention of the hot-blast, have given a stimulus to the trade which has raised Glasgow into importance as an iron district, and few towns possess greater facilities for the sale of their produce, than this central dépôt of the mineral treasures of the country by which it is surrounded.

The hot-blast process, for which a patent was taken out by Mr. Nelson in 1824, has effected an entire revolution in the iron industry of Great Britain, and

forms the last era in the history of this material. This simple but effective invention has given such facilities for the reduction of refractory ores, that between three and four times the quantity of iron can be produced weekly, with an expenditure of little more than one third the fuel; and, moreover, the coal does not require to be coked, or the ores to be calcined. In conclusion, we may add that there appear to have been five distinct epochs in the history of the iron trade.

The *first* dating from the employment of an artificial blast to accelerate combustion. The *second* marked by the employment of coke for reduction, about the year 1750. The *third* dating from the introduction of the steam-engine, and on account of the facilities which that invention has given for raising the ores, pumping the mines, supplying the furnace with a copious and regular blast, and moving the powerful forge and rolling machinery, we may safely attribute this era to the genius of James Watt. The *fourth* epoch is indicated by the introduction of the system of puddling and rolling, very soon after the employment of the steam-engine. The *fifth*, and last—though not the least important epoch in the history of this manufacture—is marked by the application of the hot-blast—an invention which has increased the production of iron fourfold, and has enabled the iron-master to smelt otherwise useless and unreducible ores; it has abolished the processes of coking and roasting, and has given facilities for a large and rapid production, far beyond the most sanguine anticipations of its inventor. Manufacturers taking advantage of so powerful an agent, have not hesitated to reduce improper materials, such as cinder-heaps and impure ores, and by unduly hastening the process, and attending to quantity more than to quality, have produced an inferior description of iron, that has brought the invention into unmerited obloquy.

The Ores.—The ores of iron are found in profuse abundance in every latitude, embedded in or stratified with every formation. They occur both crystallized, massive, and arenaceous, lying deep in strata of vast extent, filling veins and faults in other rocks, and scattered over the surface of the ground. Sometimes, but rarely, found native; usually as oxyds, sulphurets, or carbonates, more or less mingled with other substances. Of these ores there are perhaps twenty varieties, many of which are, however, rare; others are combined with substances which unfit them for the manufacture of iron, so that the remainder may be classed under the following general heads; their composition, however, varies greatly:

1. The magnetic oxyds, in which the iron occurs, as Fe_3O_4 or $\text{Fe}_2\text{O}_3 + \text{Fe O}$. This is the purest ore which is worked: the best Swedish metal is manufactured from it. It is found in primitive rocks, and is widely diffused over the globe.
2. Specular iron ore, peroxyd of iron, Fe_2O_3 . This is rich and valuable, and has been worked from a remote antiquity in Elba and Spain. It is found chiefly in primary and transition rocks.
3. Red and brown hæmatites, hydrated peroxyd of iron. These ores occur in botryoidal radiating masses, in Cumberland, Ireland, America, and other places.
4. Carbonate of iron. This ore occurs mixed with large quantities of argillaceous, carbonaceous, and silicious substances, forming the large deposits of clay-iron-stone and blackbands, from which most of the iron of this country is obtained. These strata are generally found in close proximity to the coal measures. All the above ores are more or less mixed with silica, alumina, oxyd of manganese, etc., and it may not be uninteresting to glance at their geographical distribution in Europe and America.

The United Kingdom.—Great Britain possesses peculiar and remarkable advantages for the manufacture of iron. The ores are found in exhaustless abundance, usually interstratified with the coal for their reduction, and in close proximity to the mountain limestone,

which is used as a flux. In few countries do these three essential materials occur in such abundance, or so near together as to give the necessary facilities for a large and profitable production. The ores principally employed are the clay-ironstones and carbonates of blackbands, which are found interstratified with the coal fields of Ayrshire, Lanarkshire, Shropshire, South Wales, and other parts, and these vary in richness in different localities, according to position and the amount of silica, clay and other foreign matter with which they are associated. The chemical composition of three varieties of the ore used in Lanarkshire is given by Colquhoun, as follows:

	No. 1.	No. 2.	No. 3.
Protoxyd of iron....	53.08	47.33	35.22
Carbonic acid.....	35.17	33.10	32.53
Silica.....	1.40	6.63	9.56
Alumina.....	0.63	4.80	5.34
Lime.....	3.33	2.00	8.62
Magnesia.....	1.77	2.20	5.19
Peroxyd of iron.....	0.23	0.33	1.16
Bituminous matter..	3.03	1.70	2.13
Sulphur.....	0.00	0.22	0.62
Oxyd of manganese..	0.00	0.13	0.00
Moisture and loss....	1.41	2.26	0.00
Total.....	100.00	100.00	100.37

The carbonic acid in the above ores may be partly combined with the lime as carbonate of lime, as well as with the protoxyd of iron. M. Berthier gives, according to Dr. Ure, the following analysis of the English and Welsh ironstones of the coal measures:

	Rich Welsh Ore.	Poor Welsh Ore.	Dudley Rich Ore or Gubbin.
Loss by ignition....	30.00	27.00	31.00
Insoluble residuum..	8.40	22.03	7.66
Peroxyd of iron.....	60.90	42.66	53.33
Lime.....	0.00	6.00	2.66
Total.....	98.40	97.69	99.65

Calculating the amount of carbonate of iron and metallic iron indicated by the above analyses, we have:

Carbonate of iron...	88.77	65.09	85.20
Metallic iron.....	42.15	31.38	40.45

The richness of the above ironstones would be about 33 per cent. of iron. In the process of roasting, 28 per cent. of the ore is dissipated. Mr. Mitchel gives also the following assays of clay-ironstone and blackband ore, as under:

	Clay Ironstone, Leitrim, Ireland.	Blackband Carbonate Ore.
Protoxyd of iron.....	51.633	20.924
Peroxyd of iron.....	3.742	.741
Oxyd of manganese.....	.976	1.742
Alumina.....	1.849	14.974
Magnesia.....	.234	.987
Lime.....	.410	.881
Potash.....	.274	Trace.
Soda.....	.372	Trace.
Sulphur.....	.214	.098
Phosphoric acid.....	.284	.114
Carbonic acid.....	31.142	14.000
Silica.....	6.640	26.179
Carbonaceous matter.....	2.160	16.940
Loss.....		2.420
Total.....	100.000	100.000

In North Lancashire and Cumberland, the red hematite ores are now extensively worked, and great quantities are yearly shipped from Whitehaven, Ulverstone, etc., to Staffordshire, South Wales, and Scotland, for mixing with the poorer argillaceous and blackband ores. In Cumberland, North Lancashire, no less than 546,998 tons were raised in 1854 for this purpose, and the greater portion was exported from those districts. In addition to these exports, about 25,000 to 30,000 tons are smelted by the hot blast at Cleator, in the neighborhood of Whitehaven. It produces a strong and ductile iron, considered highly

valuable for mixing with the weaker irons. These ores have been carefully analyzed, and contain:

Peroxyd of iron.....	90.3
Silica.....	5.0
Alumina.....	3.0
Lime.....	trace.
Magnesia.....	trace.
Water.....	6.0

Total..... 104.3

Or about 62 per cent. of metallic iron.

The following table gives the state of the trade in 1856; the particulars are extracted from the Mining Records, published under the direction of Mr. R. Hunt, in connection with the Museum of Practical Geology, London. The importance which Scotland has assumed in reference to the iron manufacture is especially worthy of notice:

Counties.	No. of Works.	No. of furnaces erected.	No. of furnaces in blast.	Total produce in tons.
ENGLAND:				
Northumberland, Durham, and Yorkshire....	37	106	80	348,444
Derbyshire.....	13	33	25	127,500
Lancashire & Cumberland	2	5	8	20,000
Staffordshire.....	72	203	166	847,600
Shropshire.....	13	34	23	124,800
Gloucestershire.....	4	7	5	21,990
WALES:				
Flintshire, Denbighshire, Glamorganshire.	7	11	9	32,900
Anthracite district.	14	35	21	750,000
Glamorganshire and Monmouthshire.	84	134	100	
Bituminous district.				
SCOTLAND:				
Ayrshire.....	5	41	30	249,600
Lanarkshire.....	13	83	72	463,000
Other counties.....	10	27	16	79,040
Total.....	228	724	555	3,069,574

In connection with the above, we insert the following table from Mr. Kenyon Blackwell's paper on the Iron Industry of Great Britain, read before the Society of Arts. It gives the estimated production of crude iron in the various countries:

	Tons.		Tons.
Great Britain.....	8,000,000	Sweden.....	150,000
France.....	750,000	Various German States.....	100,000
United States.....	750,000	Other countries....	300,000
Prussia.....	300,000		
Austria.....	250,000		
Belgium.....	200,000	Total.....	6,000,000
Russia.....	200,000		

In referring to the above, it will be seen that Great Britain produces as much crude iron as all other countries put together; and a great portion of that iron being converted into bars and plates, indicates a large and important article of production. An article of immense value to the country—of great demand at home and abroad—and justly entitled not only to improvements and economy in its manufacture, but to the generous support of a liberal and an enlightened government.

Previously to 1845, the imports of foreign iron into Great Britain usually varied from 20,000 to 25,000 tons a year. But at that epoch the duties on foreign iron (20s. a ton on iron in bars) were repealed; and there has since been an increase in the imports of Swedish bar-iron, which is especially well fitted for being made into steel. The imports of all sorts of foreign iron amounted, in 1849, to 29,396 tons, whereof 25,039 tons were from Sweden.

Perhaps in nothing has the fall of price, consequent on the diminution of the cost of production, that has taken place since the peace of 1815, been more conspicuous than in hardware. At an average, articles of hardware are at present (1857) full 50 per cent. lower than in 1820. And it may be safely affirmed that there are very few descriptions of articles to which a fall of price would have been so advantageous.

ACCOUNT OF THE DIFFERENT DESCRIPTIONS OF IRON (INCLUDING UNWROUGHT STEEL) EXPORTED FROM THE UNITED KINGDOM DURING 1850, SPECIFYING THE QUANTITIES SENT TO THE DIFFERENT COUNTRIES.*

Countries to which exported.	Pig iron.	Bar iron.	Bolt and rod iron.	Cast iron.	Iron wire.	Wrought iron, viz.				Old iron for re-manufacture.	Un-wrought steel.
						Anchor grapnels, etc.	Hoop.	Nails.	Of all other sorts (except ordnance).		
Russia.....	Tons. 812	Tons. 449	Tons. 3	Tons. 516	Tons. 254	Tons. 192	Tons. 3	Tons. 9	Tons. 363	Tons. 10	Tons. 576
Sweden.....	280	463	....	410	3	98	....	0	75	....	7
Norway.....	1,460	171	142	95	41	588	82	1	292	....	14
Denmark.....	7,571	2,263	422	89	46	675	867	7	847	952	35
Prussia.....	10,959	1,422	93	6	10	166	69	55	942	5,665	214
Mecklenburg.....	21	284	114	0	12	49	139	1	160	....	5
Hanover.....	1,393	529	470	1	27	78	303	1	344	....	7
Oldenburg.....	313	278	69	2	....	3	80	....	92	....	....
Hanseatic Towns.....	7,870	7,868	1,991	1,809	551	950	1,512	121	6,201	171	807
Holland.....	13,103	8,786	417	707	153	811	1,321	54	4,763	....	478
Belgium.....	28	21	100	25	573	48	....	0	120	....	618
Channel Islands.....	512	592	42	307	3	227	65	152	198	6	16
France.....	11,718	1,085	346	65	29	216	476	0	1,066	17	183
Portugal, Azores, and Madeira.....	887	4,649	2,282	64	12	200	1,462	68	682	....	4
Spain and the Canaries.....	4,641	1,312	375	1,620	282	727	1,373	41	1,020	1	117
Gibraltar.....	....	351	9	12	2	197	60	32	21	....	....
Italy.....	7,400	22,184	4,888	1,583	255	1,067	3,415	83	2,334	1,138	812
Malta.....	5	1,996	160	18	....	163	142	1	100	10	1
Ionian Islands.....	....	305	....	20	....	5	102	1	10	....	....
Greece.....	....	1,081	146	14	....	206	146	5	149	....	....
Turkish dominions, exclusive of Wallachia, Moldavia, Syria, Palestine, and Egypt.....	861	9,060	8,557	80	18	553	223	215	758	....	8
Wallachia and Moldavia.....	70	1,608	658	5	....	....	297	22	320	....	....
Syria and Palestine.....	....	165	141	3	....	22	5	1	26	....	....
Egypt.....	....	379	....	42	17	13	120	8	192	....	....
Algeria.....	190	958	16	....	....	....	16	....	51	....	....
Tunis.....	....	282	....	13	....	....	5	....	10	....	....
Morocco.....	....	161	....	....	2	....	6	3	....	....	....
Western coast of Africa.....	....	2,745	....	404	....	5	449	26	160	....	....
British possessions in S. Africa ..	5	1,388	11	407	2	227	289	130	669	4	8
Cape Verd Islands.....	....	....	....	0	....	....	....	....	0	....	....
St. Helena and Ascension Isls.....	....	1	....	....	....	....	....	2	4	....	....
Mauritius.....	....	517	52	353	1	57	100	253	461	....	5
British territories in East Indies.....	530	32,319	4,843	1,341	80	735	3,813	569	8,975	....	100
Java.....	260	1,946	463	206	62	187	140	56	198	....	....
Philippine Islands.....	....	345	160	7	....	52	75	10	212	....	5
China, including Hong Kong.....	320	503	2,207	35	53	15	191	18	28	25	....
British settlements in Australia.....	1,102	4,865	203	1,493	33	433	916	1,577	1,606	....	65
South Sea Islands.....	....	18	....	....	....	8	2	3	8	....	....
British North Amer. colonies.....	10,894	45,893	883	2,895	65	2,583	1,930	2,016	6,354	3	476
British W. Indies and Br. Guiana.....	16	812	27	1,543	20	102	878	1,112	1,063	....	9
Foreign West Indies.....	269	6,475	487	1,803	12	123	349	804	752	8	14
United States of America.....	57,021	260,841	1,400	1,476	1,295	12,882	7,349	697	10,894	7,679	6,325
Mexico.....	....	1,731	19	83	10	4	200	46	82	....	70
Central America.....	....	130	2	29	....	4	9	23	64	....	17
New Granada.....	....	1,965	12	25	....	18	23	78	66	....	11
Venezuela.....	4	70	....	49	2	2	18	50	26	....	....
Ecuador.....	10	65	....	5	....	7	....	31	14	....	....
Brazil.....	1,660	2,942	147	995	12	729	590	430	840	....	40
Oriental republic of Uruguay.....	....	14	....	28	....	14	24	19	57	....	....
Buenos Ayres.....	....	1,545	28	479	32	156	831	166	400	....	5
Chili.....	280	6,446	49	364	8	173	141	155	412	....	17
Peru.....	50	846	8	124	2	37	34	52	277	....	6
Falkland Islands.....	....	....	....	....	....	....	....	....	7	....	....
Russian settlements on the north-west coast of America.....	....	....	....	....	....	12	....	....	....	....	....
Total.....	141,972	442,908	26,435	21,092	4,034	25,927	30,605	9,267	54,808	15,688	10,592

* Cwts. and lbs. are omitted in this table, but are allowed for in the summing up.

In Ireland there are vast deposits of iron ore of great richness, though as yet but little worked. Some of these, such as the ores worked at the Arigna mines, and the Kidney ores of Balcary Bay, yield as much as 70 per cent. of iron. If these mines were worked more extensively, and if peat fuel were used in the smelting operations, the iron would probably be of the very best quality, and might rival the famed Swedish charcoal metal. Of this there is now every reason to hope, as the establishment of railway communication, with almost every part of Ireland, will open out the immense peat bogs of that country, and facilitate the introduction of vegetable fuel for the reduction of the ores, and create a large and important addition to other branches of Irish industry.

France possesses an abundant supply of iron ore, but on account of the scarcity of coal, the manufacture has been greatly restricted in extent. The introduction of railway communication is, however, rapidly removing this difficulty, and the operations of smelting are greatly on the increase. The railroad has enabled the French iron-master to substitute coal for charcoal in the reduction of the iron ores, and in consequence an immense increase has taken place in the

production of pig and manufactured iron. The ores are found in beds or strata in the Jura range; accumulated in kidney-shaped concretions in the fissures of the limestone; or dispersed over the surface of the ground, and but slightly covered with sand or clay. They are found in the Departments of the Yonne, the Meuse, and the Moselle, and indeed may be traced from the Pas de Calais on the north to the Jura on the south, indicating throughout an abundant and ample supply. The present increased production of iron in France is chiefly due to the introduction of coal in smelting, but it may also be traced in some measure to the encouragement given by the government to that branch of industry, and to the enterprise of such men as M. de Gallois and M. Dufrénoy, who have exerted themselves to extend its manufacture in that country. M. de Gallois resided in England for several years, immediately subsequent to the peace of 1815, and having obtained admission into the different iron-works here, he returned to France and established the works at St. Etienne, now probably the largest and most extensive in that country. The universal exhibition of last year (1855) fully justifies the remarks in reference to the great increase of the iron

trade of France. Any person in the least conversant with the imperfect machinery and processes of the iron manufacture as it existed in France some years since, could not have been otherwise than struck with the improved character of those exemplified in the Paris Exhibition. In no country (probably not excepting even this) has so great progress been made in so short a time, in advancing from a state of comparative rudeness to one of considerable perfection, as in France. The production of crude pig-iron in France is now little short of 1,000,000 tons annually, but the demand for railways, rolling-stock, bridges, iron ships, girders, and other constructions is so great that large quantities of iron are still annually imported from this country.

German Iron Manufactures.—The increase in the production and manufacture of iron in Germany, within the last few years, is remarkable. In Prussian Westphalia alone, no less than 16 mining and smelting companies have been formed since 1848—12 of them since 1854. In 1853, this province produced but 603,525 cwt. pig iron, and 118,064 cwt. cast iron ware; while in 1854 the product was 709,110 cwt. pig iron, and 332,061 cast iron ware; showing an increase of 73 per cent. in one year. In 1855 the same province produced 1,513,039 cwt. pig iron, and 1,126,025 cwt. bar iron. The product of iron ore in all Prussia in 1853, was 1,496,516 tons; and in 1854, 2,144,149 tons; increase, 647,633 tons. The product of all the furnaces in the kingdom of Saxony, in 1852, was 168,175 cwt.; in 1853, 170,637 cwt. Bavaria produced in 1850, 668,167 cwt.; in 1853, 1,074,317 cwt. Austria, in 1830, produced 1,437,836 cwt. pig iron, and 151,637 cwt. cast iron ware in 1854, 4,151,505 cwt. pig iron, and 582,446 cwt. cast iron ware. The product of all the furnaces in the States of the Zollverein was: In 1851, 4,612,102 cwt.; in 1852, 5,137,821 cwt.; in 1853, 6,126,458 cwt.; in 1854, 7,501,470 cwt.; showing an increase from 1851 to 1854, of 64 per cent. At this rate of increase, the production of iron will soon exceed its consumption in Germany. But little railroad iron is now imported into Germany. The rolling-mills on the lower Rhine, in Berlin, and in Silesia, supply Prussia; the rolling-mill of Zwickau meets the demand of Saxony, and that of Burglengenfeld supplies Bavaria. Austria, too, is supplied by domestic mills. German rails are more expensive than English, but are also said to be more durable.

In regard to machinery, Germany is also making rapid progress, and already outstrips England in the building of locomotives. Not a single locomotive is now sent from England to Germany on German account, while numbers of them are sent from Germany to France and Switzerland. Extensive iron-foundries and machine-shops are to be found in Berlin, Vienna, Munich, Augsburg, Esslingen, Karlsruhe, Aix-la-Chapelle, Ruhrort, Hanover, etc. Up to January 1, 1854, one establishment in Berlin had alone turned out 500 locomotives, and 1300 have been built in all in Germany since 1841. German cutlery is likewise beginning to compete with the English, especially in the West India and South American markets. The sugar plantations of the West Indies, which formerly obtained their harvesting implements from England, now import them direct from Germany.

Prussia.—Valuable deposits of the blackband and clay carbonate ores are found interstratified with the great coal-field of Ruhr; and the bog-iron and hæmatite ores are found in considerable profusion in Rhenish Prussia and other parts. In Upper Silesia, on the Vistula and the Oder, large deposits of coal and iron are found in juxtaposition, and are worked to a considerable extent.

The consumption of iron is not so great as in France, though it is increasing rapidly, as may be seen from returns recently given by the British Chargé d'Affaires at Berlin. These returns show that the amount

of iron ore raised in Prussia has increased from 1,495,516 tons in 1853, to 2,144,509 tons in 1854; this has taken place in nearly all the producing districts, but chiefly on the Rhine, where the demand has increased from 719,684 to 1,068,656 tons; in Westphalia, from 146,320 to 330,014 tons; in Silesia, from 563,739 to 650,369 tons; in lower Saxony and Thuringia, from 51,963 to 70,676 tons; in Prussian Brandenburg, from 8,084 to 12,731 tons; and in the Upper Zollverein from 6,736 to 12,063 tons.

In Austria, all the iron is smelted with charcoal or carbonized peat, and is, in consequence, of the finest quality; it may be applied to every description of manufacture, from the most ductile wire to the hardest steel. The production is, however, small. The ores are found in Hungary, Styria, Moravia, and Upper Silesia.

In Belgium, both coal and iron are found in equal abundance, and are worked at Charleroi, Liege, and at other places. The ores, which are chiefly hæmatite, are derived from the limestone at the base of the coal measures.

The superiority of the Swedish iron has long been acknowledged, and till recently it has been unrivaled. This arises not only from the purity of the ore—the magnetic oxyd of iron—but in consequence of its being smelted with charcoal only. The quantity is, however, restricted, as the iron-masters are allowed by law only a certain number of trees per annum, in order that the forests may not be totally destroyed. Coal does not exist in either Sweden or Norway.

In 1844 some experimental researches were undertaken by Mr. Fairbairn of Manchester, at the request of the Sublime Porte, in regard to the properties of iron made from the ores of Samakoff in Turkey. The ores were strongly magnetic, and contained, according to Dumas and others, 62 to 64 per cent. of iron. They consisted of:

One atom iron	28	+ one atom oxygen	8	= 36
Two atoms iron	56	+ three atoms oxygen	24	= 80
Iron....	84	Oxygen.....	82	116

Some of these ores have been smelted with charcoal, and some very fine specimens of iron and steel produced. The manufacture is, however, in a languid state in Turkey, and although smelting furnaces, blowing apparatus, forges, rolling mills, etc., were prepared and sent out from this country, they are to a great extent useless among a people who have deeply rooted prejudices and habitual inactivity to overcome, and every thing to learn in all those habits of industry which indicate the rising prosperity of an energetic and an active people.

America.—Both the magnetic, hæmatite, and clay-ironstones abound in the United States. The magnetic ores worked in New England, New York, and New Jersey; the hæmatite in Pennsylvania, New York, New Jersey, and other localities; but the greater part of the manufacture must eventually establish itself in the valley of the Mississippi, west of the Alleghany range, where vast deposits of coal and iron exist, though at present but imperfectly known or developed. The ores in most of these districts are smelted with a mixture of charcoal and anthracite, and the usual limestone flux, and produce a very excellent quality of iron. In another portion of this article (see p. 1105) a full account of the iron ores of the United States is given.

In Nova Scotia some of the richest ores yet discovered occur in exhaustless abundance. The iron manufactured from them is of the very best quality, and is equal to the finest Swedish metal. The specular ore of the Acadian mines, Nova Scotia, is said by Dr. Ure to be a nearly pure peroxyd of iron, containing 99 per cent. of the peroxyd, and about 70 per cent. of iron. When smelted, 100 parts yield 75 of iron, the increase in weight being due to combined carbon. The red

ore Dr. Ure states to be analogous to the kidney ore of Cumberland, and to contain :

Peroxyd of iron.....	85.8	84.4
Silica.....	8.2	8.0
Water.....	6.0	7.6
	100.0	100.0

The Acadian ores are situated in the neighborhood of large tracts of forests, capable of supplying almost any quantity of charcoal for the manufacture of the superior qualities of iron and steel. Several specimens of iron from these mines have been submitted to direct experiment, and the results prove its high powers of resistance to strain, ductility, and adaptation to all those processes by which the finest description of wire and steel are manufactured. The difficulties which the government have had to encounter, during the last two years, in obtaining a sufficiently strong metal for artillery, are likely to be removed by the use of the Acadian pig-iron. Large quantities have been purchased by the War Office, and experiments are now in progress, under the direction of Lieutenant-Colonel Wilmot, Inspector of Artillery, and of Mr. Fairbairn, which seem calculated to establish the superiority of this metal for casting every description of heavy ordnance. There are also some very rich ores at the Nictau mines, as the following analyses by Dr. Jackson show. They contain impressions of Silurian tentaculites, spirifers, etc. :

	Brown Ore, somewhat magnetic.	Red Iron Ore.
Peroxyd of iron.....	70.20	64.40
Silica.....	14.40	19.20
Carbonate of lime.....	5.60	5.40
Carbonate of magnesia.....	2.80	3.20
Alumina.....	6.80	1.20
Oxyd of manganese.....	.40	4.40
Water.....	.00	2.40
	100.20	100.20
* Gain from oxygen.	-20*	-20†
† Over-run, probably carbonic acid from carbonate of lime.	100.00	100.00

As our limits are circumscribed, it will not be necessary to extend this section further; suffice it therefore to observe, that in all countries nature has, with a beneficent purpose, interlaid and interstratified the whole surface of the globe with this useful and indispensable material, and it would ill bespeak that high intelligence with which man is endowed if he did not avail himself of, and turn to good account, the immense stores of mineral treasures which are so profusely laid at his feet.

Fuel.—The inquiry into the properties and composition of the ores of iron, and the processes employed for their reduction and subsequent conversion into bars and plates, would be incomplete unless accompanied by descriptive analyses of the fuel by which they are fused. Indeed the results of the operations of smelting, puddling, etc., are so intimately dependent on the quality of the fuel employed, as to render a knowledge of its constituents essential to the manufacture of good iron.

Charcoal was at first universally employed in the manufacture of iron, and on account of its purity compared with other kinds of fuel, and its strong chemical affinities and consequent high combustibility, it is of very superior value where it can be obtained in large quantities at a moderate cost. This, however, is rarely the case, and hence its use is restricted within very narrow limits in most countries. Charcoal is the result of several processes, in each of which the object is to increase the amount of fuel in a given bulk. The wood being cut into convenient lengths, and piled closely together, in a large heap, the interstices being filled with the smaller branches, and the whole covered with wet charcoal powder, is then set on fire. Care is taken that only sufficient air is admitted to consume the gaseous products of the wood, so as to maintain the high temperature without needlessly con-

suming the carbon. After the whole of the gaseous products have been separated, and the carbon and salts only are left, the access of air is prevented, and the heap allowed to cool.

Another and better process is to throw the wood into a large close oven or furnace, heated either by the combustion within it, or by a separate fire conducted in flues around it. By this process, not only is the yield greater and of better quality, from the slower progress of the operation, but the products of the distillation may be preserved and employed for a great variety of purposes. The following results of some experiments by Karsten, show the difference in yield of very rapid and very slow processes :

Wood.	Charcoal produced by quick carbonization.	Charcoal produced by slow carbonization.
Young oak.....	16.54	25.60
Old oak.....	15.91	25.71
Young deal.....	14.25	25.25
Old deal.....	14.05	25.00
Young fir.....	16.22	27.72
Old fir.....	15.35	24.75
Mean.....	15.38	25.67

These, on the average, give for the quick processes 15.3, and for the slow 25.6, being in the ratio of 1 : 1.67, or 0.67 in favor of the quick process.

Peat.—This material seems likely to come into use for smelting iron in countries such as Ireland, where neither coal nor wood are found in abundance. It is purer and less objectionable than coal, and if properly dried, compressed, and carbonized, would prove a very valuable fuel for the reduction of such ores as we have already described in the section on the iron ores of Ireland. It is carbonized in the same way as the charring of wood.

Coke.—Before the introduction of the hot-blast, this material was used to a very great extent in the manufacture of iron; it is prepared from coal in the same way that charcoal is prepared from wood, the operation being called the coking or desulphurizing process. The heaps do not require so careful a regulation of the admission of air as those of charcoal, on account of the comparatively incombustible character of the coke. Sometimes the heaps are made large, with perforated brick chimnies, to increase the draught through the mounds; at other times they are formed into smaller heaps, and the conversion takes place without the intervention of flues. The more usual and economical plan is, however, the employment of close ovens, by which process a great saving is effected, the yield being from 80 to 50 per cent. in the one case, and from 50 to 75 in the other, according to the nature and quality of the coal.

The following table of the heating power of various kinds of fuel, from Knapp's Chemical Technology, is not without interest; in practice, however, only a portion of the absolute heating power is made available :

Fuel.	Authority.	Pounds of water heated from 0° to 100° centigr. by 1 lb. of fuel.
Charcoal, Average.....	Berthier..	68.0
Peat from Allen in Ireland, Upper	Griffith.	62.7
" " " Lower		56.6
" " " Pressed		28.0
Peat charcoal, Essone.....	Berthier..	50.7
" Framont & Champ de Feu	Berthier..	58.0
Coke, St. Etienne.....	Berthier.	65.6
" Besseges.....		64.3
" Rive de Gier.....		58.9
Coal, brown, mean of 7 varieties..	Berthier..	50.3
" "cannel, Wigan.....	Berthier.	61.5
" "cherry, Derbyshire.....		56.4
" "cannel, Glasgow.....		53.2
" "Lancashire.....		71.6
Gas coke, Paris.....	Berthier.	50.3
Anthracite, Pennsylvania.....		69.1
" mean of 5 varieties..		67.4

Coal.—The hot-blast has enabled the iron-masters to use raw coal in the blast furnaces, the great heat of

the ascending current of the products of combustion coking it as it falls in the furnace. The sulphur however, and other deleterious ingredients, do not appear to be so completely got rid of as when the coal is used in the shape of coke; and it appears probable, that even with the hot-blast, the separate process of coking

might be advantageously used, on account of the greater purity of the iron produced.

The following tables, selected from various sources, give the composition of the different kinds of fuel, all of which are applicable to the reduction and fusion of the iron ores:

Fuel.	Locality.	Specific gravity.	Carbon.	Hydrogen.	Oxygen and Nitrogen.	Ashes in 100 parts.	Authority.
Splint Coal.	.....	1.290	75.00	6.25	18.75	....	Thomson.
"	.....	1.266	70.90	4.80	24.80	....	Ure.
"	Newcastle, Wylam.	1.302	74.823	6.180	5.085	18.912	Richardson.
"	Glasgow.	1.807	82.924	6.491	10.457	1.128	
Cannel coal.	.....	1.272	64.72	21.56	13.72	....	Thomson.
"	.....	1.228	72.22	8.93	28.85	....	Ure.
"	Lancashire, Wigan.	1.319	88.753	5.660	8.039	2.545	Richardson.
"	Edinburg (parrot coal).	1.318	67.597	5.405	12.432	14.566	
Cherry coal.	.....	1.263	74.45	12.40	13.15	....	Thomson.
"	Newcastle, Jarrow.	1.266	84.846	5.043	8.430	1.676	Richardson.
"	Glasgow.	1.286	81.208	5.452	11.928	1.421	
Caking coal.	Newcastle, Gatesfield.	1.280	87.952	5.239	5.416	1.393	Richardson.
"	Durham, South Hetton.	1.274	88.274	5.171	8.036	1.519	
"	.....	1.269	75.28	4.18	20.54	4.670	Thomson.
Anthracite.	Swansea.	1.343	92.56	2.330	2.530	1.720	Regnault.
"	.....	1.270	90.53	2.600	4.100	....
"	South Wales.	.....	94.05	3.380	2.570	....	Jacquelin.
"	Pennsylvania.	1.462	90.45	2.430	2.450	4.670	Overman.
"	.....	.....	94.89	2.550	2.560	....	Regnault.
"	Massachusetts, Worcester.	.....	28.35	0.920	2.150	68.65	Overman.
Peat.	Vulcaire.	.....	57.03	5.680	31.760	....	Regnault.
"	Long.	.....	58.09	0.980	31.870	....
"	Champ de Feu.	.....	57.79	6.110	30.770	....	Dr. Kane.
"	Cappage.	.....	51.05	6.35	39.55	2.55	
"	Kilbeggan.	.....	61.04	6.67	30.46	1.38	Dr. Kane.
"	Kilbakan.	.....	51.13	6.33	34.48	8.06	

According to Knapp, peat contains from 1 to 33 per cent. of its weight of ash. In coal we have the following from Mr. Mushet's analyses:

	Specific gravity.	Carbon.	Ashes.	Volatile matter.
Welsh furnace coal.	1.337	88.068	3.432	8.300
" " "	1.393	89.709	2.300	8.000
" slaty "	1.409	82.175	6.725	9.100
Derbyshire furnace coal	1.264	82.882	4.238	42.830
" cannel "	1.278	48.362	4.638	47.000

And again the analyses, from Overman, of the ash of coal, may be quoted, as showing the constituents contained in the ashes derived from combustion:

Sulphate of lime.	80.3	3.6
Lime.	8.8	2.5
Silice.	14.2	85.7
Oxyd of iron.	1.7	0.0
Alumina.	0.0	8.2

Total. 100.0 100.0

Malleable Iron.—The greatly extended application of wrought iron to every variety of construction renders an investigation of its properties peculiarly interesting. It is now employed more extensively than cast iron; and on account of its ductility and strength nearly two thirds of the weight of material may in many cases be saved by its employment, while great lightness and durability are secured. Its superiority is especially evident in constructions where great stiffness is not required, but on the other hand any degree of rigidity may be obtained by the employment of a tubular or cellular structure, and this may be seen in the construction of wrought iron tubular bridges, beams, and iron shops. The material of malleable iron which is making such vast changes in the forms of construction, can not but be interesting and important, and considering that the present is far from the limit of its application, we shall endeavor to give it that degree of attention which the importance of the subject demands. From the forge and the rolling-mill we derive two distinct qualities of iron, known as "*red-short*" and "*cold-short*." The former is the most ductile, and is a tough, fibrous material, which exhibits considerable strength when cold; the latter is more brittle, and has a highly crystalline fracture almost like cast-iron; but the fact is probably not generally known, that the brittle works as well, and is as ductile

under the hammer, as the other, when at a high temperature.

United States.—Iron was first made in America in the province of Virginia, about the year 1715, and the example was quickly followed by the provinces of Maryland and Pennsylvania. This opening of a new source of wealth was a subject of great satisfaction and importance to those who were interested in the prosperity of the colonies, presenting to their view, at no distant date, a prospect of independence of foreign countries for the supplies of those most essential articles, iron and timber.

EXPORTS OF IRON FROM THE AMERICAN PLANTATIONS.

Years.	Tons.
1717, 1718 together.	7
1729—1735, average.	2,111
1739—1743 "	2,423
1750—1755 "	3,805
1761—1776 "	4,045

IMPORTS OF IRON.

Years.	Tons.
1711—1718, average.	1,732
1729—1733 "	2,312

No further returns were published.

In 1810, Mr. Gallatin, the Secretary of the Treasury of the United States, presented to Congress a report on the manufactures, in which, among many other branches, iron, and the manufactures of iron, are mentioned as being firmly established, supplying, in several instances, the greater, and in all, a considerable portion of the consumption of the United States.

"The furnaces, forges, and bloomeries of the United States, amount to 530, of which the State of New York furnishes 69. The annual value of iron and its manufactures is estimated at \$12,000,000 or \$15,000,000. The average value of imported metal, in bar-iron and steel, at \$4,000,000. The Franconia Iron Works, in New Hampshire, established in 1810, employ a capital of \$100,000. The Vergennes Iron Works, in Vermont, promise to be very important. The price of bar-iron at this establishment is \$140 per ton; the ore \$3, charcoal \$4.50 per 100 bushels; 19,000 muskets are annually made at the two public armories of Springfield and Harper's Ferry. There is now a considerable surplus of small arms."

Some of the ores of iron are found in every State in the Union; and, about the period of Mr. Gallatin's report, mines of this metal were worked in New Hampshire, Vermont, Rhode Island, New York, Connecticut,

cut, New Jersey, Pennsylvania, Virginia, and North Carolina.

According to the "Statistical Annals of the United States," by Adam Seybert, founded on official documents, the manufacture of iron in the year 1810 was as follows: 153 furnaces, making 53,908 tons of iron; 330 forges, making 24,541 tons of bar-iron; 316 trip-hammers; 84 rolling and slitting-mills, which required 6500 tons of iron; 410 naileries, in which 15,727,914 lbs. of nails had been made. Manufacture of iron, value, \$14,364,526.

From abstracts of reliable statements it appears that the whole quantity of iron made in the year 1830, computed in pig-iron, amounted to 191,536 tons, produced from 239 furnaces, two fifths of which were made in Pennsylvania.

The average quantity of hammered iron imported from 1821 to 1830, was about 26,200 tons, and of rolled iron about 5600 tons, making together 31,800 tons, valued at \$1,762,000. The whole quantity of hammered and rolled iron consumed in the United States in 1830, may be estimated at about 144,666 tons.

The value of the various foreign manufactures of iron consumed, on an average, from 1821 to 1830, was about \$4,000,000, making the whole amount of foreign iron and its manufactures annually consumed, about \$5,762,000.

Iron Manufactures of the United States in 1850, from the "Report of the Superintendent of the seventh Census," printed by order of the House of Representatives.—PIG-IRON.—Number of establishments in operation, 377. Capital invested, \$17,346,425. Materials used, and value,

Ore.....	tons	1,579,309	} \$7,005,289
Coal.....	"	645,242	
Coke and charcoal....	bushels	54,165,236	

Number of persons employed, 20,448. Average wages per month, \$20 76. Pig-iron made, 564,755 tons; value, \$12,748,777.

CASTINGS.—Number of establishments in operation, 1391. Capital invested, \$17,416,361. Materials used, and value,

Pig iron.....	tons	845,553	} \$10,846,355
Old metal.....	"	11,416	
Ore.....	"	9,850	
Coal.....	"	190,891	
Coke and charcoal....	bushels	2,413,750	

Number of persons employed, 23,589. Average wages per month, \$27 38. Castings made, 322,745 tons; value, \$25,108,155.

WROUGHT-IRON.—Number of establishments in operation, 422. Capital invested, \$14,495,220. Materials used, and value,

Pig metal.....	tons	251,491	} \$9,698,109
Blooms.....	"	33,344	
Ore.....	"	78,787	
Coal.....	"	588,068	
Coke and charcoal....	bushels	14,510,828	

Number of persons employed, 13,257. Average wages per month, \$25 41. Wrought-iron made, 278,044 tons; value, \$16,747,074.

IMPORTS OF BRITISH IRON.

Years.	1815—1819, average	Tons.
1815—1819	"	15,097
1820—1824	"	11,832
1825—1829	"	17,491
1830—1834	"	43,630
1835—1839	"	74,846
1840—1844	"	63,099
1845—1849	"	131,662
1850.....		367,562
1851.....		464,559
1852.....		501,158

IMPORTS OF BRITISH HARDWARE AND CUTLERY.

Years.	1840—1844, average	Declared value.
1840—1844	"	\$498,554
1845—1849	"	803,608
1850.....		1,049,908
1851.....		1,080,487
1852.....		966,492

This table shows the imports to have reached the maximum in 1851.

IRON MANUFACTURES OF THE UNITED STATES IN 1840.

STATES.	CAST-IRON.		BAR-IRON.		Tons of fuel consumed.	Men employed, including mining operations.	Capital invested.
	No. of furnaces.	Tons produced.	Bloomeries, forges, and rolling mills.	Tons produced.			
Maine.....	16	6,122	1	...	285	48	\$185,950
New Hampshire.....	15	1,320	2	125	2,104	121	93,200
Massachusetts.....	48	9,332	67	6,004	199,252	1,097	1,232,75
Rhode Island.....	5	4,126	..	...	227	29	22,250
Connecticut.....	23	6,495	44	3,623	16,938	895	577,300
Vermont.....	26	6,743	14	655	388,407	788	664,150
New York.....	186	29,088	120	53,693	123,677	3,456	2,103,418
New Jersey.....	25	11,114	80	7,171	27,425	2,056	1,721,20
Pennsylvania.....	213	98,895	169	87,244	355,903	11,522	7,781,471
Delaware.....	2	17	5	440	971	28	36,200
Maryland.....	12	8,876	17	7,900	24,422	1,782	795,650
Virginia.....	42	18,810	52	5,886	86,588	1,742	1,246,650
North Carolina.....	8	968	43	968	11,593	468	94,961
South Carolina.....	4	1,250	9	1,165	6,334	248	113,300
Georgia.....	14	494	20	...	630	41	24,000
Alabama.....	1	30	5	75	157	30	9,500
Louisiana.....	11	1,400	2	1,866	4,152	145	357,000
Tennessee.....	54	16,129	99	9,678	187,453	2,266	1,514,736
Kentucky.....	17	29,206	13	3,637	35,501	1,103	449,000
Ohio.....	72	35,286	19	7,466	104,312	2,268	1,161,900
Indiana.....	7	810	1	20	737	103	57,700
Illinois.....	4	158	..	...	240	74	40,300
Missouri.....	3	180	4	113	300	80	79,000
Michigan.....	15	601	..	...	451	99	60,500
Wisconsin.....	1	3	..	...	1	3	4,000
Total.....	804	286,908	795	197,283	1,523,110	30,497	20,432,181

It is not easy to strike the true medium, the best policy, between the proper fostering care by protection, due to the iron manufacturer, and, at the same time, not to restrict the construction of railroads, and, as a consequence, the growth of new States, by confining by high duties the supply of iron to the production of our own mills. The reduction of duty on iron, by the new tariff, from 30 to 24 per cent., will, undoubtedly, have some effect on our iron manufactures; but rather to limit the profits, than to reduce the production or number of mills; the present prices are ample to give large profits to home manufacture,

even if a small decline follows the reduction of duty. The iron manufacture of the United States is only a question of time, and no very great amount of that cash article is now required to bring it to that point where it will take the lead of the world, and become the staple and most profitable branch of American industry. A great deal of instruction is to be derived from the reports of the iron manufacture in England. The following is an extract from one of the most recent:

"Thanks for the most part to the demand from the United States, the iron trade of south Staffordshire

may be reported as much more healthy than it was a month ago. By the last two or three American mills there have been brought specifications which, in their number and value, form a striking contrast to those received during many months past. These show that the American mills are able to supply only a very small portion of the demand of the States; and are demonstrative that with bars at £8 instead of £9, a trade might be carried on with America to an extent that would be restricted by nothing else than the powers of production attaching to the British works. The *Persia*, whose letters were delivered on Saturday last, was especially valuable in respect of such specifications. In the past fortnight, however, the 'make' of south Staffordshire has not been by any means so large as under such circumstances might have been expected. This has been occasioned by the unusual circumstances of large masses of machinery at several works having been stopped by breakages, which have all happened within a few days of each other. By the end of this week the preparations that have ensued will be completed, and if there should not be a recurrence, the next fortnight will be characterized by the utmost animation at the works of the principal iron-masters of the district. The large American demand will make the inconvenience greater than is now being felt by most of the makers of malleable iron, from the exceedingly short supply of hematite ore of sample sufficiently fine for the purposes of the puddling furnace. If this deficiency should last much longer, it will cause some little anxiety in cases where those descriptions of iron are in demand, in the manufacture of which pounded calcined cinder is not an efficient substitute. There are no complaints of a shortness of supply of those coarser samples of red ore used in the blast furnace."—*London Engineer*, Feb.

The supply of the best quality of iron is decreasing in England, whereas in this country we are but beginning to develop and become acquainted with our best ores. "Iron Mountain" and "Pilot Knob" in Missouri, contain iron in immense quantities, and of a purity of ore not to be found but in two or three mines, and limited in amount, in Sweden. And Kentucky has undeveloped iron ores to a great extent, and of uncommon purity. We ought to export rather than import iron; and in less than twenty years we shall do so, unless some wonderful mineralogical discoveries are made in the British Isles.

No State in the Union is so vitally interested in the iron trade as Pennsylvania. Iron, in all its different varieties, forms one of the chief sources of State wealth. The ore abounds in several sections of this commonwealth, while furnaces dot the hill-sides and valleys, giving employment to numerous laborers, and producing thousands of tons of iron, which are transported to other States, and serve to enrich all who are interested in its manufacture. Each year science applies iron to more of the common uses of every-day life. It supplies the material for ships; enters largely into the construction of houses; forms part of all the new and improved agricultural implements; and thus becomes a rival to timber in the mechanical department of our country. This increasing consumption, of course, must increase the demand in a parallel degree, and if Congress will but legislate wisely, and in favor of home labor and capital, as exhibited in the iron trade, it must prosper in the future. It is surely the policy of our country to foster this branch of her productive industry. It is by wise, judicious legislation, that comparatively young countries are enabled to compete with older and more practiced ones, where capital is abundant and labor cheap. This is the kind of legislation demanded by the iron trade of this State and country, and we hope that such will be extended by our national legislature.

Since the commencement of the present year, the iron market of this country has been marked by pecu-

liar circumstances. East of the Alleghany mountains the production of pig iron exceeds the quantity manufactured during the same period of any previous season. A still greater increase is also looked for during the remaining months. There is now on hand a considerable quantity of the stock of 1855, accumulated in consequence of the severity of the winter preventing iron from being delivered when ordered. But a singular fact is, that with all these apparent drawbacks, the price steadily and firmly advanced to the highest quotation, and sales have been greater in the early months of this, than in the same months of any other year. More than 60,000 tons were contracted for in this city, in the month of April, to be delivered during the year. This is a very heavy business to be perfected so early in the season, and since then the quantity has been swelled to a much higher figure. Importations of pig iron, especially Scotch, have been decreasing for the past year or 18 months. During the six months ending December 31st, 1855, the importation of pig iron from all foreign ports only reached 29,839 tons. This is less than one third of the amount imported during the previous 12 months. This is a cheering indication, and the decrease in the importation of foreign pig iron will give a fresh impetus to our home manufacture, which is much needed in many sections of the Union.

The long and severe winter prevented shipments of bar iron from Pittsburg in the usual quantities, consequently there has been a heavy accumulation of that particular stock at that place. It was estimated that in the month of April, there were 35,000 tons of bar iron waiting sale and transportation at Pittsburg. In despite of these facts, however, the various mills are in full operation, depending upon the heavy trade to carry them through the season. The general prosperity of all the western interests must keep up the demand for iron, and if so the stock will not be too heavy. It is computed that 280,000 tons of pig iron will be produced in the West during the present year—this, of course, includes western Pennsylvania. From the districts of Alleghany, Hanging Rock, and Clarksville, about 200,000 tons will be sent to market. There will be a decrease of charcoal pig iron in the present year, when compared with the production of 1855, of 55,000 tons. The product of new coke and raw bituminous coal furnaces will, however, make good at least 15,000 tons of this deficit. The amount of anthracite pig iron consumed in the West in 1855, was 33,000 tons. There will be an increased amount needed during the present year, if we may judge from the contracts made for supplies from Susquehanna. We give below an interesting article from the "Iron Masters' Review," showing the amount of pig iron consumed in the places named in the West; and also the quantity and value of railroad iron imported into the United States, from the 30th June, 1839, to the 30th June, 1855. It is well worthy an attentive perusal by all those who are interested in the iron trade of the United States.

In the lower part of the Susquehanna district, the furnaces have mostly produced for the western market. There has been considerable irregularity in their operations, partly on account of deficiency of coal and the late opening of navigation. The new furnaces—Dudley, Keystone, No. 2 Cornwall—and several furnaces which worked little, if any, in 1855, will probably increase the product of the district this year by 25,000 tons. Circumstances do not admit of a comprehensive survey of the product of this district, nor of the demands that may come from the West.

In the Lehigh district, at this date, the stock of pig iron, which is nearly all No. 1, amounts to 34,150 tons. The contracts already made, for iron of this district, for this year's delivery, approximate to 37,600 tons. There are 17 furnaces now in blast, one to be put in blast by the middle of May, and one in July

The 17 furnaces are producing weekly an average of 2100 tons, making for the remaining 37½ weeks of 1856, 78,750 tons, which, added to the present stock, gives an aggregate of 112,900 tons. In this estimate we omit the product of the two furnaces soon going into blast, to make up for the possible deficiencies that may result from accidents. If we allow for next year's market the production in four weeks of December, during which the product may be closed in by winter, we have 104,500 tons for the market for this year, less than already contracted, 87,600 tons; leaving unsold for this year's delivery 66,900 tons. In these estimates no account is taken of the small sales in the district, nor of a few small shipments by railroad, made in 1856 prior to this date. The sales of iron from this district in 1856, approximated to 105,000 tons—equal to a reduction of stocks, of 19,000 tons. The stocks on the 1st of January last approximated to 20,700 tons, and on the 1st of January, 1855, to 39,000. The total production in this district in the year 1856, will approximate to 106,000 tons; assuming as a basis the data above given, which will prove reliable, save as it may be affected by accidents in manufacturing, or by a change in the market. The production in the 14 weeks past has not averaged 2100 tons—several furnaces having but recently been put in blast.

The consumption of rails within the past nine months has greatly increased over the average of the previous year. The importation in the six months ending December 31, 1855, amounted to 89,854 tons; or 50 per cent. more than in the average of the previous 12 months. In the six months named, American mills produced about 70,000 tons. As the returns of last year's harvest are now exerting their greatest influence upon the general prosperity of the interior, railroad enterprises are much encouraged. If the promised peace of Europe is fully re-inaugurated, there is no doubt that with an average harvest the present year, our railroad extensions will be greater than in any period heretofore. In addition to the requirements for new roads and extensions, the older roads are progressively needing a greater amount of rails for renewals, where in most instances heavier rails are put down. It is worthy of note, that a large portion of the old rails taken up is used in other manufactures, to which this description of iron is regarded by many as being better adapted. The increasing amount of this stock, which comes in competition with pig iron, is worthy of special consideration. Capital is wanted in Pennsylvania, Maryland, Virginia, Missouri, Tennessee, and other States, for the more vigorous and more profitable workings of the extensive iron ores of those States.

PRODUCTION OF PIG IRON IN THE UNITED STATES, ACCORDING TO THE CENSUS OF 1850.

STATES.	Establishments in operation.	Capital invested.	Ore used.	Mineral coal used.	Coke and charcoal used.	Value of raw material, fuel, etc.	No. of hands employed.		Entire wages per month.		Average wages per month.		Pig iron made.	Value of other products.	Value of entire products.
							Males.	Females.	Males.	Females.	Males.	Females.			
Maine.....	1	Dollars. 214,000	Tons. 2,907	.....	Bushels. 218,970	Dollars. 14,939	71	..	Dollars. 1,562	..	Dols. 22 00	..	1,484	.....	\$6,616
N. Hampshire	1	2,000	500	.....	50,000	4,900	10	..	150	..	18 00	..	200	.....	6,000
Vermont.....	3	62,500	7,676	150	326,487	40,175	100	..	2,208	..	22 08	..	3,200	.....	68,000
Massachusetts	6	469,000	27,909	.....	1,855,000	185,741	263	..	7,288	..	27 52	..	12,287	.....	295,123
Connecticut..	13	225,600	35,450	.....	2,870,000	289,225	148	..	3,967	..	26 80	..	13,420	20,000	415,600
New York....	15	605,000	46,385	20	3,000,074	321,027	505	..	12,625	..	25 00	..	23,022	12,800	597,920
New Jersey..	10	967,000	51,266	20,885	1,621,000	332,707	600	..	12,720	..	21 20	..	24,031	.....	560,544
Pennsylvania	180	8,570,425	877,283	316,060	27,505,136	8,782,427	9,285	9	201,089	46 21	65 5 11	285,702	40,000	6,071,518	
Maryland....	18	1,420,000	99,866	14,088	3,707,500	560,725	1,370	..	27,595	..	20 14	..	43,641	96,000	1,056,400
Virginia.....	29	513,800	67,319	39,982	1,911,000	158,807	1,115	14	14,282	96 12	76 8 88	22,163	.....	521,924	
N. Carolina..	9	25,000	900	.....	150,000	27,900	26	5	208	22	8 00	4 00	400	.....	12,500
Georgia.....	3	26,000	5,189	.....	430,000	25,840	185	8	2,855	15 17	44 5 00	900	28,000	57,300	
Alabama.....	3	11,000	1,888	.....	145,000	6,770	40	..	700	..	17 50	..	522	5,000	22,500
Tennessee...	23	1,021,400	88,810	177,167	160,000	254,900	1,718	109	21,953	55 82	81 5 11	30,420	41,900	676,100	
Kentucky....	21	924,700	72,010	.....	4,576,269	260,152	1,845	10	37,835	47 20	23 4 70	24,245	10,000	604,037	
Ohio.....	35	1,509,000	140,610	21,780	5,423,800	680,087	2,415	..	59,129	..	24 48	..	52,658	.....	1,255,880
Michigan.....	1	15,000	2,700	.....	185,000	14,000	25	..	875	..	35 00	..	660	6,000	21,000
Indiana.....	2	72,000	5,200	.....	810,000	24,400	88	..	2,290	..	26 00	..	1,850	.....	58,000
Illinois.....	2	65,000	5,500	.....	170,000	15,500	150	..	3,810	..	22 06	..	2,700	.....	70,200
Missouri.....	5	619,000	87,000	55,180	.....	97,867	384	..	8,112	..	24 28	..	19,250	.....	314,600
Wisconsin....	1	15,000	3,000	.....	150,000	8,250	60	..	1,800	..	30 00	..	1,000	.....	27,000
Total.....	877	17,846,425	1,579,809	645,242	54,165,286	7,005,289	20,298	150	421,435	784	.....	..	564,755	259,700	12,748,777

PRODUCTION OF WROUGHT IRON IN THE UNITED STATES, 1850.

STATES.	Establishments in operation.	Capital invested.	Pig metal.	Blooms used.	Ore used.	Mineral coal.	Coke and charcoal.	Value of raw material used.	Number of hands employed.		Average wages per month.		Wrought iron made.	Value of other products.	Value of entire products.
									Males.	Females.	Males.	Females.			
N. Hampshire	2	Dollars. 4,000	Tons. 145	.....	.....	.....	Bushels. 50,000	Dollars. 5,600	.....	.....	Dols. 32 00	..	110	.....	10,400
Vermont.....	2	62,700	750	525	2,625	.....	337,000	66,194	57	..	31 05	..	2,045	.....	168,986
Massachusetts	6	610,300	7,030	.....	.....	11,022	78,500	231,194	260	..	22 50	..	6,720	.....	428,320
Rhode Island.	1	208,000	3,000	.....	.....	6,000	.....	111,750	220	..	26 00	..	2,650	.....	222,400
Connecticut..	19	529,500	7,081	1,644	.....	5,062	788,600	358,780	374	..	31 59	..	6,325	5,000	667,560
New York....	60	1,181,300	8,530	.....	44,642	13,908	5,554,150	888,814	1,037	..	26 00	..	13,686	195,000	1,423,968
New Jersey..	53	1,016,843	10,430	.....	14,549	4,507	1,994,180	820,950	593	..	27 78	..	8,162	.....	629,273
Pennsylvania.	131	7,620,066	163,702	20,405	.....	325,967	8,989,998	5,488,391	6,764	7 27	68 7 50	132,506	219,500	8,902,907	
Delaware....	2	15,000	510	60	.....	.....	228,000	19,500	50	..	24 79	..	550	.....	55,000
Maryland....	17	780,650	10,172	3,839	.....	10,455	246,000	489,511	568	..	28 33	..	10,000	.....	771,431
Virginia.....	39	791,211	17,296	2,500	.....	66,515	108,000	591,448	1,295	..	23 62	..	15,328	.....	1,254,995
North Carolina	19	108,000	.....	.....	4,650	.....	357,900	28,114	178	14 10	37 5 28	850	.....	66,980	
Georgia.....	11	9,200	100	.....	.....	.....	76,600	5,986	26	1 11	25 5 00	90	.....	15,834	
Alabama.....	1	2,500	120	.....	.....	.....	80,000	3,000	14	..	20 00	..	100	.....	7,500
Tennessee...	42	755,050	11,696	325	9,151	62,038	.....	385,616	731	55 15	20 5 00	10,348	88,800	670,618	
Kentucky....	4	176,000	2,000	1,600	.....	.....	250,000	180,900	188	..	32 06	..	8,070	.....	299,700
Ohio.....	11	620,800	13,675	2,900	.....	22,755	466,500	604,498	708	..	33 61	..	14,416	.....	1,076,192
Indiana.....	3	17,000	50	.....	3,150	.....	85,000	4,425	22	2 27	45 4 00	175	.....	11,760	
Missouri.....	2	42,100	1,204	.....	.....	9,884	.....	24,509	101	..	30 00	..	963	.....	68,700
Total.....	477	14,495,220	251,491	83,944	78,787	588,063	14,510,828	9,698,109	18,178	79	.....	..	278,044	458,800	16,747,074

PRODUCTION OF IRON CASTINGS IN THE UNITED STATES, 1850.

STATES.	Establishments in operation.	Capital invested.	Pig iron.	Old metal.	Ore.	Mineral coal.	Coke and charcoal.	Value of raw material, fuel, etc.	Number of hands employed.		Average wages per month.		Castings made.	Value of other products.	Value of entire products.
									Males.	Females.	Males.	Females.			
Maine.....	25	Dollars, 150,100	Tons, 3,591	245	....	1,819	14,000	112,570	249	129	00	5 00	3,691	....	265,000
N. Hampshire	26	232,700	5,678	500	....	1,680	20,500	177,060	374	33	05	....	5,764	27,700	371,710
Vermont.....	26	290,720	5,279	274	....	1,066	198,400	160,608	381	28	27	....	5,000	87,770	460,881
Massachusetts	68	1,499,050	31,134	3,361	....	12,401	3,500	1,087,904	1,596	30	90	....	32,074	2,235,635	....
Rhode Island	20	423,800	8,918	....	....	4,670	4,000	253,267	800	29	63	....	8,558	119,500	728,705
Connecticut..	60	588,300	11,396	337	....	7,592	30,600	351,369	942	727	02	8 00	11,210	70,000	981,400
New York.....	323	4,622,482	108,945	3,212	....	22,755	181,190	2,393,768	5,925	27	49	....	104,588	....	5,921,990
New Jersey...	45	598,250	10,666	350	....	5,444	175,800	301,048	808	24	09	....	10,259	....	686,480
Pennsylvania	320	3,422,924	69,501	819	....	49,228	276,355	2,372,467	4,752	127	55	6 00	57,310	661,160	5,354,881
Delaware.....	13	373,500	4,440	....	....	4,967	....	153,852	250	28	36	....	3,630	55,000	267,462
Maryland.....	16	350,100	7,220	....	....	5,000	30,000	259,190	701	27	50	....	6,244	80,000	685,000
Virginia.....	54	471,160	7,114	205	....	7,878	71,600	297,014	810	9	19	9 44	5,577	....	674,416
N. Carolina...	5	11,500	192	....	....	....	6,375	8,341	15	23	46	....	172	....	12,867
S. Carolina...	6	183,700	169	....	2,800	....	405,560	29,128	153	2	13	59 4 00	1,296	....	87,688
Georgia.....	4	35,000	440	....	....	100	9,800	11,950	39	27	43	....	415	....	46,200
Alabama.....	10	216,825	2,348	....	....	....	31,800	102,085	212	30	05	....	1,915	....	271,126
Mississippi...	8	100,000	1,197	....	....	248	92,000	50,370	112	37	91	....	924	2,800	117,400
Louisiana.....	8	255,000	1,660	....	....	3,205	....	75,800	347	35	60	....	1,570	4,000	312,500
Texas.....	2	16,000	250	....	....	250	....	8,400	35	43	43	....	200	15,000	55,000
Tennessee...	16	189,500	1,632	....	5,050	24,690	13,200	90,035	261	8	17	96 4 50	3,384	....	264,325
Kentucky.....	20	502,200	9,731	....	....	2,649	482,750	295,538	558	20	29	4 15	5,898	....	744,316
Ohio.....	183	2,063,650	37,555	1,843	2,000	30,006	355,120	1,193,790	2,758	27	32	....	37,399	208,700	3,069,530
Michigan.....	63	195,450	2,494	....	....	901	16,200	91,865	337	28	68	....	2,070	25,616	279,697
Indiana.....	14	82,900	1,963	5	....	132	29,600	66,918	148	25	74	....	1,757	....	149,430
Illinois.....	29	260,400	4,818	50	....	1,412	12,500	172,330	332	28	50	....	4,160	89,250	441,185
Missouri.....	6	187,000	5,100	200	....	2,598	....	133,114	299	19	63	....	5,200	....	336,495
Iowa.....	3	5,500	81	....	....	....	200	2,524	17	32	35	....	71	2,600	8,500
Wisconsin.....	15	116,350	1,371	15	....	595	2,700	86,930	225	26	73	....	1,342	64,025	216,195
California.....	1	5,000	75	....	....	25	....	8,530	3	23	33	....	75	....	20,740
D. of Columb.	2	14,000	545	....	....	80	....	18,100	27	27	05	....	512	11,000	41,696
Total.....	1,391	17,416,861	345,553	11,416	9,350	190,891	2,413,750	10,346,355	23,541	48	....	....	322,745	1,524,121	25,108,155

Appearances indicate that iron will grow more and more into request—in architecture, ships, and rigging. Wire ropes are now used at many of the mines in the midland and northern counties; and an attempt is being made to introduce them in Devon and Cornwall. At equal strength, a wire rope is lighter by one third than a hemp rope, and by two thirds than a chain; an important fact, especially where mines are deepest. Then we are to have metallic life-boats, pontoons, army-wagons, if the result of experiments made at Woolwich and Rochester may be trusted. The boats, we hear, can not be broken or overset, let them be used ever so roughly; and the pontoons are models of lightness. And again—the United States' Congress have recommended three lines of railway to California: northern, central, and southern, each about 2000 miles in length. The lands granted to the three comprise 131,865,000 acres—a truly gigantic encouragement! What a demand there will be for rails! Then we are to have the often-talked-of railway to India by the Euphrates valley; the route is to be forthwith surveyed. And there is talk of a railway from Honduras across to the Pacific—161 miles, the estimated cost

\$7,000,000, and the expectations of a profitable traffic, fair. To say nothing of the trade from ocean to ocean, there are forests of mahogany and other woods to supply timber-freight for centuries. According to a report in the *Journal of the Society of Arts*, the Honduras government "agrees to give a bounty of 50 acres of land to unmarried, and 75 acres to married laborers who shall go to the country to work on the road, and who shall declare their intention to become citizens."—*Chambers' Journal*. We now subjoin an official summary of the export trade of the United States from 1847 to 1856:

FOREIGN IRON TRADE OF UNITED STATES FOR TEN YEARS.

Years.	American exported.	Foreign consumed.	Excess in foreign consumed.
1847.....	\$1,167,434	\$8,717,656	\$7,550,172
1848.....	1,259,632	12,428,559	11,168,927
1849.....	1,096,172	13,722,354	12,626,212
1850.....	1,911,320	16,232,399	14,321,079
1851.....	2,255,698	17,206,410	14,950,712
1852.....	2,303,519	18,323,056	16,019,287
1853.....	2,499,652	26,993,082	24,493,430
1854.....	4,210,350	28,545,903	32,493,555
1855.....	3,753,472	21,415,205	17,661,733
1856.....	4,161,008	21,618,718	17,457,710

STATEMENT SHOWING THE EXPORTS OF FOREIGN MANUFACTURED IRON FROM THE UNITED STATES, FOR THE YEAR ENDING JUNE 30TH, 1856.

Whither exported.	Muskets and rifles.		Fire-arms not specified.	Needles.	Cutlery.	Other manufactures and wares of, not specified.	Side-arms.	Cap or bonnet wire.	
	No.	Dollars.						Pounds.	Dollars.
Hamburg.....	....	....	....	....	....	450	....	....	....
England.....	....	....	24,614	....	....	4,770	....	....	....
Canada.....	....	....	3,895	5,550	45,646	131,906	....	4,200	448
Other Br. North American pos.	....	....	....	....	150	3,602	....	....	....
British West Indies.....	....	....	....	....	82	613	....	....	....
British Australia.....	....	....	200	....	....	3,091	....	....	....
British East Indies.....	500	1,200	....	....	....	479	....	....	....
France on the Atlantic.....	....	....	....	....	....	172	....	....	....
French North American pos.	....	....	....	....	....	1,893	....	....	....
Cuba.....	....	....	....	....	....	819	....	485	....
Other ports in Africa.....	3,295	10,589	....	506	1,745	7,726	877	....	....
Mexico.....	384	1,026	1,157	....	....	563	....	....	....
Central Republic.....	100	413	....	....	....	574	....	....	....
New Granada.....	....	....	292	....	....	841	....	....	....
Peru.....	....	....	....	....	....	8,666	....	....	....
Sandwich Islands.....	....	....	850	....	....	....	....	....	....
Total.....	4,230	13,228	30,503	6,056	50,225	210,605	1,362	4,200	448
From warehouse.....	3,494	11,194	5,544	5,332	25,129	120,043	1,356	....	....
Not from warehouse.....	736	2,034	24,964	224	25,096	90,562	0	4,200	448

STATEMENT SHOWING THE EXPORTS OF FOREIGN MANUFACTURED IRON FROM THE UNITED STATES, FOR THE YEAR ENDING JUNE 30TH, 1856—Continued.

Whither exported.	Bar iron.		Rod iron.		Hoop iron.		Sheet iron.		Pig iron.	
	Cwts.	Dollars.	Cwts.	Dollars.	Pounds.	Dollars.	Pounds.	Dollars.	Cwts.	Dollars.
Bremen.....	250	1,250	.....	.....	.....	.....	.....	.....	1,600	1,981
Holland.....	.....	.....	.....	.....	.....	.....	.....	.....	440	716
England.....	.....	.....	.....	.....	.....	.....	.....	.....	290	752
Canada.....	3,976	11,287	827	4,434	22,160	619	447,101	14,901	100	150
Other British North Amer. pos.....	806	2,000	.....	.....	.....	.....	15,075	972	.....	.....
British Australia.....	.....	.....	.....	.....	.....	.....	37,582	2,329	.....	.....
Cuba.....	515	1,590	.....	.....	58,450	2,863	.....	.....	600	770
Other ports in Africa.....	.....	.....	.....	.....	16,636	799	.....	.....	.....	.....
Haiti.....	24	96	.....	.....	22,136	981	.....	.....	.....	.....
Mexico.....	3,576	18,885	.....	.....	6,520	302	8,463	198	125	400
New Granada.....	120	462	.....	.....	.....	.....	.....	.....	.....	.....
Brazil.....	11	45	.....	.....	.....	.....	.....	.....	3,500	5,300
Chili.....	637	1,119	.....	.....	.....	.....	6,960	509	.....	.....
Sandwich Islands.....	35	219	.....	.....	.....	.....	.....	.....	.....	.....
China.....	20	50	.....	.....	.....	.....	.....	.....	.....	.....
Total.....	9,970	32,546	827	4,434	125,932	5,454	512,381	18,634	6,755	10,069
From warehouse.....	6,871	17,465	827	4,434	71,888	2,858	447,901	14,936	2,600	4,100
Not from warehouse.....	3,599	15,081	.....	.....	54,044	2,601	64,980	3,698	4,155	5,969

STATEMENT SHOWING THE EXPORTS OF FOREIGN MANUFACTURED IRON FROM THE UNITED STATES, FOR THE YEAR ENDING JUNE 30TH, 1856—Continued.

Whither exported.	Nails, spikes, tacks, etc.		Chain cables.		Mill-saws, cross-cut, and pit-saws.		Anchors, and parts thereof.		Anvils, and parts thereof.	
	Pounds.	Dollars.	Pounds.	Dollars.	No.	Dollars.	Pounds.	Dollars.	Pounds.	Dollars.
Russian pos. in North America.....	.....	.....	21,400	642	.....	.....	.....	.....	.....	.....
England.....	70	11	.....	.....	.....	.....	3,955	197	.....	.....
Canada.....	4,340	209	22,986	540	558	1,388	4,697	208	.....	.....
Other British North Amer. pos.....	9,000	420	64,786	3,877	.....	.....	21,016	1,419	.....	.....
British Australia.....	3,000	154	.....	.....	805	1,407	.....	.....	.....	.....
Philippine Islands.....	.....	.....	14,392	680	.....	.....	8,394	220	.....	.....
Other ports in Africa.....	.....	.....	5,376	289	.....	.....	.....	.....	.....	.....
Haiti.....	.....	.....	1,788	85	.....	.....	.....	.....	.....	.....
Mexico.....	6,900	561	.....	.....	.....	.....	.....	.....	550	66
New Granada.....	.....	.....	17,000	700	.....	.....	.....	.....	.....	.....
Chili.....	.....	.....	1,121	59	.....	.....	310	169	.....	.....
Sandwich Islands.....	.....	.....	215,339	6,685	.....	.....	125,701	6,452	8,700	365
Whale Fisheries.....	8,200	730	.....	.....	.....	.....	.....	.....	.....	.....
Total.....	31,410	2,085	364,188	13,301	868	3,240	159,078	8,656	9,250	481
From warehouse.....	15,810	1,008	307,089	10,859	858	3,065	83,856	1,716	8,700	365
Not from warehouse.....	12,600	1,077	57,149	2,442	5	175	125,717	6,940	550	66

Iron Mountain.—Iron Mountain is situated in St. Francis county, Mo. The land on which it lies was a grant by the Spanish government, when this portion of the south-west was in possession of that government. The grant was confirmed by the Congress of the United States in 1836; but on account of the difficulty of transportation, and of the impression that the ore could not be smelted, this inexhaustible supply was permitted to remain unproductive until 1851, when the Iron Mountain Company was formed and proceeded to the erection of furnaces. The mountain is a flattened, conical shaped hill, with an average elevation above the surrounding valleys of 228 feet, the base of which covers an area of about 500 acres. The ore is the specular iron ore, and is remarkably pure; its average yield, in the furnace, being 56 per cent. From surface indications, and from all explorations made, the whole Iron Mountain seems to be made of iron ore. Almost the entire surface of the mountain is covered with iron ore, the particles increasing in size as you ascend toward the top, until on its summit are found disconnected masses, many tons in weight,

and often six or eight feet in diameter. To what depth the iron ore extends below the base of the mountain, has never yet been ascertained. An artesian well was attempted to be bored by the company, at the base of the mountain, and after attaining the depth of 180 feet, most of the way through iron ore, the work was abandoned. When the boring ceased, the auger rested in a solid mass of ore; so that there is ore under the ground, as well as above it.

Imports of Iron into the United States.—The United States, next to England, may be considered among the leading iron producing countries in the world—England producing 3,600,000, and the United States 1,000,000 tons per annum. Assuming the average price of iron to be \$27, or even \$30, we produce annually to the value of \$27,000,000 or \$30,000,000. From the following table it will be seen that our imports of iron and steel manufactures have gradually reached nearly the same sum. The imports were in

1849.....	\$15,058,961	1853.....	\$30,825,798
1850.....	17,063,398	1854.....	31,819,484
1851.....	18,876,763	1855.....	25,553,865
1852.....	30,661,592	1856.....	24,580,202

STATEMENT SHOWING THE IMPORTS OF MANUFACTURES OF IRON INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Cap or bonnet wire.		Nails, spikes, tacks, etc.		Chain cables.		Mill-saws, cross-cut and pit-saws.		Anchors, and parts thereof.	
	Pounds.	Dollars.	Pounds.	Dollars.	Pounds.	Dollars.	No.	Dollars.	Pounds.	Dollars.
Swedish West Indies.....	.....	.....	.....	.....	9,050	275	.....	.....	.....	.....
Hamburg.....	.....	.....	8,860	327	.....	.....	.....	.....	.....	.....
Bremen.....	3,167	90	1,999	91	.....	.....	.....	.....	.....	.....
Belgium.....	8,811	246	1,135,465	43,008	12,255	447	.....	.....	.....	.....
England.....	130,898	3,854	1,104,392	76,940	15,569,732	476,994	20,838	54,973	544,290	37,150
Scotland.....	.....	.....	2,400	838	80,100	2,840	.....	.....	9,565	507
Canada.....	2,170	87	14,910	1,225	57,413	1,907	.....	.....	600	22
British West Indies.....	.....	.....	6,875	275	86,118	2,475	.....	.....	62,690	2,043
British Honduras.....	.....	.....	.....	.....	4,065	89	.....	.....	.....	.....
France on the Atlantic.....	91,030	604	17,554	521	.....	.....	.....	.....	.....	.....
Portugal.....	.....	.....	.....	.....	.....	.....	.....	.....	3,000	119
Mexico.....	.....	.....	.....	.....	.....	.....	.....	.....	577	25
New Granada.....	.....	.....	.....	.....	20,450	829	.....	.....	.....	.....
Pera.....	.....	.....	.....	.....	11,313	115	.....	.....	.....	.....
China.....	.....	.....	8,000	154	.....	.....	.....	.....	.....	.....
Total.....	155,376	4,892	2,392,096	127,879	15,850,788	482,568	20,843	54,988	921,123	39,866

STATEMENT SHOWING THE IMPORTS OF MANUFACTURES OF IRON INTO THE UNITED STATES, FOR THE YEAR ENDING JUNE 30TH, 1856.—Continued.

Whence imported.	Markets and rifles.		Fire-arms, not specified.	Side-arms.	Needles.	Cutlery.	Other manufac- tures and wares of iron specified.
	No.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
Sweden and Norway.....							56
Danish West Indies.....							297
Hamburg.....	6	41	8,696		515	8,869	19,179
Bremen.....	1	25	11,162	1,304	21,020	119,518	121,682
Holland.....			10		842	210	1,890
Lower Guiana.....							20
Belgium.....	122	654	265,406	420	1,436	12,017	147,538
England.....	7,606	89,324	264,969	463	174,221	1,439,532	8,602,115
Scotland.....						467	14,080
Gibraltar.....							424
Canada.....	4	43	117			406	7,632
Other British North Amer. posses.						25	1,274
Danish West Indies.....			289				784
British Guiana.....			564				
British possessions in Africa.....							212
France on the Atlantic.....	34	349	27,974	928	45,195	69,014	256,380
Spain on the Mediterranean.....							10
Cuba.....						473	162
Texas.....							102
Austria.....							202
Turkey in Asia.....							93
Hawaii.....							62
Mexico.....							584
Central Republic.....							10
New Granada.....	5	11	2,828		28	2,431	9,436
Chili.....							188
Sandwich Islands.....							585
China.....						332	2,360
Total.....	7,775	40,946	576,435	3,015	246,060	1,698,094	4,191,147

STATEMENT SHOWING THE IMPORTS OF THE MANUFACTURES OF IRON INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.—Continued.

Whence imported.	Arms and parts thereof.		Bar iron.		Rod iron.		Hoop iron.		Sheet iron.	
	Pounds.	Dollars.	Cwts.	Dollars.	Cwts.	Dollars.	Pounds.	Dollars.	Pounds.	Dollars.
Russia on the Baltic and North Seas.....			1,449	2,796			7,636	255	1,038,068	42,250
Prussia.....									16,775	875
Sweden and Norway.....			277,906	580,690						
Hamburg.....			48,616	110,166	120	233				
Bremen.....			10,246	26,872						
Holland.....			869	1,855					400,055	12,186
Belgium.....			1,806,194	4,906,581	198,579	477,994	13,157,698	348,087	29,531,171	755,756
England.....	958,700	46,764	16,815	30,136	121	235	50,820	1,482	23,924	564
Scotland.....			57	33						
Ireland.....			5,901	12,908						
Canada.....			1,405	2,706						
British West Indies.....			464	1,000			6,937	208		
France on the Atlantic.....	2,100	64	155	486						
Cuba.....							126	41		
Central Republic.....										
China.....			50							
Total.....	960,500	46,825	2,168,449	5,392,785	198,520	478,523	13,223,639	345,094	31,887,353	814,342

STATEMENT SHOWING THE IMPORTS OF THE MANUFACTURES OF IRON AND STEEL INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Fig iron.		Old and scrap.		Railroad iron.		Cast, sheet, and German steel.		All other.	
	Cwts.	Dollars.	Cwts.	Dollars.	Cwts.	Dollars.	Cwts.	Dollars.	Cwts.	Dollars.
Prussia.....	4,031	8,500					2,635	20,150		
Sweden and Norway.....										
Danish West Indies.....			5	5						
Hamburg.....	4,892	4,067	2,716	1,481			6	53		
Bremen.....	500	554					225	2,355		
Holland.....							161	1,474		
Lower East Indies.....							8,950	36,484		
Belgium.....			57	42						
England.....	892,170	350,183	78,063	51,663	2,922,535	5,730,337	155,225	1,633,285	103,578	895,921
Scotland.....	749,415	789,188	58	55						
Ireland.....	89,579	37,967	6,060	4,742						
Canada.....	20,702	29,805	40,015	25,475	187,080	858,687	12	162	224	673
Other Br. N. Amer. pos.	5,090	6,584	20,121	13,573	242	256	95	523		
British West Indies.....			44,874	27,049					50	361
British Honduras.....			171	97						
British Guiana.....			9,584	4,407						
British pos. in Africa.....			1,292	905						
British Australia.....			223	84						
France on the Atlantic.....	1,060	2,177	4,965	3,075					56	552
Cuba.....			12,964	7,125						
Puerto Rico.....			17	8						
Cape de Verd Islands.....			94	102						
Sardinia.....									55	483
Austria.....							385	3,469	1,211	9,029
Other ports in Africa.....			1,244	789						
Hawaii.....			176	121						
San Domingo.....			465	247						
Mexico.....			2,260	1,288						
New Granada.....			18,185	9,892						
Brazil.....			1,950	940						
Peru.....			28	31						
Sandwich Islands.....			162	144						
China.....			2,610	1,860						
Total.....	1,190,230	1,171,085	247,769	153,112	3,109,916	6,179,290	165,894	1,698,255	106,155	899,963

STATEMENT SHOWING THE EXPORTS OF DOMESTIC IRON (RAW AND MANUFACTURED) FROM THE UNITED STATES, FOR THE YEAR ENDING JUNE 30TH, 1856.

Whither exported.	Fig.		Bar.		Nails.		Castings.	All other manu- factures of.
	Cwts.	Dollars.	Cwts.	Dollars.	Pounds.	Dollars.	Dollars.	Dollars.
Russian posses. in North America.					6,100	310		622
Swedish West Indies.								9,830
Danish West Indies.					59,450	2,487		8,662
Hamburg.								11,768
Bremen.								6,638
Holland.							250	847
Dutch West Indies.					2,500	100		1,208
Dutch Guiana.								906
Dutch East Indies.								88
Belgium.								51,241
England.			100	500	500	28	20	115,173
Scotland.								19,725
Gibraltar.					60,800	2,580		1,488
Malta.					6,000	256		591
Canada.	15,528	26,565	3,545	19,611	547,417	29,771	175,698	1,811,693
Other British North American pos.			102	422	415,574	19,825	61,190	88,555
British West Indies.					80,425	1,328		16,384
British Honduras.					9,000	397		2,702
British Guiana.								298
British possessions in Africa.					63,480	3,167	2,224	7,598
British Australia.					10,500	420	36,382	294,897
British East Indies.							105	13,401
France on the Atlantic.								17,848
France on the Mediterranean.					51,000	2,395		800
French North American possessions.					42,500	1,766	179	149
French West Indies.					7,500	212		23
French Guiana.					9,200	398		52
Spain on the Mediterranean.					40,000	2,000		640
Canary Islands.								52
Philippine Islands.								200
Cuba.	200	350		25	1,397,450	73,959	1,614	589,809
Porto Rico.					70,740	2,797	101	110,405
Portugal.								873
Madeira.					2,500	114		50
Cape de Verd Islands.					14,100	539		126
Azores.					25,600	1,160	80	
Austrian possessions in Italy.					10,000	575		
Turkey in Europe.							300	2,852
Turkey in Asia.								2,806
Other ports in Africa.					53,712	2,563	247	16,417
Hayti.			22	111	143,900	6,405	23	29,925
San Domingo.					11,500	472	244	
Mexico.			78	497	185,762	8,721	1,262	208,839
Central Republic.					8,500	267		18,911
New Granada.					58,400	2,632		173,006
Venezuela.					48,900	1,966		84,226
Brazil.					42,100	1,758	429	26,565
Uruguay.					30,244	1,697		31,967
Buenos Ayres.					65,800	2,793		23,861
Chili.			24	100	1,256,225	52,539	2,414	63,773
Peru.					267,800	2,263	273	53,320
Ecuador.					1,600	72	150	
Sandwich Islands.			18	101	119,720	5,871	1,942	105,504
China.	15	300			8,600	730	1,000	76,639
Whale Fisheries.					7,681	800		84,311
Total.	15,788	27,215	3,896	21,382	5,786,580	238,388	288,316	8,985,712

Iron-Wood (Ger. *Eisenholz*; Du. *Yserhout*; Fr. *Bois de fer*; It. *Legno di ferro*; Sp. *Plo hierro*; Lat. *Sideroxylon*, *Lignum ferreum*), a species of wood of a reddish cast, so called on account of its corroding as that metal does, and its being remarkably hard and ponderous—even more so than ebony. The tree which produces it grows principally in the West India Islands, and is likewise very common in South America, and in some parts of Asia, especially about Siam.

Irrawadi (*Eriwadi*, "the great river"), one of the great rivers of south-eastern Asia, is supposed to rise in Tibet, near lat. 28° north, long. 97° 30' east, flows generally southward, traversing the Burmese Empire throughout, and enters the Indian Ocean (Bay of Bengal) by numerous mouths, east of Cape Negrais, in lat. 16° 20' north, long. 96° east. Principal affluents, the Ning-thee, Mogouny, Bharno, and Lung-tchuen Rivers. In lat. 17° north, it separates into numerous arms, which cover the whole kingdom of Pegu with net-work of ramifications, and the Rangoon and Bassein branches form the east and west boundaries of its delta, a region comprising upward of 10,000 square miles, covered with teak forests and grass jungles, interspersed with some rice-grounds. The main stream from the head of the delta to Yedan, above Ava, varies from one to four miles in breadth, and may always be ascended to Ava from the sea by vessels of 200 tons, which, during the rains, can reach the influx of the Mogouny River, 800 miles from the ocean. It is

usually navigable for canoes as high as Bharno, besides which town and Ava, Amarapura, Sakaing, Yandabo, Pagahm Mew, Promé, Henthada, Bassein, and Rangoon, are the principal places on its banks.

Isinglass (Ger. *Hausenblase*, *Hausblase*; Fr. *Colle de poisson*, *Curlock*; It. *Cola di pesce*; Rus. *Klei ribui*, *Karluk*), one of the purest and finest of the animal glues. A variety of gelatine, sometimes called *ichthyocolla*, or fish-glue (from *ichthys*, a fish, and *κόλλα*, glue), prepared from the air-bag, swimming-bladder, or sound of various fishes. The Russian and Siberian isinglass is most esteemed; it is chiefly obtained from sturgeons, a family of cartilaginous fishes of the genus *Acipenser*. The swimming-bladder is cut up, washed, and then exposed to the air, with the inner silvery membrane upward. When dry, this membrane is removed by beating and rubbing; the sound is then prepared in various ways. For forming what is called *leaf* isinglass, it is merely dried; for *long* and *short staple*, it is twisted between three pegs, into the shape of a horse-shoe, harp, or lyre; for *book* isinglass, it is folded like the sheets of a book; for *ribbon* isinglass, it is rolled out. The swimming-bladder of *A. sturio* of the Caspian Sea furnishes leaf isinglass of three qualities, known as *fine-firsts*, *firsts*, and *seconds*. *A. güldenstadti* of the Caspian and Black Seas and their tributary rivers, furnishes *caviare* from its roe or ovary, while the swimming-bladder yields *staple* and *leaf* isinglass. The varieties of staple are *Patriarch Astra-*

khan, and *Astrakhan* *firsts*, *seconds*, and *thirds*. The varieties of leaf are also *firsts*, *seconds*, and *thirds*—the firsts forming the finest leaf known in commerce. *A. rufinus* and *A. stellatus* also yield isinglass. There is a kind known as *Samovey leaf*, from Tanganrod, but this is inferior; there is also the *sisane leaf*, said to be obtained from a small fish, and *kroaki isinglass*, which is made into small membranous disks. Isinglass is also procured from *Siluris glanis*. For *purse*, *pipe*, and *lump* isinglass, the swimming-bladder is dried unopened, and the variety known as *Siberian purse*, of moderately good quality, is greatly in demand.

Brazilian isinglass is obtained from Para and Maranhão, but the fishes which produce it have not been named. For the variety known as *pipe-Brazil*, the swimming-bladders are dried unopened, and made into pipes 10 or 12 inches long, and from 2 to 2½ inches broad, and are sometimes distended with air. *Lump* isinglass is formed by placing two swimming-bladders side by side, and for *honey-comb* isinglass, the largest lump isinglass is split open. There are also varieties of isinglass from New York, from Hudson's Bay, and from the East Indies. In Moldavia a variety is prepared from the skin, stomach, intestines, and swimming-bladder of the sturgeon. These are cut small, steeped in cold water, and simmered. The jelly thus produced is spread out into thin layers, and dried into a kind of parchment, which, on being softened with water, is rolled into cylinders, or extended into plates, and forms an inferior isinglass. Cod sounds are also used for a similar purpose. The *patent gelatin* prepared from glue-pieces or cuttings of hides, etc., after the manner of glue, is also used as a substitute for isinglass. A solid gelatin in thin plates and strings is prepared from bones, and is chiefly of French manufacture.

Isinglass is prepared for sale by being picked and cut. This was formerly done by hand, but is now effected by steam machinery; the thin filaments thus produced should be whitish in color, dry, semi-transparent, nearly tasteless, and quite devoid of smell. Isinglass differs from glue in being tough, fibrous, and elastic, instead of brittle. On boiling, it should completely dissolve, and on cooling, should form a white jelly, soluble in weak acids, but separable from them by alkalis. With milk and sugar it is used as a diet for invalids, and it is also used in the preparation of blanc-mange, jellies and creams, and for enriching soups and sauces. Isinglass is no longer considered to be highly nutritive; it is even less digestible than the flesh or muscular part of animals. The great consumer of isinglass is the brewer, who uses it as a fining material, for which purpose lump isinglass is chiefly used. This is deeper in color, and inferior in solubility to the better varieties. On mixing it with the liquor to be fined, it partly combines with some of those matters which render the liquor cloudy, and entangles in its meshes those which are mechanically suspended, the whole then rising to the surface can be removed; and the liquor be left clear. Wine, coffee, and other liquids are also clarified by isinglass, but sole-skins and hartshorn shavings are often used as substitutes for it. Isinglass forms the adhesive material in court-plaster, for which purpose a solution of isinglass, mixed with tincture of benzoin, is brushed over black sarcenet. Isinglass dissolved in spirits of wine or common gin, and gently simmered by placing the bottle in a vessel of boiling water for about an hour, forms *diamond cement*, or *white fish-glue*; gum ammoniac is sometimes added. Panes of isinglass, instead of glue, are used in France instead of horn, for lanterns, and also for lamp-shades, etc.—E. B.

Isle of Bourbon. Merchandise from Europe, or any country facing the Mediterranean, is inadmissible to the established entrepôt of this island, unless directly imported from French entrepôts, or the place of production; but merchandise of any other origin

may be imported under any flag. This island is situated in the Indian Ocean, between latitude 20° 50' and 21° 24' S., 440 miles east of Madagascar. It is of an oval shape, greatest length 40 miles, greatest breadth 27 miles. Population about 109,000. Area, 900 square miles. It is intersected by two mountain ridges, with volcanoes. There are many small rivers, but none navigable. The valleys of any considerable size are not numerous. It has no safe harbor. The climate is healthy and pleasant. From December to May is the hot and rainy season. The soil is very fertile. In 1836 the surface was distributed into about 65 parts of cultivated land, 14 parts of pasture, 55 parts of wood, and 97 parts of waste lands. The cultivated parts encircle the island, and press up the sides of the interior mountains. The articles produced are the sugar-cane, coffee, cloves, cocoa, tobacco, and grain; of these, the sugar-cane, grain, and coffee are most largely produced. The fisheries are excellent. They employ about 500 persons. The fish taken sell in the island for about \$80,000 per annum. In 1848 the population consisted of 108,000 souls. They have numerous brick and lime kilns, tanneries, forges, foundries, tin-ware factories, breweries, and manufactures of palm-leaf bagging. The principal articles of export are raw sugar, coffee, cloves, dye-woods, cabinet-wood, and saltpetre. The staples are enumerated in the order of their importance, and are of the annual value of about \$5,000,000. The chief imports are rice, wheat, oil, wines, cattle, timber, salt, glass, porcelain, and cottons and other manufactured goods. The total value of the imports is about \$2,800,000.

Isothermal (Gr. *ισος* and *θερμ*, heat). In physical geography, *isothermal lines* are those which pass through those points on the surface of the earth at which the mean annual temperature is the same. *Isothermal zones* are spaces on opposite sides of the equator, having the same mean temperature, and bounded by corresponding isothermal lines. On account of the irregular form and disposition of the continental masses, by which the climate of different places is greatly influenced, the isothermal curves are not parallel to the equator, excepting in the very low latitudes. According to Humboldt, the isothermal line, which corresponds to the temperature of 32° Fahrenheit, passes between Ulea, in Lapland, lat. 66°, and Table Bay, on the coast of Labrador, lat. 54°. The isothermal line of 41° passes near Stockholm, lat. 59½°, and St. George's Bay, Newfoundland, lat. 48°. The line of 50° passes through the Netherlands, lat. 51°, and near Boston, in the United States, lat. 42½°; that of 59° between Rome and Florence, lat. 43°, and Raleigh, in North Carolina, lat. 36°. In all these cases we see that the isothermal lines, in passing from the western side of the continent of Europe to the eastern coast of America, deviate very considerably toward the south; the deviation in one case amounting to 11½° of latitude. In passing over the American continent they again recede to the northward; and in California, and to the north of that peninsula, along the western side of the continent, the annual temperature is nearly the same as under similar latitudes in the west of Europe. From the western to the eastern side of the old continent the flexure of the isothermal curves and the diminution of the mean annual temperature under the same parallels, are not less conspicuous. The isothermal line of 55° passes through Nantes, lat. 47°, and Pekin, lat. 39½°. Edinburgh, and Kasan, in the east of Russia, have the same latitude; but the mean annual temperature of the former is 48°, while that of the second is below 38°. For the different causes which affect the parallelism of the isothermal lines, or which produce the differences of the mean annual temperature of the places under the same parallel of latitude.

Humboldt gives the name of *isothermal lines* (*ισος*, and *θερος*, summer) to the curves passing through those

places at which the mean summer heat is the same; and of *isochimænal* (ἰσος, and χειμὼν, winter) to those which pass through the places at which the mean temperature of winter is the same. The isothermal and isochimænal curves deviate much more from the parallels of latitude than the isothermal. The latitudes of places having the same winter temperature sometimes differ so much as 18° or 20°. The winter of Scotland is as mild as that of Milan. The mean temperature of the winter months at Edinburg is about 38½°; of Kasan, under the same parallel, only 2°. The winter of Pekin is as rigorous as that of Stockholm.—HUMBOLDT's *Fragmens Asiaticques*.

Isthmus, a narrow neck or slip of land which connects two continents; or joins a peninsula to the terra firma, and separates two seas. The most celebrated isthmuses are, that of Panama or Darien, which joins North and South America; that of Suez, which connects Asia and Africa; that of Corinth, which unites the Morea with western Greece; that of Crim Tartary, otherwise called *Taurica Chersonesus*; and that of the Peninsula Romania, and Erisso, or the isthmus of the Thracian Chersonesus, twelve furlongs broad, being that which Xerxes undertook to cut through.

Italy. The name *Italia* was originally applied to the extreme end of the peninsula, south of a line drawn from the Gulf of Squillace, *Sinus Scyllaceus*, to that of Sta. Eufemia, *Sinus Terinæus*. By the time of Thucydides, in the 5th century B.C., the appellation had already extended to Metapontum on the east, and the Posidonian Gulf on the west coast, thus including the whole of modern Calabria, and great part of the provinces of Basilicata and Salerno. The further extension of the name was cotemporary with the progress of the Roman power, and at the time of Pyrrhus it included apparently the whole peninsula, except Liguria and Cisalpine Gaul. In the 7th century of Rome, though both Liguria and Cisalpine Gaul were still, in official usage, distinct from *Italia*, yet the latter name, as we gather from many passages in the classics, was already employed, in common acceptance, to designate the whole country from the Alps to the Sicilian Straits. The official acceptance was dropped as soon as Augustus, in his division of Italy, incorporated Liguria, Cisalpine Gaul, Venetia, and Istria.

The origin of the name has been referred to various sources, all equally uncertain. Greek and Roman tradition deduced it from the eponymous hero Italus, a supposed Enotrian or Pelasgic chief; while Timæus, followed by Varro and Gellius, derived it from *Italos*, which in old Greek signified an ox, from the quantity of cattle bred in the country. *Græcia, enim antiqua, ut scribit Timæus, tauros vocabat Ἰταλός, a quorum multitudo et pulchritudo et fetu vitulorum, Italiam dixerunt.** The word *Vitulus* (calf) and *Italus* were, according to Festus, synonymous; and on the *denarii* struck by the Sabellian nations during the Social War, B.C. 90-88, there occurs the word *Vitelu* for Italy.

In early times Italy was also called *Saturnia* from the Latin god Saturnus, *Enotria* from an ancient chief Enotrus, and *Ausonia* from the Ausones, the *Aurunci* of the Romans, who occupied the centre of the peninsula. All these names, however, seem to have belonged to particular districts, and to have been applied to the whole country only by the Latin and later Greek poets; indeed *Enotria* would appear from Antiochus to have been synonymous with *Italia* in its original acceptance. The Greek poets applied to it sometimes the name *Hesperia*, on account of its being to the westward of their country. The Germans called it *Waelshland*, because the parts nearest to them were inhabited by the Galles or Wallies; and in their pres-

ent language the name of Waelshland is still retained by the common people.

The loftiest range of mountains in Europe on the north-east, north, and north-west, and the sea on every other side, form the natural boundaries of Italy. The Alpine chain, extending in a semicircular form from the Julian Alps at the head of the Adriatic to the Maritime Alps on the Gulf of Genoa, divides it on the north-east from Illyria and the Tyrol, on the north and north-west from Switzerland, and on the west from France, where the River Var (*Varus*) forms its boundary. From this Alpine range, which may be called its basis, Italy projects south-east in a peninsular form, and nearly in the shape of a boot, far into the Mediterranean Sea, which takes the different names of—Adriatic, *Mare Superum*, on the east coast—Ionian, *Mare Ionium*, on the south-east coast, from the Cape of Sta. Maria di Leuca to the Straits of Messina—and of Tyrrhenian, *Mare Inferum* vel *Tyrrhenum*, on the west coast. According to these physical barriers, Trieste and the province of Istria on the east, and Nice on the west, would be excluded from Italy; but ever since Augustus extended its limits to the Var on the west, and the Gulf of Quarnero (*Sinus Flanaticus*) on the east, they have been reckoned as part of Italy. In the present political division of the Austrian empire, however, neither Istria nor Trieste is included in the Lombardo-Venetian kingdom, the limits of which are at the Isonzo, north-east of Aquileia. Along the north and north-west frontier the limits of Italy have at different times undergone various, though insignificant changes; for the Alps, though presenting an unbroken line on a distant view, are so deeply indented with valleys as to make a natural boundary possible only by following the watershed, a course never or seldom adopted in political arrangements. But even the watershed would not mark the limits of different nationalities, as valleys which, by this criterion, should not belong to Italy, are inhabited by an Italian race; and German or French is spoken in districts which should be included in Italy.

The Italian peninsula is situated between the parallels of N. lat. 46° 30' and 37° 54', and E. long. 6° 38' and 18° 32'; if the islands are included, the southernmost parallel of lat. is 35° 40'. Its length in a direct line from the foot of the Alps near Aosta to the Capo di Sta. Maria di Leuca (*Japygium Promontorium*) is about 600 miles, and to the Capo dell' Armi (*Leucopectra*) a little more than 660. Its breadth varies greatly. From the mouth of the Var to the head of the Adriatic, near the Isonzo, it is 300 miles; and if the line be carried to the head of the Gulf of Quarnero, near Fiume, it is more than 350. It narrows rapidly as it descends south; and from Viareggio to Cervia is only 95 miles. Further south it expands a little; and from Piombino to Ancona the breadth is 138 miles, and 150 from Capo di Licosa to Brindisi. From Diamante to the mouth of the Crati, in Calabria, it is 29 miles, and only 18 between the Gulfs of Sta. Eufemia and Squillace. It is surrounded by many islands, the principal of which are: on the east coast the group of the Tremiti, north of Monte Gargano, and S. Pietro and S. Paolo in the Gulf of Taranto; on the south, Sicily, the largest of all, the Lipari group, Pantelleria, Malta, and Gozo, 58 miles from Sicily; on the west, Capri, Procida, and Ischia, at the two extremities of the Gulf of Naples; the Ponza group opposite Gaëta, Giglio near Monte Argentaro, the two large islands of Sardinia and Corsica; and between the latter one and the coast of Tuscany are Pianosa, Elba, and Capraia. The most important of these are noticed under their respective heads in this work.

The sea coasts of the peninsula, on the Tyrrhenian side, are, for the most part, protected by lofty acclivities, but on the Adriatic and the Ionian they are generally flat. The most remarkable capes and promontories of the peninsula are: Delle Melle, Manara,

* Varro, *De Re Rustica*, li. 5.

Piombino, Argentaro, Circello, Miseno, Campanella, Licoso, Vaticano, Delle Armi, on the west shore; Spartivento, Rizzuto, Nau or Colonne, Alice, Leuca, Gargano, on the south-east and east shore.

The extent and population of Italy, including its islands, are shown by the following table, which is to

be considered as merely approximative. In some of the States, the returns of population are not much attended to; and, with regard to their area, there is great discrepancy between the various authorities. This table, however, has been compiled from the most authentic data.

Names of the States.	Episcopal sees.	Extent in square miles.	Jews.	Population.	Capital cities.
Kingdom of the Two Sicilies:					
Naples.....	88	24,962	2,500	6,845,855	Naples.
Sicily.....	14	9,556	....	2,285,580	Palermo.
Kingdom of Sardinia:					
Piedmont and Riviera.....	26	15,397	4,250	3,946,450	Turin.
Island of Sardinia.....	11	8,223	....	552,665	Cagliari.
Lombardo-Venetian Kingdom.....	20	18,208	7,000	5,503,478	Milan.
Papal States.....	65	12,120	12,800	3,065,000	Rome.
Grand Duchy of Tuscany (including Lucca).....	21	6,784	7,180	1,817,500	Florence.
Duchy of Modena.....	4	1,629	2,680	606,900	Modena.
Duchy of Parma.....	4	1,712	630	508,800	Parma.
Republic of S. Marino.....	..	18	....	7,900	S. Marino.
Total.....	251	98,614	87,040	25,148,928	
Corsica, belonging to France.....	1	2,850	....	236,251	Ataccto.
Malta and Gozo, belonging to England.....	1	114	....	123,261	Valetta.
Total.....	253	96,578	....	25,508,585	

The most densely inhabited State is that of Lucca, which contains 525 individuals for every square mile; next to it come the Lombard provinces. The most thinly inhabited parts are the Campagna of Rome and the Island of Sardinia. Italy has more populous towns than any other State of Europe of the same extent. Naples has more than 400,000 inhabitants; Milan, Turin, Rome, and Palermo, each more than 150,000; Florence, Venice, and Genoa, more than 100,000; Leghorn, Messina, Verona, and Bologna, more than 60,000; Parma, Padua, and Catania, more than 40,000; Mantua, Bergamo, Brescia, Ferrara, Modena, Piacenza, Ancona, and Bari, more than 30,000, etc.

The division of Italy into northern, central, and southern, is neither political nor strictly geographical, but is adopted sometimes as a convenient designation of some parts of the country. According to the general acceptance in the peninsula, northern Italy is understood to include Piedmont and the Riviera, Lombardy, the Venetian, Parma, Modena, and the States of the Church, as far as an imaginary line from the Gulf of Spezia to Ravenna; central Italy includes Tuscany and the rest of the States of the Church; and southern Italy the kingdom of Naples. The division in more common use among natives is into upper and lower Italy, the former applying to the portion north of the Apennines and to the Riviera, the latter to all the rest of the peninsula.

The face of the country is much diversified by mountains, of which those forming its northern and north-western boundary have been described in this work under the article ALPS. A second range of mountains, running through its whole length, determines its configuration and its physical character. From the earliest historical times they were called *Apennines*—a name supposed to be of Celtic origin, from its containing the root *Pen*, which in Celtic dialects signifies height or head.

The Apennines may be regarded as a great offshoot of the Alps, from which they branch off near the Gulf of Genoa; but as there is no regular break in the chain, much difference of opinion has prevailed as to the point of their real commencement. Polybius extends the Apennines nearly as far as Marseilles; Strabo, on the contrary, extends the Maritime Alps to Vado, and states that the Apennines begin near Genoa. The latter opinion has been adopted by the best modern geographers, who fix the junction of the Maritime Alps and the Apennines in the valley of the Bormida, west of Savona, where the range, which does not exceed the height of 1300 feet, presents the nearest approach to a break.

All the rivers of Italy are subject to sudden and

very heavy floods, and with the exception of the Po, the Adige, and the Tiber, have their volume of water greatly reduced in summer. The insignificant amount of tide in the Mediterranean renders most of them useless for navigation.

In a country extending through 10 degrees of latitude there must be great differences of climate, and consequently of vegetation and agriculture, from position alone. Besides that, however, the climate of Italy is modified to such a degree by the ranges of the Alps and Apennines, and by the air of the sea along its coasts, as to render useless any division into regions according to the classification of Saussure. In the plains of Lombardy and Piedmont, and the other territories to the north of the Apennines, which are inclosed by mountains on every side but the east, Fahrenheit's thermometer in winter descends to 10°; snow lies sometimes a fortnight on the ground, the lagoons at the mouths of the rivers are frozen, and slight night frosts appear early in November, and some years as late as April. Delicate plants do not thrive except in sheltered situations, but the mulberry-trees flourish, rice is grown, and the pastures are rich. South of the Apennines, that part of Tuscany and the States of the Church which is near their main range is subject to great cold, but westward, and along the Riviera, the temperature grows milder, snow seldom lies long on the fields, and the climate is suitable to the growth of the olive and the orange. But it is when we reach the central range of the Apennines that we find the coldest districts of Italy. In all the upland valleys of the Abruzzi and of Sannio, snow begins to fall early in November, and heavy storms occur often as late as May; whole communities are shut out for months from any intercourse with their neighbors, and some villages are so long buried in snow that regular passages are made between the different houses for the sake of communication among the inhabitants. The district extending from the south-east of Lake Fucinus to the Piano di Cinquemiglia, and inclosing the upper basin of the Sangro and the small lake of Scanno, is the coldest and most bleak part of Italy south of the Alps. Heavy falls of snow in June are not uncommon, and it is only for a short time toward the end of July that the nights are totally exempt from light frosts. Yet, less than 40 miles east of this district, and even more to the north, we find the olive, the fig-tree, and the orange, thriving luxuriantly on the shores of the Adriatic from Ortona to Vasto. In the same way, while in the plains and hills round Naples snow is rarely seen, and never remains long, and the thermometer seldom descends to the freezing point, 20 miles east from it in the fertile valley of Avellino, of no great elevation, but encircled by high

mountains, light frosts are not uncommon as late as June; and 18 miles further east, in the elevated region of S. Angelo de' Lombardi and Bisaccia, the inhabitants are always warmly clad, and vines grow with difficulty and only in sheltered places. But nowhere are these contrasts so striking as in Calabria. The shores, especially on the Tyrrhenian Sea, present almost a continued grove of olive, orange, lemon, and citron-trees, which attain a size unknown in the north of Italy. The sugar-cane flourishes, the cotton-plant ripens to perfection, the date-trees are seen in the gardens, the rocks are clothed with the prickly-pear or Indian-fig, the inclosures of the fields are formed by aloes and sometimes pomegranates, the liquorice-root grows wild, and the mastich, the rosemary, the myrtle, and many varieties of oleanther and cistus, form the underwood of the natural forests of arbutus and evergreen oak. If we turn inland but five or six miles from the shore, and often even less, the scene changes. High districts covered with oaks and chestnuts succeed to this almost tropical vegetation; a little higher up, and we reach the elevated table-lands of the Pollino and the Sila, covered with firs and pines, and affording rich pastures even in the midst of summer, when heavy dews and light frosts succeed each other in July and August, and snow begins to appear at the end of September or early in October.

The cerealia form, as elsewhere in Europe, the chief aliment of the inhabitants; in Italy, however, the lower classes, who are the most numerous, subsist much on maize and beans, which require little preparation to render them fit for food. In some of the southern parts wheat is made use of by the same class, both in the form of bread and in that of macaroni, which is manipulated with great facility. Wheat and maize are, on the average of years, about equal to the consumption, but little can be spared for exportation; and in many of the ports are dépôts of foreign wheat kept to meet the variations of seasons, or to be used as articles of commerce with other countries.

As Italy produces abundance of wine, and consequently needs neither beer nor corn-spirits, no barley is needed for these drinks, and scarcely any is cultivated. Oats are but little grown, but abundance of beans of various kinds are produced. Rye, the common bread-corn of the far greater portion of Europe, is only raised in a few spots in the very northernmost parts of Italy, where it is made into bread for the poor; while those of the higher classes there, as well as throughout the whole peninsula in the cities, make use of wheaten bread. Rice grows in many parts, in fact wherever there is a sufficiency of water to insure a good produce, at such distance from towns as not to be injurious to the health of the inhabitants. It is a part of almost every meal in families in easy circumstances, but is scarcely used by families who are in circumstances that require the practice of great parsimony. A great variety of lupines are used as food, especially in the soups. In some parts of the mountainous regions, chestnuts are a substitute for corn as long as they last. Fruits are plentifully used, particularly figs, grapes, and melons, as food; while the cheapness of onions, garlic, tomatoes or love-apples, and capsicums, render them valuable as condiments. The potato, which in the other parts of Europe has been so much extended of late years, has been but partially introduced into Italy; and, where it is cultivated, it occupies a very small proportion of the soil. Lettuces, asparagus, endive, artichokes, and several kinds of turnips and of carrots, are everywhere grown.

Animal food is far from being extensively used. The oxen yield in some parts excellent, in other very indifferent meat. The mutton is neither good nor abundant, but has been much improved of late years. Swine furnish a plentiful supply during the winter months: they are also prepared as bacon or hams, and above all as sausages, the fame of which latter has

reached unto England under the name of the city of Bologna, where they were early and extensively prepared. The large dairy farms in Lombardy, in which the cheese known by the name of Parmesan is made, and the oak and chestnut forests of Calabria, furnish the most and best swine's flesh.

The fisheries contribute largely to the supply of food in Italy, though from the number of fasts still countenanced by the Catholic church, not sufficient for the consumption; and the deficiency is procured by commerce with the English, French, and Americans, who convey to the sea-ports the salted cod-fish from the banks of Newfoundland. Their own fisheries on the coast give much occupation; the most considerable are those for the tunny, a very large fish, and for the anchovy, a very small one. These are conducted upon a large scale by joint-stock companies. The lakes and the rivers also yield some, though not a great proportion, of that kind of food which ecclesiastical restrictions render indispensable. The sugar-cane is not cultivated in the south of Italy, as it is found, that in point of strength, as well as of cost, the sugar made from it does not succeed in a competition with that substance when imported from the West Indies. The products of agriculture are sufficient for the clothing of all the inhabitants; for though wool is neither good nor plentiful, yet hemp and flax are grown everywhere, are manufactured at home, and, from the nature of the climate, linen can be substituted for woollen dress during most of the months of the year. Some raw wool is, however, imported to supply the manufactures, and some cloths, both from England and France, together with (in Lombardy) those from the other Austrian provinces, especially from Bohemia. Some cotton is grown in the southern divisions of Italy, but not sufficient to furnish materials for their very insignificant manufactures of that article.

The chief product of Italian agriculture is the silk. It is produced from every part, and much of it is converted into articles of dress or of furniture where it is collected; but the chief production of it is in Sardinia, Naples, and Lombardy, whence the looms of England, Prussia, Austria, Russia, and Germany are supplied. The value of this commodity exceeds that of all the other productions of Italy which are exported to foreign countries. The manufacture has of late years made great progress, which it is still steadily maintaining. The great increase which has taken place in the propagation of the mulberry-tree has, within the last 30 years, increased the quantity of raw silk to an extent that had never before been dreamed of.

Another very important Italian product, which is used partly as food, partly employed in home manufactures, and extensively exported as an article of foreign commerce, is the oil of the olive-tree. It is used as a substitute for butter in the south, is much appropriated to the manufacture of many kinds of soap, and is exported to England for the use of our various fabrics, chiefly those of wool, and as a luxury at our tables. The planting and watching cost but little labor or expense, and in a few years the income more than recompenses the labor. The best olive oil is produced near Genoa, in Lucca, in Tuscany, and in Calabria; but it is plentiful throughout the whole of Italy, except in Lombardy and in Piedmont.

The wines of Italy are not very highly valued in other countries, and almost the whole that is produced is consumed at home. Those of the north are for the most part disagreeably acid, and scarcely any of them are or can be preserved beyond one year. The vines are not so much grown in vineyards as in the hedgerows; a system which doubtless injures the quality of the wine. In the southern parts, however, where the vines are grown in low vineyards as in France, the wines are of a more fiery quality, and though prepared with little care, they only require to be better known to be esteemed by foreigners.

The minerals of Italy are of small value; and though mines of gold, silver, and copper were once wrought, the veins have long been exhausted. Some alum is found in the Papal dominions and the Neapolitan territory, some vitriol and antimony in Parma, and sulphur in the island of Sicily. In many places there are excellent marble quarries, the best near Verona and Carrara. Alabaster is found in many of the mountains. The salt manufactured on the seashore, and from saline springs, is more than is required for the home consumption, and a large quantity might be exported.

Direct trade between the United States and Italy is conducted through the ports of Leghorn, Genoa, and Palermo, to which may be added the Austrian port of Trieste. Exports to Sicily, Sardinia, and Tuscany, in 1854, amounted to \$469,143; while to Trieste they reached, during the same year, \$1,751,766. The value

of cotton exported to Sicily, Sardinia, and Tuscany, during the same year, was \$179,093; to Trieste, it reached \$1,370,402. The value of tobacco exported to Sicily, Sardinia, and Tuscany, in 1854, was \$144,082; to Trieste, it reached the sum of \$259,252. A large portion of the exports to Trieste, however, are purchased there for the German markets, that port possessing unusual facilities as a leading entrepôt for many of the States of Germany. Many American vessels clear from the ports of the United States with cargoes destined for the markets of "Italy generally;" at least such would seem to be their mode of clearance, from the custom-house returns; and the average annual value of cargoes thus destined, exceeds the whole amount of cargoes for designated points in the Italian peninsula, except Trieste. The following table exhibits the value of this triangular trade for a period of 36 successive years:

COMMERCE OF THE UNITED STATES WITH ITALY (INCLUDING MALTA TO OCTOBER 1, 1833), FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	\$410,171	\$689,496	\$1,099,667	\$978,468	....	\$855,211	8,802	....
1822.....	560,714	889,470	1,450,184	1,562,088	....	211,944	10,056	....
1823.....	115,994	951,911	1,067,905	1,369,440	....	215,197	6,057	....
1824.....	76,868	587,480	664,348	1,029,439	....	70,898	5,111	461
1825.....	66,605	573,494	640,099	1,454,022	....	100,084	7,015	....
1826.....	81,622	448,599	530,221	1,120,749	....	74,259	5,208	....
1827.....	74,417	585,804	610,221	1,013,126	....	102,592	5,891	....
1828.....	279,520	641,280	920,750	1,607,417	\$25,000	67,532	6,515	767
1829.....	289,755	611,257	901,012	1,409,588	....	1,200	7,081	....
1830.....	326,289	414,121	740,860	940,254	....	2,450	6,626	418
Total.....	\$2,281,905	\$6,847,502	\$8,629,707	\$12,479,581	\$58,592	\$1,201,432	67,812	1,646
Sept. 30, 1831.....	\$371,515	\$323,010	\$694,525	\$1,704,264	....	\$37,938	9,120	....
1832.....	178,507	509,056	687,563	1,619,795	\$660	4,400	6,042	....
1833.....	70,364	801,822	872,186	999,134	....	1,200	6,055	882
1834.....	105,786	387,771	493,557	1,422,068	....	18,805	4,482	426
1835.....	178,545	107,896	286,441	1,457,977	....	14,004	4,544	206
1836.....	139,478	524,556	664,059	1,970,246	....	2,514	5,868	258
1837.....	205,268	418,409	623,677	1,827,181	....	....	2,697	3,531
1838.....	318,586	141,357	459,983	944,288	....	88,018	3,041	1,310
1839.....	315,399	122,753	438,152	1,182,297	....	6,728	1,016	1,835
1840.....	1,189,838	238,947	1,428,785	1,157,200	....	57,672	8,071	2,602
Total.....	\$3,073,231	\$3,119,507	\$6,192,738	\$14,284,395	\$660	\$180,769	50,871	11,000
Sept. 30, 1841.....	\$731,411	\$190,907	\$922,318	\$1,151,286	\$3,750	\$3,841	6,282	1,267
1842.....	515,577	\$04,940	\$520,517	987,528	16,000	1,414	7,367	1,402
1843.....	541,500	186,721	728,221	394,564	....	....	3,850	1,117
June 30, 1844.....	318,566	255,257	573,823	1,096,926	....	1,361	2,340	941
1845.....	557,569	280,852	838,421	1,301,577	....	2,400	5,984	914
1846.....	942,653	424,652	1,367,305	1,189,736	....	....	1,196	....
1847.....	1,056,022	93,383	1,149,405	1,279,936	....	13,475	....	....
1848.....	1,101,113	159,488	1,260,601	1,616,100	....	7,719	....	....
1849.....	311,450	293,419	604,869	1,550,896	....	8,000	....	....
1850.....	1,567,166	239,904	1,807,070	2,105,077	....	4,028	....	....
Total.....	\$3,172,637	\$2,371,973	\$5,544,610	\$12,673,626	\$19,750	\$42,288	26,519	5,641
June 30, 1851.....	\$1,736,394	\$127,406	\$1,863,800	\$2,051,897	....	....	....	....
1852.....	1,573,852	205,342	1,779,194	1,284,905	....	....	....	....
1853.....	2,173,745	159,833	2,333,578	953,714	....	....	....	....
1854.....	1,586,327	163,499	1,751,766	971,728	....	....	....	....
1855.....	506,657	42,736	549,393	1,773,488	....	....	2,898	297
1856.....	457,437	5,583	463,020	1,635,865	....	....	4,179	763

The commerce of Italy has suffered from the derangement of the government; and although favorably situated for a large trade, the merchant marine is small, and confined almost entirely to coasting vessels.

Imports in 1852.....	Value, Sento.
Exports.....	10,218,426
The Sento = \$1 08 of United States' currency.	10,474,013

VALUE OF THE IMPORTS AND EXPORTS OF LEGHORN.			
Year ending	Imports.	Exports.	
October, 1852.....	Francs.	Francs.	
1853.....	85,520,000	54,800,000	
1854.....	115,400,000	71,220,000	
1855.....	142,260,000	....

NAVIGATION OF THE PORTS OF CIVITA VECCHIA AND OF ANCONA (1852).

Vessels.	Entered	Tonnage.	Crew.	Cleared	Tonnage.	Crews.
Roman.....	1,080	67,096	7,439	1,082	66,679	7,393
Foreign.....	1,281	187,738	20,117	1,210	185,313	19,729
Total.....	2,311	254,834	27,556	2,292	251,992	27,122

The mercantile marine numbered at the close of the year 1854, 1,893 vessels (of which 210 were vessels of war), having a total tonnage of 31,637 with 9711 men.—*Foreign Com. U. S.*

Ivory, the name given to the teeth or tusks of the elephant, and of the walrus or sea-horse. Each male elephant come to maturity has two tusks. These are hollow at the root, tapering, and of various sizes, depending principally on the age of the animal. Color externally, yellowish, brownish, and sometimes dark; internally, white. The best are large, straight, and light-colored, without flaws; not very hollow in the stump, but solid and thick. The most esteemed come from Africa, being of a closer texture, and less liable to turn yellow, than those from the East Indies. The trade in London thus divide them:—First sort, weighing 70 pounds or upward; second sort, weighing 56 lbs. to 60 lbs.; third sort, weighing 38 lbs. to 56 lbs.; fourth sort, weighing 28 lbs. to 37 lbs.; fifth sort,

weighing 18 lbs. to 27 lbs. All under 18 lbs. are called *scrivelloes*, and are of the least value. In purchasing elephants' teeth, those that are very crooked, hollow, and broken at the ends, or cracked and decayed in the inside, should be rejected; and care taken that lead or any other substance has not been poured into the hollow. The freight is rated at 16 cwt. to the ton.—MILBURN'S *Orient. Com.*

Supply of Ivory.—The imports of elephants' teeth, in 1840 and 1841, were, at an average, 5556 cwt., of which 4520 cwt. were retained for consumption. The medium weight of a tusk may be taken at about 60 lbs.; so that the yearly imports of 1840 and 1841 may be taken at 10,372 tusks; a fact which supposes the destruction of at least 5186 male elephants! But, supposing the tusks could only be obtained by killing the animal, the destruction would really be a good deal greater, and would, most probably, indeed, amount to about 7000 elephants. Occasionally, however, tusks are accidentally broken, one lost in this way being replaced by a new one; and a good many are also obtained from elephants that have died in the natural way. Still it is sufficiently obvious, that the supply from the sources now alluded to can not be very large; and if to the quantity of ivory required for Great Britain, we add that required for the other countries of Europe, America, and Asia, the slaughter of elephants must, after every reasonable deduction is made, appear immense; and it may well excite surprise, that the breed of this noble animal has not been more diminished. The western and eastern coasts of Africa, the Cape of Good Hope, Ceylon, India, and the countries to the eastward of the Straits of Malacca, are the great marts whence supplies of ivory are derived. The imports from western Africa into Great Britain, in 1840, amounted to 1933 cwt.; the Cape furnished only 97 cwt. The imports during the same year from India, Ceylon, and other eastern countries, were 2418 cwt. The Chinese market is principally supplied with ivory from Malacca, Siam, and Sumatra.

The chief consumption of ivory is in the manufacture of handles for knives; but it is also extensively used in the manufacture of musical and mathematical instruments, chess-men, billiard-balls, plates for miniatures, toys, etc. Ivory articles are said to be manufactured to a greater extent, and with better success at Dieppe, than in any other place in Europe. But the preparation of this beautiful material is much better understood by the Chinese than by any other people. No European artist has hitherto succeeded in cutting concentric balls after the manner of the Chinese; and their boxes, chess-men, and other ivory articles, are all far superior to any that are to be met with anywhere else.

STATEMENT SHOWING THE IMPORTS OF IVORY INTO THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30TH, 1856.

Whence Imported.	Manufactures of. Unmanufactured.	
Russian Posses. in N. America.	.....	\$898
Bremen.....	\$2,018	....
England.....	9,558	46,558
British Possessions in Africa...	.....	21,945
France.....	4,367	206
Portugal.....	.....	188
Ports in Africa.....	.....	250,278
China.....	2,150	178
Other places.....	102	83
Total.....	\$18,520	\$320,100

Historical Notice.—It is a curious fact, that the people of all Asiatic countries in which the elephant is found, have always had the art of taming the animal and applying it to useful purposes, but that no such art has ever been possessed by any native African nation. Is this owing to any difference between the Asiatic and African elephants, or to the inferior sagacity of the African people? We incline to think that the latter is the true hypothesis. Alexander the Great is believed to have been the first European who employed elephants in war. It appears pretty certain that the elephants made use of by the Carthaginians were mostly, if not wholly, brought from India; and that they were managed by Indian leaders. Some of the latter were captured by the Romans, in the great victory gained by Metellus over Asdrubal. See, on this curious subject, two very learned and valuable notes in the *Ancient Universal History*. BUFFON'S *Article on the Elephant* is a splendid piece of composition.

Rendering Ivory Soft.—The various mechanical and chemical processes connected with the manipulation of ivory, are among the most interesting peculiarities of art. In rendering it soft and transparent, small pieces of the article are laid in strong phosphoric acid until they become transparent, then rinsed in water, and dried in pure linen. When dry it is translucent and hard, but softens as often as it is dipped in warm water or milk. The time of immersion in the acid differs with different pieces of ivory. If certain parts are to retain their original character, they are covered with a varnish before immersion. The acid probably acts by forming an acid phosphate of lime out of the boric phosphate which constitutes three fourths of ivory. The process of hardening ivory, which has become pliable by age, consists in boiling it for some time in a solution of gelatin.

Vegetable Ivory is now imported chiefly from the River Magdalen into Europe and the United States of America; in some years no less than 150 tons of it have been imported into England. The "nuts" may be purchased in the toy-shops of the British metropolis for a few pence each, but when bought in large quantities, they are obtained at a much cheaper rate. In August, 1854, 1000 "nuts" were sold in London for 7s. 6d. The ivory plant is confined to the continent of South America, where it grows between the 9th degree of north, and the 8th degree of south latitude, and the 70th and 79th of west longitude. It inhabits damp localities, such as confined valleys, banks of rivers and rivulets, and is found not only on the lower coast region, as in Darien, but also on mountains at an elevation of more than 3000 feet above the sea, as in Ocam. Among the Spaniards and their descendants, it is known by the name of *Palme de Marfil* (ivory palm); while its fruit is called by them *Cabeza de Negro* (Negro's head); and its seed, *Marfil vegetal* (vegetable ivory). The Indians on the banks of the Magdalena term the plant *Tagua*, those on the coast of Darien *Anta*, and those of Peru, *Pullipunta* and *Homero*. It is generally found in separate groves, seldom intermixed with other trees or shrubs, and where herbs are rarely met with.—*Botanical Magazine*, May, 1856.

Ivory Black. The mixture of charcoal and phosphate of lime obtained by burning bone, is sold under this name, and, like other forms of animal charcoal, is very effective in depriving certain substances of their color.

J.

Jack, in nautical language, is a flag of colors used in making signals. See **FLAGS**.

Jacmel, a sea-port of Hayti. This port, considering the scantiness of its supplies for foreign export, enjoys a considerable share of the navigation of Hayti. It forwards to Port-au-Prince most of the merchandise it imports, especially the large quantities of flax and silk textiles which it receives by the British steam-packets. The first rank in the commerce of this port, formerly held by the British, is now transferred to the United States. In the movements of 1850 there were under the American flag 60 vessels, out of a total of 151; under the English flag, 45 (including their regular royal mail steamers); and under the French flag only 5. The trade and navigation between the United States and the port of Jacmel during the last six months of 1854 is given as follows:—Number of vessels, 30; average tonnage of each, 140 tons; value of cargoes inward, \$661,599 32; value of cargoes outward, not given in official returns. Cargoes inward consisted of provisions, lumber, shingles, and assorted goods. Cargoes outward of coffee, logwood, lignum-vitæ, fustic, braziletto.

Jacobus, a gold coin, worth 25s., and so called from King James I. of England, in whose reign it was struck. There are two kinds of *Jacobus*, the old and new; the former valued at 25s., weighing six penny-weights ten grains; the latter, called also *Carolus*, valued at 23s., and in weight five pennyweights twenty grains.

Jacquard, a peculiar and most ingenious mechanism, invented by M. Jacquart of Lyons, to be adapted to a silk or muslin loom for superseding the employment of draw-boys, in weaving figured goods. Independently of the ordinary play of the warp threads, for the formation of the ground of such a web, all those threads which should rise simultaneously to produce the figure have their appropriate heads, which a child formerly raised by means of cords, that grouped them together into a system, in the order, and at the time desired by the weaver. This plan evidently occasioned no little complication in the machine, when the design was richly figured; but the apparatus of Jacquart, which subjects this manoeuvre to a regular mechanical operation, and derives its motion from a simple pedal put in action by the weaver's feet, was generally adopted soon after its invention in 1800. Every common loom is susceptible of receiving this beautiful appendage. It costs in France 200 francs, or \$40 in this country.

Jade, an ornamental stone, of which there appear to be two varieties, *common jade* or *nephrite*, and *saussurite* or *jade tenace*. Common jade is a silicate of magnesia, oxyd of iron, alumina. Its specific gravity varies from 2.9 to 3.0; hardness 7.0. Its color is leek green, passing into gray. It is very tough, and scarcely fusible before the blow-pipe. Nephrite was formerly worn as a charm, and was supposed to be a cure for disease of the kidney, whence the name from *νέφρος*, kidney. From its toughness it has been used for the blades of hatchets by the New Zealanders, and other savage nations. Humboldt speaks of jade stones being an article of trade among the natives of the north and south sides of the Orinoco. Jade is much used in Turkey and Poland for the handles of knives, daggers, swords, etc.; and in India, ornaments and trinkets, delicately worked, are made of it. In China, the jade is of a whitish color, and is called *yu*. It is formed into vases, rings, and other articles. A great variety of jade ornaments from India and China appeared at the Great Exhibition of 1851. Such articles are very costly, on account of the extreme difficulty

of working this refractory substance, but it has been suggested that mortars, pestles, and some other objects required by chemists, could be manufactured of jade of larger size than can now be made of agate, and, from the simplicity of the forms, at moderate cost. Jade is polished by carnelian, but it takes only a greasy, not a brilliant polish.

Saussurite is a double silicate of magnesia, lime, and oxyd of iron, with silicate of alumina; specific gravity 3.2 to 3.4, hardness 5.5. Its color is greenish-white, or ash-gray; its cleavage is in two directions, meeting at an angle of nearly 120°. Its lustre is pearly, resinous, or vitreous; it is extremely tough, and is fusible before the blow-pipe.—E. B.

Jaffa, or **Yaffa** (the ancient *Joppa*), is a sea-port town of Palestine, in north lat. 32° 3', east long. 34° 45'. It is situate on an eminence projecting into the sea, about 40 miles north-west of Jerusalem. It is mentioned in the Old Testament as the port at which the timber for Solomon's Temple was shipped. During the wars of the Maccabees, its shipping was set on fire by Jonathan; and it was again pillaged during the wars between the Romans and the Jews, 8400 of its inhabitants being put to the sword, and the town burned. Having subsequently become the refuge of pirates, the place was utterly destroyed. Gradually, however, it seems again to have risen to importance, for, during the reign of the Christian emperors, it was made the seat of a bishopric. In A. D. 636 it was taken by Omar. In the crusades it was taken by Baldwin I., and in 1186 retaken by Saladin. In more recent times it was stormed by Napoleon in 1797, when 500 Turkish prisoners were put to death. The harbor of Joppa has always been dangerous, owing to its exposure to the sea, and, being now nearly choked up with sand, vessels are obliged to keep at a distance from the shore. Notwithstanding all the danger and difficulty of landing, Joppa has for many centuries been the resort of pilgrims on their way to Jerusalem. The town chiefly faces the north. The buildings are surmounted by flattened domes, which rise in rows above one another like terraces, on the steep face of the eminence on which the town is built. The summit of the height is crowned with a castle; but though the general situation of the town is thus somewhat picturesque, its appearance on closer inspection is mean and comfortless. A wall 12 feet high defends the town on the landward side, and two forts protect the harbor. Joppa carries on trade in cotton, soap, fruit, coral, etc. The fruits, consisting of water-melons, oranges, lemons, etc., grow well in the sandy soil of the numerous neighboring gardens. It imports rice from Egypt. The inhabitants consist of Turks and Arabs, Romanists and Greeks, with some Armenians, as may be inferred from the three mosques, three churches, and three Armenian convents to be seen in the town. A British consul resides here. Population 4000.—E. B.

Jafna, the capital of the district of Jafnapatam. It stands at some distance from the sea, but communicates with it by a river navigable for large boats, and which falls into the sea near Point Pedro. The town is fortified and possesses a good citadel, which, though small, is exceedingly well built; but it was given up in 1795, after a short resistance, to the British troops. The situation is salubrious, and living is cheap; on which account many families have removed to this place from Colombo. The greater part of the inhabitants are of Mohammedan extraction, and are divided into several tribes, known by the names of Lubbaahs, Moplays, Chittees, and Cholias. The foreign settlers are more numerous than the native inhabitants. There are

manufactures of coarse cotton cloths, calicoes, handkerchiefs, shawls, stockings, etc., and there are also many artificers, such as goldsmiths, jewelers, joiners, and cabinet-makers.—E. B.

Jalap, or **Jalap** (Ger. *Jalapp*; Fr. *Jalap*; It. *Sciarappo*; Sp. *Jalapa*), the root of a certain convolvulus, so named from Xalapa, in Mexico, whence we chiefly import it. The root, when brought to this country, is in thin transverse slices, solid, hard, weighty, of a blackish color on the outside, and internally of a dark gray, with black circular striae. The hardest and darkest colored is the best; that which is light, spongy, and pale colored, should be rejected. The odor of jalap, especially when in powder, is very characteristic. Its taste is exceedingly nauseous, accompanied by a sweetish bitterness.—LEWIS'S *Mat. Med.*; BRANDE'S *Pharmacy*.

In Mexico, from 4000 to 6000 feet above the sea level, grows the plant which yields true jalap, and which has been called by botanists *Convolvulus purga*, and *Ipomœa purga*, the latter name being adopted by De Candolle. It has since, however, been placed in the genus *Exogonium*. The true jalap (*Exogonium purga*) has a tuberous perennial root, a smooth, twining, annual stem, a salver-shaped corolla, with long cylindrical tube, a calyx of five small, unequal sepals, and herbaceous stems. Its leaves resemble the ivy, and its beautiful red flowers open only at night. The dried tubers of this plant supply the drug jalap; these, as found in commerce, rarely exceed 1 lb. in weight; they are oval in form, and covered with a dark skin or cuticle. Internally they are yellowish gray, with deep brown concentric circles, and are hard and difficult to powder. Inferior sorts are more irregular in form, and are called *spurious jalap*, or, from their shape, *cocked-hat jalap*. Some roots are much worm-eaten, and are so called; but as the insects do not touch the resinous portions, such roots are available for extracts. Four kinds of jalap are known in commerce, two genuine and two spurious; first, dark, heavy, resinous tubers; secondly, lighter colored and less resinous; thirdly, *white or false jalap*, pieces of which are occasionally mixed with the true; and, fourthly, *jalap-stalk or woody jalap*, the slices of which are more fibrous and woody than the genuine. There are about 200,000 lbs. of the pure jalap annually exported from Vera Cruz on the Gulf of Mexico, the sea-port of Jalapa.

Jalapa, or **Xalapa**, a town of Mexico, capital of a cognominal department, in the State of Vera Cruz. It is situated on a small plain at the foot of a range of hills 55 miles north-west of the town of Vera Cruz, and about 4500 feet above the sea level. On account of its exhilarating climate it is a favorite resort of the inhabitants of Vera Cruz when the *comito prieto* is prevalent there. The only building of importance is an old church, which is believed by the people to have been founded by Cortez. Cotton is manufactured, but its trade has greatly diminished. In the neighborhood grows the creeping-plant, *Exogonium purga*, or, as it is called from this town, *Jalap*. The population of the department is estimated at 45,000, and the town at 16,000 persons.

Jamaica, an island lying off the Bay of Honduras, between the Caribbean Sea and Gulf of Mexico, within N. lat. 17° 40' and 18° 30', and W. long. 76° 10' and 78° 30', about 4000 miles S.W. of England, 80 S. of Cuba, 90 W. of St. Domingo, and 515 miles N. of Chagres, the Atlantic port of the Isthmus of Panama. It is the most southern of that group, which is called by some the Greater Antilles, by others the Leeward Islands. The latter name, however, is now generally applied to the smaller islands on the north-east, and sometimes to those on the south of the Caribbean Sea. It is the largest, and was formerly the most valuable of the British West Indies, being 140 geographical miles in length, by 50 in extreme breadth, and con-

taining about 4,080,000 acres, or 6400 square miles. Within its government are comprised, besides the three small islands called the Caymanas, Belize, or British Honduras, on the main land of Central America, with Ruatan and other islands in the Bay of Honduras. These places, though distant respectively 600 and 460 miles, have been called the dependencies of Jamaica, and are ruled by superintendents appointed by the governor. The title of Britain was disputed by Spain in the early part of the last century, and the Bay Islands were given up to that power by the treaty of London in 1786, but were re-occupied by the British during the subsequent war. Having, with the Mosquito Territory, formed the subject of dispute between Great Britain and the United States, arising out of the Clayton-Bulwer Treaty, they have (1856) been constituted as free territory under the republic of Honduras, with provisos against alienation, the erection of forts, and the introduction of slavery.

Jamaica was discovered by Columbus on the 8d of May, 1494, while coasting along the south of Cuba, during his second voyage. He called it St. Jago, after the patron saint of Spain, but it is now generally known by its Indian name Jamaica, a word signifying the Isle of Springs, according to the best authorities, though Long derives it from a kind of fruit. It is sometimes written Xaymaca by the Spaniards. On approaching the shore, Columbus called the nearest land after his first ship, Santa Maria, a name still preserved in Port Maria. He effected a landing a little to the westward, at Ora Cabessa, where, after a slight opposition from the natives, he took possession of the country, with the usual formalities, for the king of Spain. The inhabitants were the same mild, inoffensive race as those of Cuba and Hayti. Like the Arowaks of Trinidad and Guiana, they were probably offshoots of the great Mexican stock, and very different from the fierce Caribs of the Windward Islands. After a short stay, Columbus quitted Jamaica, which remained undisturbed for nine years. In June, 1503, on his fourth and last voyage, he was driven by a tempest, in which he lost two ships, to a bay on the north side of the island, which he named Sta. Gloria (now St. Ann's Bay), where he ran his remaining vessels ashore in a small inlet still called Don Christopher's Cove. The shipwrecked mariners were received with the greatest kindness by the Indians, and here Columbus remained upward of a year awaiting the return of messengers he had dispatched to Ovando, governor of Hispaniola, as Cuba was then called. During this time he suffered much from disease, as well as from the mutiny of his followers, whose gross misconduct alienated the Indians, and provoked them to withhold their accustomed supplies, until he dexterously worked upon their superstition by prognosticating an eclipse.

By Esquivel the natives were treated, according to Herrera, with unusual humanity. That his successors did not imitate him in this respect is proved by the astounding fact that of the Indian population, at this time estimated at from 60,000 to 100,000 souls, not a descendant of either sex existed in 1655, when the island fell into the hands of the English, nor, is it supposed, for nearly a century before. After a short sway, Esquivel died in Sevilla d'Oro, a town founded by himself on St. Ann's Bay, which is supposed by some to have been deserted on account of the ravages of ants, by others to have been destroyed during an insurrection of the Indians. Its premature fall was, however, most probably owing to the attacks of French filibustiers, or pirates, who for a long period infested these coasts. The site of the town may still be traced by mounds of earth, as well as in the names of certain fields belonging to the Seville sugar plantation. Melilla, near Port Maria, or, according to another opinion, at Martha Brae, near Falmoth, shared the same fate.

About the year 1523, Diego Columbus, visiting Jamaica from Hispaniola, founded on the River Cobre,

inland to the south of the mountain range, St. Jago de la Vega, St. James of the Plain, which gave the title of marquis to his descendants, and is still the official capital, under the name of Spanish Town. At some distance westward, on the coast, was built Oristan, which is now called Bluefields. Down to 1596 the history of Jamaica is only a record of the rapid disappearance of the Indians, under the Spanish yoke, and of intrigues at the court of Spain, having for their object the dispossession of the descendants of Columbus, whose rights were, however, successfully defended, and eventually centred in an heiress, through whom they passed by marriage to the house of Braganza, reverting afterward to the Spanish crown, in consequence of the revolution of 1640, which placed John, duke of Braganza, on the throne of Portugal. Long anterior to this last event, the union of the crowns of Spain and Portugal, under Philip II., in 1580, occasioned an influx of Portuguese colonists into Jamaica, who contributed much to its strength and prosperity, but were usually on indifferent terms with Spanish settlers. Attention had at an early period been paid to agriculture, the cotton-plant was extensively cultivated, and the sugar-cane, vine, and various kinds of corn and grass had been introduced; and whereas a small species of dog, called the alco, was the only domestic quadruped known to the aborigines, horses, horned cattle, and swine had been imported from Hispaniola, which multiplied amazingly, and a flourishing trade sprang up in lard and hides, as well as tobacco, sugar, and ginger.

The population, according to the return of 1855, consists of 181,633 males, and 195,800 females; but this is based upon the last census, that of 1844, when the population was returned at 380,000, of whom 16,000 were white, 68,000 colored, and the rest black, of whom about 1200 were maroons. Since then upward of 40,000 people have died from cholera and small-pox, and about 2000 have emigrated to Navy Bay to work on the railway over the Isthmus of Panama, a portion of whom only have returned. The careless treatment of children by the negroes, and their almost invincible repugnance to pay doctors' fees, which has necessarily reduced the number of medical practitioners, prevent the natural rate of increase; and the waste of public money during the protracted dispute between the Council and House of Assembly, has caused the number of immigrants imported to fall very short of other colonies. We find, in consequence, that while 49,000 arrived in British Guiana between the years 1840 and 1852 only 14,000 were brought to Jamaica. The following returns have been made by the Emigration Commissioners of Immigrants introduced into Jamaica from 1848 to 1855, both inclusive:

Emancipados from Havana.....	276
Sierra Leone.....	1870
St. Helena.....	2198
Madefra.....	879
China.....	472
Total.....	5,195

Besides which there were still in the island 1684 coolies who had arrived before 1847, and a considerable number of recaptured Africans. The criminal returns of this population are remarkably favorable; the number in prison throughout the island on the 31st December, 1855, was only 583; and Sir H. Barkly reports that the numbers convicted of crimes in Jamaica when compared with British Guiana were as 18 to 33.

The revenue of Jamaica was estimated, in a calculation made in 1830, on an average of ten years, at £490,000 currency, or about £327,000 sterling. This was independent of that raised by the vestries for parochial purposes, which amounted to about £300,000 currency, or £200,000 sterling. The public revenue of 1841 was £226,969, 18s. 3d.; the parochial, £177,491, 12s. 10d. sterling. The public expenditure, £291,-

415, 16s. 0d.; the parochial, £150,857, 16s. 8d. In the year 1854, owing to the suspension of the import and rum duties, and consequent large accumulation of taxable articles which had paid nothing to the treasury, the revenue fell to £96,624 sterling, while the expenditure was £197,638. In 1855 the following return was made: *Income*.—Ordinary revenue, £199,647; casual revenue, £26,771; total, £226,419. *Expenditures*.—Ordinary expenditure, £193,461; casual expenditure, £49,643; total, £243,105. In the same year the local or parochial taxes amounted to about £80,000. In the budget for 1856, the following estimates of the revenue and expenditure for the current year were presented to the Jamaica Legislature:

INCOME.	
Import dues.....	£125,000
Rum duties.....	30,000
Stamps.....	11,000
Tonnage dues.....	11,000
Fees.....	1,000
Stock and hereditaments.....	16,000
House tax (disallowed).....	6,000
Land tax.....	5,000
Interest on guaranteed loan in Colonial Bk.....	1,000
Total income.....	£206,000
EXPENDITURE.	
Collection of revenue.....	£20,105
Parochial items transferred.....	14,058
Church establishment.....	29,398
Administration of justice.....	20,292
Police.....	23,455
Governor and Privy Council.....	4,450
Legislative Council.....	2,064
House of Assembly.....	3,845
Executive committee.....	8,320
Sanitary establishment.....	10,120
Education (disallowed).....	6,000
Printing.....	4,000
Public works.....	3,500
Light-houses.....	1,000
Prisons.....	17,700
Insolvent deposits.....	2,000
Interest on loans.....	33,411
Miscellaneous, including £300 for militia, £800 to geologist.....	3,546
Total expenditure.....	£206,765

By an act of the Assembly in 1854, the Council fund of £6000 a year, originally granted in 1728, ceased, and it was provided that £25,000 should be raised annually as a permanent civil list, for the purposes of the government of the island, and a further sum of £30,000 for the interest on, and repayment of the guaranteed debt.

It is difficult to fix the value of the movable and immovable property in Jamaica, once estimated at £50,000,000. The latter, however, that is, the land with the buildings on it, is periodically valued for taxation, and the hereditament tax is raised upon a sum equal to 6 per cent. on such valuation—that being, according to an arbitrary assumption, the nett revenue of the land. Though the tax is paid upon many properties on which the cultivation has been given up, and which produce no revenue at all, this sum was fixed in 1850 at £693,382, 4s. 3d., on an estimated value of about £11,500,000. Since then the decline has been rapid; and when it is remembered that the fall in ratable property in the next year exceeded £2,000,000, there can be little doubt that the difference in value since the prosperous days of Jamaica amounts to at least 80 per cent. For many once valuable estates no purchaser could now be found on any terms. It is on record that 231 sugar estates have been abandoned, besides 243 coffee plantations, and 182 grass pens. It is notorious that the paper-circulation, which amounted to £258,816 in 1844, has dwindled to £70,000 in 1855. It is clear, therefore, that though the public and parochial taxation has been reduced from about £800,000 currency to less than £300,000 sterling, it is much more burdensome to the tax payer now. Indeed, when it is considered that the value of articles exported, expensive as they are to produce, does not reach £1,000,000, it is evident that the estates in the

aggregate yield no rental at all, but are maintained by non-resident proprietors possessed of other means, who are unwilling to abandon the hope of future improvement. Even supposing the whole money expended in raising these articles of export amounted to little more than double the public revenue of the country, a proportion, highly taxed as the island is admitted to be, quite beyond belief, it would follow that after payment of production, expenses, and taxes, little or no surplus would remain for the proprietor; but such expenses must in reality far exceed £600,000, and can only be provided, as before observed, by those proprietors who have other funds at their disposal.

It is necessary to explain the two forms of calculation to which reference has been made—currency and sterling. The former was an arbitrary mode of reckoning, unrepresented by any coinage, employed until the year 1840, by which £140 currency equalled nominally £100 sterling; but a premium of about 18 per cent. was paid in addition to place this sum in England, so that upward of £166 in Jamaica were needed to pay £100 in England. In 1840 an act passed establishing the English computation, fixing the pound sterling at \$5, or £1, 13s. 4d. currency, and making English money the legal tender. Spanish and Portuguese coins are still current, the highest being the doubloon, or ounce, worth about £3, 6s. 8d. Before this date, a "fivepenny," worth 3d. sterling, was the lowest coin. There is still no copper, and the lowest coin is the silver three-halfpence, coined especially for Jamaica, and called a prædial, as intended for the payment of agricultural laborers. In former days, the only paper currency consisted of island checks issued by the treasury. There are now two banks of issue, a branch of the Colonial Bank, and the Bank of Jamaica. A third, the Planters' Bank, has been given up since the trade of the colony declined. The present issue is usually from £70,000 to £80,000. Savings banks have also been established in the island.

The commerce of Jamaica depends almost entirely on its agriculture. It has gradually lost the greater portion of the transit trade in consequence of the revolt, and subsequent disorganization of the Spanish colonies on the mainland, the establishment of St. Thomas as a free port, and the rapidity of steam communication between Europe and the American coast, which diminished the advantages of an emporium in the West Indies. Its agricultural prosperity has declined in equal proportion, though, from different causes, the value of its staple having been depreciated by successive acts of the Imperial Government, whereby the differential duties, under the protection of which

the scheme of emancipation was originally intended to be carried out, were discontinued. In 1840 East India sugar was admitted on equal terms into the British market. Four years afterward the same advantage was conceded to foreign sugar, the produce of free labor; and in 1846 to slave-grown sugar. Protection has also been removed from molasses, coffee, and cocoa. Under these circumstances, the want of adequate labor has prevented Jamaica competing with those countries in which, from slavery and other causes, there is a sufficient supply.

The following tables illustrate these observations:

Years.	Value of imports.	Value of exports.
1809.....	£4,068,897	£3,093,294
1810.....	4,808,887	2,808,579
1853.....	864,094	837,276
1854.....	408,520	932,316

The exports consist of her own products only, the imports include those intended for re-exportation, as well as those taken for home consumption, which explains why, in the flourishing era of the transit trade, the balance should be apparently so much against Jamaica. The exports, too, are entered at their value in the place of growth, while to imports are added charges for freight, etc. The small imports of 1854 were partly owing to the goods imported in anticipation the year before, when the duties were not levied. The same cause accounts for the small quantity of rum exported in 1853, and the excess of the two following years, enough for two years' home consumption having been entered in the same year duty free. The following table gives the trade and navigation report for 1855:

ARRIVALS IN JAMAICA IN 1855.

From	No. of ships.	Tonnage.	Men.	Value of imports.
Great Britain.....	122	43,029	....	Brit £494,019 15 6
United States.....	94	13,784	....	For. 405,487 12 4
Colonial.....	145	15,435	....
Foreign.....	127	11,804	....
Total.....	488	84,052	4,322	£899,507 7 10

DEPARTURES FROM JAMAICA IN 1855.

To	No. of ships.	Tonnage.	Men.	Value of exports.
Great Britain.....	123	88,997	....	£1,003,325 9 5
United States.....	77	13,502	....	of which
Colonies.....	63	8,847	....	953,123 10 0
Foreign countries	240	26,014	....	represented island produce.
Total.....	503	86,560	4,462	

Of the ships in this list 40 were ships of war, 44 steamers, and 38 colliers.

IMPORTS INTO GREAT BRITAIN FROM JAMAICA OF THE PRINCIPAL ARTICLES OF NATIVE PRODUCE IN 1817 AND 1855.

Year.	Sugar.	Rum.	Molasses.	Coffee.	Cocoa.	Cotton.	Pimento.	Ginger.	Arrow-root.	Logwood & fustic.	Mahogany.	Indigo.	Beeswax.	Honey.
	Cwts.	Galls.	Cwts.	Lbs.	Cwts.	Lbs.	Lbs.	Lbs.	Lbs.	Tons.	Tons.	Lbs.	q.	Galls.
1817	1,400,500	2,706,969	95	14,653,538	260	1,021,674	1,627,612	340,373	11,519	1,396	32,011			*
1855	450,282	2,109,291	..	5,657,103	..	280	7,066,580	799,796	87,900	11,544	147,929	....		81,536 6,487
	Dec.	Dec.	Dec.	Dec.	Dec.	Dec.	Inc.	Inc.	....	Dec.	....	Dec.	....	....
	950,218	597,678	95	8,996,435	260	1,021,394	6,038,968	459,423	....	275	....	32,011	....	....

* No return.

The largest sugar crop was in 1805, which exceeded 150,000 hhd. ; that of 1855 did not reach 30,000 hhd. ; that of 1856 had fallen to 20,000 hhd. The largest coffee crop was in 1814, and exceeded 34,000,000 lbs. The great increase of pimento is unfortunately accounted for by the rapid spread of the tree, which grows wild in Jamaica, over lands formerly under cultivation. Since 1852 a small quantity of copper ore has been exported, amounting in 1854 to 37 tons. Besides these principal articles, there is exported a small quantity of tamarinds, cocoa-nuts, succades, shrub, ebony, lignum vite, and lancewood. There are five mining companies in Jamaica, all in their infancy—the Clarendon Consols, and Wheel Jamaica, in Clarendon; the Port-Royal and St. Andrews, and the Ellers-

lie and Bardowie, in St. Andrew; the Portland Mining Company in Portland. Of these the first two are at present the most promising. The principal imports into Jamaica are salt pork and beef, salt fish and oil, butter, lard, cheese, corn, corn-meal, oatmeal, flour, biscuits, rice, tobacco, wine and beer; hardware, cutlery and ironmongery; ready-made clothes, boots and shoes, and dry goods of all sorts; soap, candles, saddlery, and harness; shingles, lumber, wood-hoops, and coals.

Imports into the Island of Jamaica from the United States in 1854.—Flour, 13,823 barrels; candles, 7941 boxes; butter, 2378 kegs; lard, 2577 kegs; pork, 1433 barrels; hams, 20 barrels, 15 casks, 11 tierces; cheese, 108 boxes; meal, 2614 barrels; corn, 2191 bags;

bread, 977 barrels; beef, 241 barrels; coals, 3301 tons; lumber, 33,186 feet; rice, 1542 bags. Approximate value, \$499,515.

American vessels engaged in trade with Jamaica in 1852, 194; in 1853, 164; from all European ports, in 1852, 119; in 1853, 155.

The commercial resources of this island may be seen from the following tables of exports for three years, 1850-1852:

	1850.	1851.	1852.
Sugar.....bhd.	36,030	40,293	34,414
Rum.....punchons	15,591	18,492	15,660
Molasses.....casks	9	40	11
Ginger.....lbs.	799,000	1,176,000	994,000
Pimento....."	4,059,000	4,439,000	5,438,000
Coffee....."	127,000	5,595,000	7,127,000

Port Regulations.—On every vessel entering Jamaica, there is levied under the customs-tonnage act, a port duty of 24 cents per ton. Light-house duty, 6 cents per ton. Hospital tax—vessels from out of the tropics, 8 cents per ton; from within the tropics, 4 cents per ton. Health officer's fees—on a ship or bark, \$2 88; on a brig or brigantine, \$2 16; on a schooner or sloop, \$1 44. Harbor dues—ship or bark, \$7 68; brig or brigantine, \$5 76; schooner or sloop, \$3 84. Jamaica embraces an area of 5520 square miles, and contains a population of about 36,000 whites, and 312,000 free blacks. Total population, 348,000.

Pilot dues in the ports of Kingston and Port Royal.—In—350 tons and over, \$23 04; 250 tons and over, \$17 28; 150 tons and over, \$14 40; 100 tons and over, \$11 52; 100 tons, \$5 04.

Out—350 tons and over, \$15 36; 250 tons and over, \$13 44; 200 tons and over, \$11 52; 150 tons and over, \$9 60; 100 tons and over, \$7 68; 100 tons, \$6 72. These charges are reduced when the vessel enters or clears from Port Royal only.

There is a steam communication between England and Jamaica, and *vice versa*, twice a month, in 19 days. The Royal Mail Steam-packet Company's ships leave Southampton on the 2d and 17th of each month, calling at St. Thomas, Porto Rico, and Jacmel, in Hayti, and reach Kingston on the 21st and 6th. They leave again for England on the 27th and 12th, making the course of post about 44 days. They also sail once a month between Jamaica and Honduras; course of post 10 days. There are frequent opportunities between Jamaica and Havana, and the United States. In the island there is a post twice a day between Kingston and Spanish Town, and a communication twice a week between these capitals and the country districts; besides expresses, on the arrival and departure of the mail packets. Jamaica being on the direct route from England to Nicaragua, can scarcely fail to share in the growing importance of the States of Central America.

Emancipation.—Hitherto its history, since emancipation, has been discouraging to the friends of liberty. The negro on whom the cultivation of the island depends, has gradually retired from labor, and retrograded in the social scale. This does not arise from any hostile feeling toward the whites, with whom he usually lives on the most amicable terms; it is the natural result of removing all restraint from a people low in civilization, and consequently with few artificial wants, in a country where land is superabundant. The Jamaica negro can earn enough on a sugar plantation in a few weeks to buy a small patch of freehold land. The wood upon it forms his cottage; and the vegetables which grow almost spontaneously support him in tolerable comfort. When his little property does not require his care, he works from time to time for hire; but as plantation after plantation is abandoned, and the country returns to its primeval forest, he is confined more and more to the society of his own race; and though not more addicted to crime, is rapidly receding into a savage state. During slavery the dissenting ministers possessed great influence over him;

he now prefers the established church, because it costs him nothing, but he cares little for either. Not feeling the want of education, he does not seek it for his children, whom he prefers employing in his own service. Hence, neither churches nor schools are wanted in Jamaica, but congregations and scholars. These observations are confirmed by the last returns, which fix the diminution of children in the schools in 1854, as compared with the previous year, at 2000, and show this decrease to be less conspicuous in those belonging to the established church of England and Scotland, than in those of the Baptists and Independents. We can scarcely blame the negro for following the bent of his inclination; but it is evident that under these circumstances, unless there is a large and immediate supply of immigrants, to meet the expense of whose introduction, averaging at least £10 per head, there are no available funds, all society will come to a speedy end, and the island become a second Hayti. Already the enormous depreciation of property has caused the ruin of so many, that the name of Jamaica proprietor, once used proverbially to indicate wealth, is now associated with poverty and distress.

Jamaica is of a long oval shape, and has been compared to a seal with the head pointed to the west. Its surface is beautifully diversified with hills and valleys. An elevated range, called, in the eastern or highest part, the Blue Mountains, and terminating in Dolphin Head, to the west, runs longitudinally through the island, and other high ridges intersect this chain. On the south the mountains are generally steep, with gigantic spires or buttresses rising from the plain at an average distance of 12 miles from the sea. Though difficult of access they are traversed by bridle-roads in various directions to the height of nearly 6000 feet; and several passes, or gaps, as they are called, of great altitude, connect the two sides of the island. On these elevated ranges the coffee attains the greatest perfection, and above, dense forests ascend to the highest peak, composed chiefly of beef-wood, as it is called from its color, and satin-wood. Under their shade the tree-fern grows to the height of 15 feet, and the flute-like note is heard of the solitaire, a bird only found in these wildernesses. On the north side the mountains approach the sea closely, but more gradually, their conical forms are gently rounded, and in St. Ann and Trelawny the lower slopes are shaded by pimento woods, the indigenous growth of the island, and elsewhere by orange groves, mango, and cedar forests, above which frequently towers the gigantic silk-cotton tree. The shady valleys between were once occupied by cacao walks, now destroyed; and on the lowlands, near the sea, were formerly the indigo-works, long since abandoned. Here are now the sugar estates, in which the dark green of the cane is varied by the golden tint of the guinea grass, and the cabbage and cocoa-nut palms shoot up in long lines close to the water's edge, from which they are separated by a fringe of mangroves, growing below high-water mark, and the beautiful but poisonous manchineel. The waving field of canes is broken at intervals by the white cluster of buildings composing the sugar-works. The mill, the boiling-house, with its tall chimneys, and the stables, stores, and bookkeepers' houses surround a large court-yard. Above, on an eminence, is usually the proprietor's mansion, and close by, though completely buried in the broad foliage of the plantain and banana, the negro village. On these plantations during crop the scene is most animated. Bands of negroes, with cutlasses, attack the rows of canes which tower above their heads; wagons, drawn by oxen or mules, in endless succession, carry the canes to the mill; women and children hurry with the dry stalks to feed the fires; and the shouts, without which a negro seldom does any thing, announce afar off, in this clear atmosphere, the neighborhood of a sugar estate. It is here, too, that the traveler sees most clearly the

decline of the country. At each end of the island, in the parishes of Hanover and Portland, he may journey for miles through deserted plantations. Ridges, overgrown with guava bushes, mark the site of the corn fields; rank vegetation fills the court-yard, and even bursts through the once hospitable roof. A curse seems to have fallen upon the land, as if this generation were atoning for the sins of the past. For while we lament the ruin of the present proprietors, we can not forget the unrequited toil which in times gone by created the wealth they have lost, nor that hapless race, the original owners of the soil, whose fate saddens the darkest page of history.

The sugar estates resemble generally those of the other islands, but Jamaica has a feature peculiar to itself. In the centre of the island, and toward the south and west, are large plains, or table-lands, at an elevation of about 1000 feet, covered with a luxuriant growth of guinea grass, dotted with groves of tall trees, and, at greater intervals, with white houses and villages. From an eminence the whole country resembles a series of English parks. These are the pens, or grazing farms, where horses and cattle of most excellent quality are bred. They are chiefly in St. Ann, Manchester, St. Elizabeth, St. James, and Hanover. The climate, at this elevation, is well suited to a European population, who can not work on the sugar plantations, but may with safety be employed on the light and healthy duties of the farm. From one of the many points of view on the mountain range the country presents an aspect of beauty and grandeur scarcely to be surpassed. Above tower the lofty peaks, with clouds on their summits—around are magnificent forests—beneath are the peculiar hollow basins, called cock-pits—below them deep ravines, or wider valleys; through these flow rivers or mountain torrents, occasionally falling from the rocky ledges in cascades which would attract notice in any part of the world. At a greater distance the wide plains are spread out like a map, checkered with towns and villages; and the deeply indented coast, terminating to the east in lofty cliffs, is washed by the glittering waters of the Caribbean Sea. The view of the island from the sea has long been celebrated. Soon after leaving Cape Tiburon, the western point of Hayti, the Blue Mountains are in sight, and along the south coast of Jamaica, from Point Morant to Kingston, the inhabited plains, sloping gradually up, till cultivation terminates in forest, present an aspect of no common beauty. From Fort Nugent, which is conspicuous under a steep hill, to Port Royal, runs a narrow sandy promontory, called the Palisades. Here is the great cemetery where so many victims to yellow fever lie buried that the name has become proverbial; and this neck of land incloses the harbor of Kingston, which is entered by a most intricate channel between Port Royal and Port Henderson, and beyond which the capital is seen stretching northward toward the amphitheatre of the Liguana Hills, and protected by the loftiest range of the Blue Mountains. The heights of the principal peaks have been computed as follows: Blue Mountain Peak, 7770 feet; the Portland Gap ridge, 6501 feet; Portland Gap, 5640 feet; and St. Catherine's Peak, 4970 feet. It is stated, however, by some authorities, that the three highest peaks on the grand ridge of the Blue Mountains, called Coldridge, have their respective summits 8184, 7656, and 7576 feet above the level of the sea.

The soil is in most places deep and fertile, and for the growth of sugar, pimento, and ginger, and, as some think, of coffee, has never been surpassed. On the north there is a reddish yellow soil. The brick mold, reckoned the best in the West Indies for the cane, is a deep warm hazel mold, easily labored, and requiring little manure. The black shell mold owes its fertility to the mineral salts and exuvies which it contains. On the south side are large natural salt

ponds, which of late years have been neglected. The principal soils in the interior are a red clay, a yellowish clay, a red grit, a loose conchaceous mold, a black mold or clay or marl, a loose vegetable mold on rock, a fine sand. The red sandstone of the lower mountains resembles much the porphyrite conglomerate of the higher, and both produce coffee; but while that grown on the former has been driven out of the market by the cheaply grown coffee of Ceylon, the latter retains its value, being considered by many superior to the Mocha which springs from a similar soil. Among minerals are—argillaceous dark purple schist; gneiss; steatite, and even serpentine; sienites, highly micaeous; and the hard lamellated amianthus, resembling petrified wood; white freestone; quartz of different kinds; limestone, and a kind of marble. Rich lead ore, impregnated with silver is found in St. Andrew; radiated antimony and rich copper ores, abounding in malachite, are found chiefly in Clarendon, Portland, and St. George; magnetic iron and cobalt in St. George and Metcalf; anthracite coal in Portland and St. George; but neither gold nor pure silver have been found, though the Indians possessed ornaments of both when discovered by the Spaniards. A species of marl, common in Jamaica, was eaten by the negroes during slavery, so much to the detriment of their health and value that the practice was made penal. The honeycomb limestone rock, of which a great part of the island is composed, contains no minerals, but is hollowed into innumerable caverns and fissures. Many of these are beautifully ornamented with stalactites, particularly one on the Roaring River estate, near Savana la Mar. In some of these fissures called "sinks," rivers suddenly disappear to rise again at a considerable distance. On the Sweet River estate several springs rise like fountains with great force in one field. On the road from Falmouth to Maroon Town, a considerable stream pours from an opening in the solid rock several feet above the ground, and the Rio Bueno streams at once from the foot of a perpendicular rock in St. Ann. There are fewer traces of fire in Jamaica than in the other islands; but the Burnt Hill, near Hope Bay, seems to be an extinct volcano. There is great variety of climate; the medium heat at Kingston is about 80°, and the minimum 70° Fahrenheit, throughout the year. At an elevation of from 4000 to 5000 feet, the average range is from 55° to 65°; the minimum in winter being 44°. On the Blue Mountain Peak, in August, the writer found the temperature 44° at sunrise, and ice of some thickness has been formed there in March. Snow has never been known to fall. The alternation of temperature is from 8° to 10° on the south side, and more on the north, but the transitions are not so sudden and detrimental as in many parts of the continent of North America. The grand compensation for excess of temperature is afforded by the breezes which regularly every morning set in from the sea to the land, and every evening from the land to the sea, to preserve the equilibrium which the noonday sun has disturbed; when these are sometimes interrupted the heat is intense, the thermometer rising to 100° Fahrenheit, and the island becomes unhealthy. There is no striking variety in the length of the day, or in the seasons, except the alternations of wet and dry. Storms of thunder and lightning are prevalent, and sometimes very mischievous in autumn. The hurricane season ranges from July to October. The periodical rains, which last ordinarily for six weeks, are called the May and October seasons, but there is great irregularity in the time of their falling. The north side usually suffers less from drought than the south, but even there the rains are sometimes very capricious, following the course of a river, or being stopped by a ridge of hills. The parishes of Vere and St. Dorothy, on the south side, have sometimes been more than a year without rain, to the destruction of vegetation and cattle.

Some parts of Jamaica, particularly near morasses, are extremely unhealthy, and there few escape intermittent fevers, or "fever and ague," as it is called; but in general the climate is favorable to those who live carefully, though when the yellow fever comes as an epidemic, which happens every seven or eight years, it carries off all alike. It is, however, rarely known at an elevation of 1000 feet, and in some of the hilly districts, especially the Santa Cruz Mountains and Pedro Plains, there are remarkable instances of longevity among the English settlers. The annual mortality among the white troops for twenty years ending 1837 was 180 in the 1000, or a seventh of the entire force. Since they have been fed on fresh provisions, and more especially since they have been encamped on high ground, this has been reduced to 34 per 1000. Of late years the cholera has made its appearance, and committed extraordinary havoc; and since emancipation, small pox has been more prevalent, on account of the negroes neglecting the vaccination of their children. The vegetable productions of Jamaica are far too numerous to be described. There are forest trees fit for every purpose, from ship-building to cabinet-making, among which the ballata, rosewood, satinwood, mahogany, lignum vitæ, lancewood, and ebony, are conspicuous; but the scarcity of labor makes it cheaper to import planks ready sawn from America. The logwood, the trunk of which resembles the clustered columns of Gothic architecture, and the fustic, are largely exported for dyeing. The Jamaica cedar (*Cedrela odorata*), with ash-like leaves, is valuable for the interior of houses, as its scented wood keeps off insects. The silk-cotton tree (*Ceiba Bombax* or *Eriodendron*) is one of the largest in Jamaica; its silky pods are used to stuff pillows, but, from want of adhesion in the fibres, is useless for manufacture. The pimento is indigenous, and furnishes the allspice. The bamboo, the coffee, the cacao or chocolate tree, are well known productions; the last, however, is disappearing, and the export has ceased. Several species of palm abound, the macca, the fan palm, and screw palm, but the noblest is the palmetto royal (*Areca oleracea*), the green top of which is called the mountain cabbage, and eaten as a vegetable. The cocoa-nut is the most valuable of all this tribe. The mango, which overspreads the island, forming a splendid forest tree, and affording food for man and beast, was introduced by Rodney, who took it from a French ship; the bread-fruit by the famous Bligh in 1793. The papaw has the peculiar property of rendering meat tender. The lace-bark tree, found near Maroon Town, has an inner bark of so delicate a texture that ladies' dresses have been made of it. The guava, from which the delicious preserve is made, is a weed of the country, and the fruit when raw scarcely eatable. The palma christi, from which castor oil is made, is a very abundant annual. A new species of silk-worm (the *Bombyx Cynthia*), which feeds on its leaf, has lately been introduced from India, by the Jamaica Society of Arts, founded by Sir C. Grey. The sunflower is sometimes cultivated for oil. A variety of the *Cactus Opuntia*, on which the cochineal feeds, is common, and from which, as well as from the insect, recent experiments have proved that a dye may be obtained. English vegetables grow in the hills; while the plains produce the plantain, cocoa, yam, cassava, ochra, beans and peas of various sorts, ginger, and arrowroot. Maize and guinea corn are generally cultivated, and the guinea grass, accidentally introduced in 1750, has overspread the whole island, and forms the most wholesome and strengthening food for horses and cattle. The principal fruits are the orange, the shaddock, the lime, the grape or cluster fruit, the pineapple, naseberry, granadilla, star-apple, custard-apple, mammee sapota, mango, banana, grapes, melons, the avocado pear, the bread-fruit, and tamarind, though the last three would be more correctly ranked

among vegetables. There is a botanic garden near Kingston, and a finer one at Bath, where many now naturalized exotics were first planted. The sarsaparilla is erroneously supposed to grow in Jamaica, though it is classed in the customs' returns there among the imports. It is brought from the Spanish main, and re-exported by the Jamaica Jews, in whose hands the trade is; hence it is called Jamaica sarsaparilla. The sugar-cane was cultivated at an early period in Jamaica by the Spaniards, and was so much extended by the English that, in 1671, we read of sugar works scattered over the whole island. There are several varieties, the most valuable being the one brought from Bourbon in 1799, which is of a bright yellow; and the Mont Blanc, of three sorts, white, violet, and blue. Besides which is the ribbon-cane, beautifully striped with various colors, which is coarse and dry, but more hardy than the other sorts. The statistics of the sugar and coffee cultivation have been given elsewhere. There are many beautiful flowers in the island, the most remarkable of which are the aloe, the yucca, the datura, the mountain pride, the portlandia; the cactus and cereus tribe, the various kinds of convolvulus and ipomœa, and two beautiful descriptions of plumeria, called the tree jasmine. Innumerable varieties of ferns grow in the mountains, and orchids in the woods. The pastures are infested by that interesting minosa, the sensitive plant. It is eaten by sheep, but is armed with minute thorns, which make troublesome wounds in their feet. There are many beautiful insects, among which the fire-flies are most remarkable. There are fourteen sorts of *Lampyridæ* or fire-flies, besides the *Elateridæ* or lantern beetles, which are larger and more luminous; but neither in flowers nor insects is Jamaica so rich as more southern islands. To compensate for this it has no venomous serpents, though abounding in harmless snakes and lizards. A large lizard, the iguana, is considered a delicacy, as are the land-crab and tortoise. The scorpion and centipede are poisonous, but not very common or dangerous. Ants, mosquitoes, and sandflies swarm in the lowlands. Bees, among which is a stingless variety, are numerous in the woods, and produce excellent honey. It is a popular error that in the tropics flowers have no scent and birds no song. The datura and orange are among many instances to the contrary in the former case; and as to the latter, Goss enumerates some twenty different song birds in Jamaica, among which may be mentioned the Jamaica nightingale, a kind of mocking-bird (*Merula Jamaicensis*), and a species of humming-bird (*Mellisuga humilis*). Parrots and pigeons are common, and the wild guinea fowl; also a species of goatsucker, called the mosquito hawk, and a great variety of water-birds, among which is the pelican and a sort of albatross. The crane, heron, plover, snipe, ortolan (or rice-bird of Carolina), and quail, are migratory. The aura vulture, or turkey buzzard, called the John Crow, is numerous, and valuable as a scavenger. By its instinct the concealed body of a murdered man has more than once been traced in Jamaica. The sea and rivers swarm with fish; among the larger ones are the shark, the nurse shark, the bonito, the sword and saw-fish; besides the snapper, mullet, king-fish, Spanish mackerel, the flying-fish, etc. The cachalot is found. Turtles abound; and the seal and manatee, or river cow, are sometimes found, and the crocodile (called erroneously alligator). Jamaica, when discovered, contained but few species of animals. Besides the alco, there was the utia or Indian cony, the muskrat, the armadillo, monkey, agouti, peccary, opossum, and raccoon. At present the only wild animals are the wild hog (an African variety, introduced from the Canaries), a kind of deer (the cariacou), goats, rats, and mice. The rats commit serious ravages among the canes, and those which feed only in the cane-fields are by some esteemed a delicacy. This species, called the

Charles Price rat, was introduced to destroy a smaller kind; but the remedy seems to have proved worse than the evil. The breed of oxen has been much improved by judicious crossing, and can scarcely be surpassed. The horses have much of the Arab blood. They are small but fleet, and at the island races have often beaten English racers, particularly some taken out by the Marquis of Normanby, when governor. The Cleveland bay has lately been introduced from England, with a view to size and bone. The mules are large, hardy, and sagacious, and much used for mountain-riding, as well as for carrying baggage and working on the estates. The sheep and pigs are of excellent quality, and the pork of Jamaica is considered much more wholesome than that of England, being frequently recommended to invalids. Goats are much reared by the negroes, but they are very mischievous in sugar and coffee plantations. The Cuba bloodhound is used as a watch-dog, being the species which thrives best in a hot climate; the English hound and terrier, which have frequently been introduced, soon degenerate and die. Poultry succeeds well, particularly the turkey, the Guinea fowl, and Muscovy duck.

The principal publications relating to Jamaica are: LONG's *History*, 1774; BRYON EDWARDS' *History*, 1809, with an Appendix, 1819; RENNY's *History*, 1807; MATHISON, 1811; HOWARD's *Laws of Jamaica*, 1827; BECKFORD's *History*; DALLAS' *Maroon War*; STEWART's *Jamaica*; MONK LEWIS' *Tour*; MADDEN's *Jamaica*; MONTGOMERY MARTIN, 1836; PHILIPPO's *Past and Present State of Jamaica*, 1843. The earlier histories are scarcely applicable to the present day, while many of the later publications are mere vehicles for conveying the authors' views for or against slavery. By far the best and most reliable information is contained in the dispatches of successive governors, published in the Parliamentary Blue Books; many of which, and particularly those of Sir Charles Grey, contain admirable expositions of the state of the country, and causes of its decline. The natural history of Jamaica has also been the theme of many writers—Sloane, in 1692; Brown, 1754; Barham, 1794; Lunan, 1814. These authors have a most able and enthusiastic successor in Gosse, whose *Journal of a Naturalist in Jamaica*, 1851, and *Birds of Jamaica*, 1847, are delightful books. For vivid pictures of scenery and life in Jamaica, *Tom Cringle's Log*, and *The Cruise of the Midge*, by MICHAEL SCOTT, a Kingston merchant, are unrivaled.

The Caymanas, or Cayman Isles, are three small coral islands or keys, in N. lat. 19° to $19^{\circ} 20'$, and 30 to 40 leagues west north-west from Point Negril, Jamaica, and about the same distance south of Cuba. Grand Cayman lies off the centre of the Yucatan Passage; Cayman-Braque or Brac, and Little Cayman, are near each other, and about 34 miles north-east from Grand Cayman. They were discovered by Columbus, but no settlement was ever made by the Spaniards. Grand Cayman, the only one occupied, is about a mile and a half long by a mile broad, and contains about 1000 acres. It is very low, entirely without springs, and overgrown with low stunted shrubs. These islands are favorite breeding-places for turtles, immense shoals of which animals frequent the low sandy shore for the purpose of depositing their eggs.

James, Capt. Thomas. This English navigator was employed by a company of merchants of Bristol, in connection with one Luke Fox, in 1631, on a voyage of exploration for the discovery of a north-west passage. Sir Thomas Roe presented him to Charles I., who greatly encouraged the enterprise. He sailed from the port of Bristol on 8d May, and wintered on an island in Hudson's Bay, in latitude about 52° , from whence he proceeded northward as far as 65° ,

when his further progress was prevented by the great accumulation of ice, and he returned to England, where he arrived 22d October, 1632. During the ensuing year, he published his "Strange and Dangerous Voyage for the Discovery of a North-west Passage to the South Sea." He made some discoveries on the coast of Hudson's Bay, to the western side of which country he gave the name of *New Wales*, in honor of the prince, afterward Charles II. His journal contains much curious and interesting matter connected with the sufferings of himself and his companions during their sojourn on the Isle of Charlton.

Japan. The empire of Japan consists of a chain of islands lying off the eastern coast of continental Asia, and extending south-east and north-west between north lat. 31° and 48° , and east long. 129° and 150° . Inclosed between this chain of islands and the opposite coasts of Corea and Manchu Tartary, is the Sea of Japan, which communicates by means of straits with the Chinese Sea on the south, the Pacific Ocean on the east, and the Sea of Okhotsk on the north. To the east, Japan has no nearer land than California, 5000 miles off; the nearest part of China is about 420 miles, and of Kamschatka 270 miles distant. The term Japan is probably a corruption of the Chinese name, *Ji-pun-quo*—i. e., Kingdom of the Source of the Sun, or Eastern Kingdom. Marco Polo, who was the first to bring intelligence of this country to Europe, and who acquired his information in China, calls it *Zi-pangu*. The Japanese name is Nipon, or Nifon—i. e., Sun-source.

The empire is divided into Japan proper—consisting of the three large islands of Nipon, Kiu-siu, and Sitkokf, and the numerous small islands. Nipon, the largest and most important of the group, and that which gives name to the whole empire, has an estimated area of 100,000 square miles; its length being more than 900 miles, while its average breadth exceeds 100. It is thus about one fifth larger than Great Britain. Its form is that of a curve or crescent, with the concave side toward the main land. South of Nipon, and separated from it by a narrow channel, is the island of Kiu-siu, or Ximo, about 200 miles in length and about 80 in average breadth, thus containing an area of about 16,000 square miles. Lying north-east of Kiu-siu, and eastward of the southern extremity of Nipon, is the island of Sitkokf, or Sikoko, about 150 miles in length by 70 in average breadth. It is separated from Nipon by a long strait in some parts not more than a mile in width; and from Kiu-siu by Bungo Channel, which is about 80 miles broad. North of Nipon, and separated from it by the Sangar Straits, is the large Island of Yesso, a conquest and colony of the empire. Its form is that of an irregular triangle, and its area is computed at 30,000 square miles. The southern portion of the island of Krafto, or Sagalien, which is separated from Yesso by the Strait of Pouse, and the three southernmost of the Kurile Islands—Kunashir, Iturup, and Ourup—belong to Japan.

The small islands which surround these are generally rocky and barren, but occasionally rich and fruitful. The entire number of islands composing the empire of Japan is estimated at above 1000, and the area of the whole empire at not less than 170,000 square miles. The coasts are difficult of access, not only from the multitude of rocks and islets which beset the passages, but also from the severe gales which, more than any other part of the ocean, agitate these narrow seas. Several dangerous whirlpools also occur among the rocks. Kämpfer remarks, that nature seems to have designed these islands to be a sort of little world, secluded and independent from the rest, as well by rendering it dangerous to approach their shores, as by endowing them plentifully with every thing necessary for luxury and comfort, and thus enabling them to subsist without any commerce with other nations. The Japanese policy, which rigidly

forbids all intercourse with strangers, in other circumstances impracticable, has been greatly facilitated by the interposition of these natural barriers.

Climate.—The climate of Japan must vary considerably between its northern and southern extremities; but, except at a few points, we possess very little information on the subject. In the southern part of the empire, it is said in many respects to resemble that of England. At Nagasaki, in the island of Kiu-siu, lat. 33° , the average temperature in the month of January was 35° , and in August 98° of Fahr. At this point the weather is very changeable. Rain is frequent at all seasons of the year, but especially in the months of July and August. In December and January the ground is covered with hoar frost, and occasionally with snow, except in very mild winters. In summer the land is cooled by the sea-breeze, which blows from the south during the day, and from the east at night. At Simoda, on the island of Nipon, in north lat. $34^{\circ} 39' 49''$, east long. $138^{\circ} 57' 50''$, we learn, from the account of the American expedition (1852-54), that "the climate is more or less variable in the winter and spring. The presence of snow upon the lofty peaks, although there is seldom frost or snow at Simoda itself, and the not unfrequent rains, with the ever necessary fogs, give an occasional humidity and rareness to the atmosphere, which are chilling to the senses, and must be productive of occasional inflammatory diseases, such as are frequent in the spring and winter with us. The change of wind alternates often between the warm sea-breezes from the south, and the cold blasts from the snow-capped mountains inland, and produces the usual effects, doubtless, of such variations. In summer it is occasionally very hot in the daytime, but the nights are refreshed by the sea-breezes. From April 19 to May 13, a record of the thermometer gives 72° as the highest, and 58° as the lowest point; and of the barometer, $29^{\circ} 38'$ and 30° . As the season advances the mercury rises, no doubt, much higher, reaching probably 85° of Fahr., or more." Golownin, a Russian naval officer, who was for two years a prisoner at Hakodadi in Yesso (north lat. $41^{\circ} 49'$, east long. $140^{\circ} 47'$), describes its climate as follows:—"The ponds and lakes freeze, snow lies in the valleys and plains from November till April, and falls in as great abundance as at St. Petersburg. Severe frosts are indeed uncommon, yet the temperature is often two degrees below the freezing point. In summer the rain pours in torrents at least twice a week, the horizon is obscured by dark clouds, violent winds blow, and the fog is scarcely ever dispersed. Apples, pears, and peaches hardly attain ripeness, and the orange and lemon will not bear fruit." Of the climate of the still more northern part of the empire we have no precise account; but the same writer informs us that on the coast of Sagalien, which is but little further north than Paris, the sea is not clear of ice so early as the Gulf of Finland. Fogs are also, as might be expected, very prevalent in Japan, and thunderstorms are frequent.

Surface.—The surface of the principal islands is in general very irregular, though in the interior some plains of considerable extent occur. In many places hills descend close to the sea-shore, or leave only a narrow strip of land between the water and their bases. The highest mountain is said to be Fusi, an extinct volcano, on the island of Nipon, westward of the Bay of Yeddo. Its summit is clad in perpetual snow, thus indicating a height of not less than 12,000 feet above the level of the sea. Several mountains of considerable elevation are seen to rise in the northern part of Nipon, in Yesso, and in Sagalien, and some of them are active volcanoes. Besides the outbursts of frequent volcanic eruptions, no country is more frequently visited by destructive earthquakes. Kämpfer enumerates six active volcanic mountains. "Earthquakes," says he, "are so frequent that the natives

regard them no more than Europeans do ordinary storms." In 1586 a succession of earthquakes took place and lasted for 40 days, causing the destruction of the best part of the city of Yeddo, and the death, it is alleged, of 200,000 of its inhabitants. In 1783 the eruption of a volcano in the island of Kiu-siu, accompanied by violent earthquakes, destroyed in a single province 27 villages. Another volcanic eruption took place in the same island in 1793, accompanied by earthquakes which continued from March to June, and caused, according to official returns, the death of 53,000 persons, with a proportional destruction of property. On 23d December, 1854, an earthquake occurred which was felt on the whole coast. Of the town of Simoda only a few temples and private edifices, that stood on elevated spots, escaped destruction. The fine city of Osaca, on the south-eastern side of Nipon, was completely destroyed, and the capital Yeddo did not escape without injury. On 10th November, 1855, an earthquake at Yeddo is said to have caused the destruction of 100,000 dwellings and 54 temples, and the death of 30,000 persons.

Rivers.—The rivers are numerous, but short, shallow, and rapid. They are not navigable for vessels of burden, but some of them may be ascended by small boats for some miles from the sea. The principal lake of Japan is that of Oitz, in the southern part of the island of Nipon. It is about 60 miles in length, but of inconsiderable breadth.

Geology.—Little is at present known of the geological formation of the Japanese islands. The volcanic formation appears to prevail, but by no means to the exclusion of the plutonic and sedimentary. The useful mineral products, so far as yet known, are gold, silver, copper, quicksilver, tin, lead, iron, coal, sulphur, and salt. With the exception of tin and iron, these seem to be all very abundant. The gold is found in many parts of the empire, sometimes as ore, and sometimes from the washings of the earth or sand. Silver is equally plentiful with gold, and it is probable that the quantity of these metals annually exported from the country, when the trade was open, amounted in value to a million and a half sterling. Copper abounds through the whole group, and sometimes of a quality not to be surpassed by any in the world. The natives refine it, and cast it into cylinders about a foot long and an inch thick. A specimen analyzed by Dr. Percy gave 0.13 per cent. of nickel, 0.03 per cent. of iron, and extremely minute traces of tin and gold. The coarser kinds they cast into round lumps or cakes. Iron ore rich enough for the purpose of smelting appears to be confined to three provinces, and the metal is consequently dear. "Iron," says Kämpfer, "is much of a price with copper, iron tools being full as dear, or rather dearer, than those of copper or brass." The same is stated with respect to the proportional value of iron and copper by Golownin. Lead and quicksilver are said to be abundant, but they have never been articles of export. Tin has been discovered in small quantities, and of a quality so fine and white that it almost equals silver; but of the extent to which it may be procured little is known, as the Japanese do not attach much value to it. Zinc, according to Kämpfer, is not produced in Japan, and in his time calamine used to be imported from Tonquin for the manufacture of brass wares. Zinc, however, is expressly stated by the governor-general Baron Van Imhoff to be an article of export as well as brass. This was 50 years after Kämpfer's time. Sulphur, as might be expected in a region so volcanic, is very abundant. In some places it lies in broad deep beds, and may be dug up and removed with as much ease as sand. A considerable revenue is derived by the government from this source. Coal appears to be found in many parts of the country, and is used for fuel. Siebold speaks of it as being in common use throughout the country, and on visiting one of the mines he

saw enough to convince him that it was skilfully worked. Being bituminous, it is, for domestic purposes, generally converted into coke. Rock-salt seems to exist in some parts of the country, but does not appear to be much used, the culinary salt in use being made from sea-water by an unskillful and expensive process. By saturating masses of sand with sea-water in the sun, a strong lye is obtained, which is afterward boiled in earthen vessels, and yields an expensive and impure muriate of soda. No diamonds have been found, but agates, carnelians, and jaspers are met with, some of them of great beauty. Pearls, frequently of great size and beauty, are fished up on nearly all parts of the coast.

Vegetable Productions.—The vegetable productions of Japan are, for the most part, those common to temperate regions. Timber is, however, so scarce, that no one is permitted to cut down a tree without permission from the magistrate, and only on condition of planting a young one in its stead. The most common forest trees are the fir and cedar—the latter growing to an immense size, being sometimes more than 18 feet in diameter. In the northern parts of the empire two species of oak are found which differ from those of Europe. The acorns of one kind are boiled and eaten for food, and are said to be both palatable and nutritious. The mulberry grows wild in great abundance, and the varnish-tree (*rhus vernic*) abounds in many districts. In the south, the bamboo cane, though a tropical plant, is found either in the wild or cultivated state, and is largely used in the manufactures. The camphor-tree is of great value here, and lives to a great age. Siebold visited one which Kempter had described as having been seen by him 185 years before. It was healthy, and covered with foliage, and had a circumference of 50 feet. The country people make the camphor from a decoction of the root and stems cut into small pieces. Chestnut and walnut trees are both found. Among the fruit trees are the orange, lemon, fig, plum, cherry, and apricot.

Animals.—Extensive cultivation leaves no room for wild animals; and tame animals, not being used for food, are not multiplied beyond the felt necessity for their use. The horses are small, but hardy, active, and of good bottom. William Adams, an English mariner of the time of James I., describes them as "not tall, but of the size of our middling nags, short and well trust, small headed and very full of mettle, in my opinion far excelling the Spanish jennet in pride and stomach." Oxen and cows are only used in plowing and carriage, milk and butter not being used as articles of food. Buffaloes of an extraordinary size, with hunches on their backs, like camels, are used to draw carts and carry heavy goods on their backs. Sheep and goats were formerly kept at Firando by the Dutch and Portuguese, and might be bred in the country to great advantage if the natives were permitted to eat their flesh, or knew how to manufacture their wool. They have a few swine, kept chiefly for trading with the Chinese, among whom they are in great demand. Dogs are to be found in large numbers in the half domesticated state in which they generally exist in the East. This is not true, however, of one species, resembling somewhat an English spaniel, which is considered so valuable as to form part of every royal Japanese present. It is conjectured that the English variety may have sprung from some presented by the emperor to the king of England. The wild animals are bears, wild boars, foxes, monkeys, deer and hares. Rats and mice are very common, as well as two small species of weasel or ichneumon, which live, half tame, under the eaves of houses.

Wild fowl are very abundant, consisting chiefly of geese and ducks, which migrate in great numbers to the shores of Japan in winter. Numerous species of pigeons are to be found, and woodcocks, pheasants, snipes, larks, etc., are common. There are two spe-

cies of pheasant, and one of peacock, peculiar to Japan. Domestic poultry are kept by the natives almost solely for ornament or amusement. Some of the reptilia are of large size, and, along with the insect tribes, are dreaded for their deadly and destructive powers.

The shallow bays and creeks around the islands swarm with shoals of fish, which, indeed, constitute nearly the whole animal food of the Japanese, and furnish them plentifully with oil for domestic purposes. In their coarse taste, the intestines of the whale, and even the refuse of blubber, are considered good enough for food. The Japanese are the boldest and most expert of all Asiatic fishermen. Their fishing voyages extend to the rigorous seas of Sagalien and Kuriles in pursuit of herring, with which they manure their cotton fields. They are the only Asiatic people that pursue the whale. The women are said to be expert divers for shell-fish, with which the shores of Japan abound.

Natives.—The Japanese are described as an active, vigorous people, of the middling size, and their bodily and mental powers more closely assimilated to Europeans than Asiatics. The common people, according to Thunberg, are of a yellow color, which sometimes borders on brown, and sometimes on white. The laboring classes, from the exposure of the upper parts of their bodies in summer, have their naturally fair complexion deepened into brown. Their dark brown eyes are oblong, small, and sunk deep in the head. The eyelids forming a deep furrow gives them the appearance of being keen-sighted. Their heads are large, and their necks short, their hair black and glossy with oil. Their noses, without being flat, are yet rather thick and short. Dr. Ainslie gives a somewhat different account of their complexion. He represents them as perfectly fair, and indeed blooming, though this seems to apply chiefly to the women. Thunberg also mentions that the descendants of the oldest and noblest families of the princes and lords of the empire are somewhat majestic in their shape and countenance, being more like Europeans; and the ladies of distinction, who seldom go out in the open air without being covered, are perfectly white. Siebold, speaking of the inhabitants of Kiu-siu, corroborates this view, and says that "the women who protected themselves from the influence of the atmosphere have generally a fine and white skin, and the cheeks of the young girls display a blooming carnation." The married women of Japan dye their teeth black, by means of a corrosive composition, so powerful that by mere touch it burns the flesh into a purple gangrenous spot, and in spite of the utmost care in its application, invariably taints the gums, destroying their ruddy color and vitality. "The Japanese women, always excepting the disgusting black teeth of those who are married, are not ill-looking. The young girls are well formed, and rather pretty, and have much of that vivacity and self-reliance in manners which come from a consciousness of dignity, derived from the comparatively high regard in which they are held. In the ordinary mutual intercourse of friends and families the women have their share, and rounds of visiting and tea-parties are kept up as briskly in Japan as in the United States."—*American Expedition.*

Language.—Superficial observation led to the belief that Japan was colonized by the Chinese; but a more accurate knowledge of the physical characteristics and language of the people has rendered this opinion untenable. Indeed, the Japanese themselves consider it a high disgrace to be compared with the Chinese. Dr. Ainslie states that the only occasion on which he saw a Japanese surprised into a passion, and, forgetting his habitual politeness, lay his hand on his sword, was on a comparison being made between the two nations. The structure of the languages of the two countries is essentially different, that of Japan being polysyllabic, while all the dialects of the Chinese are monosyllabic.

It is true that, like the Latin in Europe during the middle ages, the mandarin dialect of the Chinese is in use among the learned here, as in Corea, Tonquin, and elsewhere; and hence many Chinese words have been introduced into the Japanese; but the introduction of these only makes the structural difference the more strikingly apparent. The *Yomi*, or primitive language of Japan, is used in poetry and works of light literature. The *Koye*, or Chinese language, slightly varied in pronunciation, is employed by the *bonzes* or priests in their religious books. The vulgar language of the country is a mixture of the two. Close affinities have not been traced between the *Yomi* of Japan and any other Asiatic language. By some, at least, it is thought to be most analogous to the languages of the Tartar race, to which, in spite of diversity in physical characteristics, it is now most commonly believed that the Japanese belong.

Population.—In regard to the population of Japan, all our information rests merely on conjecture. Some authorities estimate it at more than 10,000,000, while others make it more than four or five times that amount. All travelers who have visited the country bear testimony to the populousness of the parts visited by them. Thus, Kämpfer, who passed four times over that part of the country between Nagasaki and Yeddo, says—"The country is populous beyond expression, and one would scarce think it possible that, being not greater than it is, it should nevertheless maintain and support such a vast number of inhabitants. The highways are an almost continued row of villages and burghs. You scarce come out of one but you enter another; and you may travel many miles, as it were, in one street without knowing it to be composed of different villages but by the different names that were formerly given them, and which they afterward retain though joined to one another. It has many towns, the chief whereof may vie with the most considerable in the world for largeness, magnificence, and the number of inhabitants."

The men of all classes are exceedingly courteous, and although inquisitive about strangers, never become offensively intrusive. The lower people are evidently in great dread of their superiors, and are more reserved in their presence than they would be if they were left to their natural instincts. The rigid exclusiveness in regard to foreigners is a law merely enacted by the government from motives of policy, and not a sentiment of the Japanese people. Their habits are social among themselves, and they frequently intermingle in friendly intercourse. "The Japanese," says Kämpfer, "are very industrious and inured to hardships. Very little will satisfy them. They generally live on plants and roots, tortoises, shell-fish, sea-weeds, and the like. Water is their common drink. They go bare-headed and bare-legged. They wear no shirts; they have no soft pillows to lay their heads on, but sleep on the ground, laying their heads, instead of a pillow, on a piece of wood, or a wooden box somewhat depressed in the middle. They can pass whole nights without sleeping, and suffer all manner of hardships." The following apparently very correct picture of this people is given by an anonymous writer of the reign of Elizabeth: "The inhabitants show a notable wit and an incredible patience in suffering, labor, and sorrows. They take great and diligent care lest either in word or deed they should show their fear or dullness of mind, and lest they should make any man (whosoever he be) partaker of their troubles and wants. They covet exceedingly honor and praise; and poverty with them bringeth no damage to nobility of birth. They suffer not the least injury in the world to pass unrevenged. For gravity and courtesy they give not place to the Spaniards. They are generally affable and full of compliments. They are very punctual in the entertainment of strangers, of whom they will curiously inquire even trifles of foreign people, as

of their manners, and such like things. They will as soon lose a limb as omit one ceremony in welcoming a friend. They used to give and receive the cup at one and the other's hands, and before the master of the house begins to drink, he will proffer the cup to every one of his guests, making show to have them begin. Fish, roots, and rice are their common junkets; and if they chance to kill a hen, duck, or pig, which is but seldom, they will not, like churls, eat it alone, but their friends will be partakers of it. Although essentially an abstemious and sober people, they are not averse occasionally to strong potations."

The Japanese laws are very short and intelligible, and the proceedings under them are as simple as the laws themselves. There are no professional lawyers, every man being deemed competent to plead his own cause. If a party is aggrieved, he appeals to the magistrate, who summons the other party before him. The case is then stated by the complainant in his own way, and the accused is heard in reply. The magistrate examines witnesses, and is said frequently to display great acuteness in the detection of falsehood. He passes sentence, from which there is no appeal, and it is carried into execution *instantly*. If the matter in dispute be of great importance, the magistrate may refer it to the emperor in council. Sometimes in trifling cases he orders the parties to go and settle the matter privately with the aid of their friends, and it is well understood that the matter must be settled, or unpleasant consequences will result. See *Ency. Brit.*, 1856; De Bow's *Review*, ix.

Revenue.—The great source of revenue in Japan is the rent of land, with an impost on houses, in the manner of a ground rent. There appears to be no tax on articles of consumption, no capitation tax, and no transit duties. The cultivators of the soil appear to be mere villeins, simply occupants cultivating as metayers. In lands belonging to the crown, the proportion of the crop considered rent is four parts in ten, and in the rest six in ten, most commonly the latter. These proportions apply to every kind of crop—corn, pulses, and cotton. The land, in order to determine the rent, is surveyed by sworn appraisers twice a year, once before the seed is sown, and again immediately before harvest. Those that cultivate untilled ground have the whole crop for two or three years. Among their many excellent laws relating to agriculture, one is, that whosoever does not cultivate his ground for the term of one year forfeits his possession. It would appear, from the proportion of crop taken as rent, that the impost on the land does not materially differ from that assumed as land-tax under the Mohammedan government of Hindoostan, and continued in some places by ourselves. This will enable us to make an approximate estimate of the rental of Japan—that is, of the principal source of its public income. This, of course, will suppose a similar condition of society and rate of population in Japan and the country with which it is compared. Let us take, therefore, the same Indian territories by which we have attempted to estimate the population. These have, in round numbers, a population of 46,000,000, and yield a land-tax of £10,000,000. This proportion would give to Japan, with its estimated population of 40,000,000, a rental of nearly £8,700,000 to be divided between the imperial governments, feudatory princes, hereditary nobles, and the soldiery.

To the rent of lands is to be added the ground-rent of the houses, which is said to be at the rate of 1s. 8d. for each fathom of frontage, without regard to depth, unless it exceed 15 fathoms, when the rate is doubled. Whether the impost applies to all houses, wherever situated, or only to those in towns, is not stated; but if the former be the case, estimating each house to have an average of five inhabitants, and also five fathoms of frontage, would give the income from this source at more than £3,300,000, or, adding this to the land-rent,

would make the annual revenue of the empire about £12,000,000.

The Japanese being chiefly dependent on the soil for subsistence, have arrived at a high state of perfection in the arts of agriculture. Though a great part of the country is hilly or mountainous, and the soil in general rather poor, yet almost every available foot of land is cultivated, and very abundant crops are raised. Where the land is inaccessible to the plow it is cultivated by manual labor. Like the Chinese, they pay great attention to manuring and irrigation. As animal food constitutes hardly any part of their subsistence, no pastures or meadows are to be seen. Rice constitutes the main object of agriculture, as it forms the bread corn of the people from one end of the empire to the other. Its cultivation extends to the island of Yesso, and as far north as 45 degrees of latitude. The rice of Japan is known to excel every other in Asia, and this may not be owing exclusively to its skillful cultivation, but partly to the climate and the distance of Japan from the tropics. From it the inhabitants distill a drink called *saki* (a kind of rice beer), in very general use. Wheat and barley are grown, but the former is not in much use, and the latter is the chief provender of cattle. Rye, maize, panic, millet, and the *Cynosu-rus cororanus* are also raised. Beans and peas of different kinds are cultivated in great abundance, particularly the bean *Dolichos soja*, from which *soy*, a kind of sauce, prepared by boiling and fermentation, is made. Among esculent roots and pot-herbs the following are successfully cultivated: the bata, the potato, carrot, turnip, cabbage, radish, lettuce, gourd, melon, and cucumber. The fruits are generally those of Europe, as the orange, lemon, peach, fig, pear, chestnut, walnut, and cherry.

The tea-plant in Japan, as in China, takes the place of the vine in the temperate regions of the west, and of the coffee in tropical countries. "The tea shrub," says Kämpfer, "is one of the most useful plants growing in Japan, and yet it is allowed no other room but round the borders of rice and corn fields, and in other barren places unfit for the culture of other things." In a few places the plant, according to Siebold, receives more attention; generally, however, hardly as much as our hawthorn hedges, and thus the leaves are unfit for the consumption of strangers. Its use, however, is universal among the natives. It was introduced into this country from China in the ninth century. Tobacco was first introduced by the Portuguese in the early part of the 16th century, about the same time that it was introduced into England, and it is remarkable that the Japanese emperor instituted a persecution against its growers and smokers at the same time that King James issued his *Counter Blast*, and with as little effect in arresting its use. The plants cultivated in Japan for textile purposes are cotton and hemp in the northern islands. The mulberry is grown for the silk-worm. In husbandry cotton ranks next in importance to rice, and furnishes materials for clothing the great mass of the people.

Manufactures.—In the manufacture of cotton fabrics the Japanese display considerable skill, but in this respect they do not equal the Hindoos. Their best silk is said to be superior to that of China. In the manufacture of porcelain, too, they are said by some to excel the Chinese. Specimens of great beauty and delicacy, at least, have been produced, though some assert that, owing to the exhaustion of the best clay, such articles can no longer be manufactured. Like the Chinese the Japanese have long practiced the manufacture of paper and glass. Formerly they did not know how to make the flat pane for window glass, and probably what they do make is of an inferior quality, as they still purchase thick mirror glass from the Dutch, to grind into lenses. Paper they manufacture in great abundance, as well for writing and printing as for tapestry, handkerchiefs, etc. It is made of very

various qualities, and some of it is as soft and flexible as cotton cloth. Indeed, that used for handkerchiefs might be mistaken for cloth, so far as toughness and flexibility are concerned. This paper is made of the bark of the mulberry (*Morus papyrifera*) by means of the following process: In December after the tree has shed its leaves, they cut off the young shoots, about three feet in length, and tie them up in bundles. They are then boiled in a lye of ashes in a covered kettle, till the bark is so shrunk that half an inch of the wood may be seen projecting at either end of the branch. When cool the bark is stripped off, and soaked in water for three or four hours until it becomes soft, when the exterior black cuticle is scraped off with a knife. The coarse bark, which is full a year old, is then separated from the fine, which covered the younger branches, and which makes the best paper. The bark is then boiled again in clear lye, continually stirred with a stick, and fresh lye from time to time added, to make up for the evaporation. It is then carefully washed at a running stream, by means of a sieve, and incessantly stirred until it becomes a fine pulp. For the finer kinds of paper this process is repeated, a piece of linen being substituted for the sieve. After being washed, it is beaten with sticks of hard wood on a wooden table, till it is brought to a pulp, which is put into water and dissolved and dispersed like meal. This is put into a small vessel with a decoction of rice and a species of *Hibiscus*, and stirred until it has attained a tolerable consistence. It is then poured into a larger vessel, whence it is taken out, and put in the form of sheets in mats or layers of grass straw. These sheets are laid one upon another, with straw between, and pressure is applied to force the water out. After this they are spread upon boards in the sun, dried, cut, and gathered into bundles for sale and use. The well-known lacquer ware to which Japan has given name, is unequalled for beauty and durability by that of any other nation. We have ourselves of late years imitated, but certainly not equalled it. They display considerable skill in working the metals. In wood work, caskets, cabinets, and the like, they are unsurpassed. Some of their swords are said to be equal to the finest Damascus blades; and Golownin states that their carpenters' and cabinet-makers' tools are equal in temper to those of a similar kind in England. They are exceeding quick in observing any improvement brought in among them by foreigners, and copy it with great skill and exactness. Clocks, watches, and astronomical instruments are made by them, copied from European models.

Arts.—In certain branches of the fine arts the Japanese have attained no small skill. They are ignorant of anatomy and perspective, and therefore barbarous in their sculptures and landscapes; but in the representation of a single object they manifest great accuracy of detail, and a truthful adherence to nature. Architecture, as an art, can hardly be said to have an existence—their temples, palaces, and private houses being all low and temporary structures, generally of wood; and the frequency of earthquakes leads them to bestow less care on their buildings than in other circumstances they might do.

Trade.—The Japanese carry on a large internal traffic, which, from the peculiar characteristics of their country, is in a great measure by coasting. The numerous straits and creeks, with their shallow waters, though generally unfit for ships of burden, are sufficiently commodious for the small craft of the Japanese, which rarely exceed 60 tons burden. The inland transport is by horses, oxen, and porters, there being very little river or canal navigation. Kämpfer, who, however, refers to the busiest parts of the country, that between the chief port Osaco and the two capitals, speaks of its commercial activity as follows: "How much is carried on between the several provinces of the empire! How busy and industrious the

merchants are everywhere! How full their ports of ships! How many rich and mercantile towns up and down the country! There are such multitudes of people along the coasts and near the sea-ports; such a noise of oars and sails and numbers of ships and boats, both for use and pleasure, that one would be apt to imagine the whole nation had settled there, and all the inland parts were left quite desert and empty." This was said 160 years ago, and it may be safely assumed that the uninterrupted peace which the country has since enjoyed has not impaired its commercial prosperity. That the Japanese are a commercial people may be inferred from the order, neatness, and propriety with which every thing connected with their trade is conducted. They have gold, silver, and copper money, as well as bills of exchange. Their shops have signs, and their goods are packed and labeled with a truly mercantile care and neatness.

The foreign intercourse of Japan was, more than two centuries, and till within the last few years, solely confined to the Dutch and Chinese. Even with these the trade was limited, being with the Dutch for a considerable time restricted to a single ship annually, and with the Chinese to ten junks. The exports and imports were even limited as to value, and the sales and purchases fixed by a tariff of the Japanese government. The Dutch were confined to the small island of Desima, in the harbor of Nagasaki, which is only about 640 feet in length by 240 in extreme breadth. A small stone bridge connects the island with the town of Nagasaki, and a strong Japanese guard was always stationed here, no one being allowed to pass either to or from the island without license. The whole island is surrounded with a high fence, on the top of which are placed iron spikes. On the north side are two water-gates, which were kept always shut, except to admit or let out the Dutch vessels. When a ship arrived her guns and ammunition were first taken out, and she was afterward searched in every part, and an exact list made of every thing on board. The crew were then permitted to land on the island, where they were kept, as long as the ship remained, under the inspection of guards. Every Japanese official at the Dutch factory was bound twice or thrice a year to take a solemn oath of renunciation and hatred of the Christian religion, and was made to trample crosses and crucifixes under his feet. The Dutch were at all times surrounded by Japanese spies, whom they were obliged to employ as interpreters, clerks, servants, etc.

As the empire is again in some measure thrown open to foreign intercourse, it may not be unprofitable to speculate on the nature and value of a trade with it. The commodities which have been chiefly in demand in Japan, are iron, steel, lead, tin, quicksilver, cinnabar, sapan-wood, black pepper, cloves, nutmegs, sugar, putchuk, deer-skins, ivory, Chinese and Tonquin raw silk, Indian cotton goods, cotton yarn, mirrors and other glass ware, and English woollens. At one time or another all these articles found a market in Japan, and most of them are imported by the Dutch and Chinese at the present time. In a free trade, or any approach to it, with Japan, we may suppose that iron and steel, high-priced commodities there, would become staple imports. The climate would give rise to a consumption of woollens; and although the Japanese are clothed in their own cotton, judging from what has taken place in India, where both the raw and wrought articles are cheaper than in Japan, we may infer that cotton fabrics might be imported with advantage. Cotton yarn or twist has long been one of the regular articles of import, although it was long the high-priced manufacture of Java spun with the distaff that was imported. Mirrors and glass ware would, no doubt, find a ready market. Sugar would certainly be in demand, as Japan produces none; and the same may be said of nearly all kinds of spices and dyes.

woods. Even cotton wool and rice might be occasionally imported, as they are regularly into China. According to M. Caron, whose information refers to 1636, or the period preceding the last persecution, the European nations imported annually into Japan from 540,000 to 675,000 lbs. of Chinese raw silk, 200,000 deer-skins, and 100,000 other kinds of peltry.

With respect to the exchangeable products from Japan, gold, silver, and copper were largely exported when the trade was open. While the Dutch were carrying on their trade at Firando, and still unrestricted, they exported annually gold to the value of £170,000, and silver to from £330,000 to £385,000. But the Spanish and Portuguese trade was free at the same time, and these nations are stated to have exported more largely, so that we may conclude that a million and a half of the precious metals were, from near the beginning to near the middle of the 17th century, exported from Japan. Of copper, the Dutch exported in some years as much as 1800 tons. Most important, however, in this part of the world will be the supply of coal, which the islands are said to furnish abundantly. It will also be seen from what we have already said of the productions of the country, that there are many things among them that may become valuable as exports, while a demand for other articles will no doubt lead to their introduction as subjects of trade.

After the expulsion of the Portuguese in 1639, and before the restrictions were so stringent as they afterward became, the entire value of the foreign trade was estimated by the Dutch governor-general, the Baron Van Imhoff, at £333,000; while in his own time (1744) it had declined to £264,583, of which one third only was Dutch, the rest being Chinese. In 1805 the cargoes of two ships laid in at Batavia, were sold in Japan for £35,416, with which, or rather with the balance after deducting heavy local charges, copper and camphor were purchased, which in Batavia sold for £195,733. The adventure of next year was neither so large nor so prosperous, for the outward cargo brought in Japan only £24,325, and the return cargo of copper and camphor produced when sold in Batavia only £101,644. These favorable speculations however, arose entirely from the enormous war prices for copper and camphor. Since then the trade has become still smaller, and, as already stated, is confined to a single ship. In the earlier period of its trade Japan was not only free to all the world, but was not even burdened with imposts on either ship or cargo; presents, however, required to be made to the emperor, the provincial governors, and one or two other parties.—E. B.

Money.—Accounts are kept in taels, mace, and candarines; 10 candarines make 1 mace, and 10 maces 1 tael. The Dutch reckon the Nangasaki tael at $3\frac{1}{2}$ florins, equal to about 6s. 2d. The gold coins current are the new and old itjib and cobangs, or copangs; the silver coins are, the nandiogin, itaganne, and kodama. They are in general very simple, struck plain and unadorned, the greatest part of them without any rim round the margin, and most of them without any determined value. For this reason they are always weighed by the merchants, who put their chop or stamp upon them, to signify that the coin is standard weight and unadulterated. The new cobangs are oblong, rounded at the ends and flat, about 2 inches broad, scarcely thicker than an English farthing, of a pale yellow color; the die on one side consists of several cross lines stamped; and at both ends there is a rectangular figure, with raised letters on it, and, besides, a moonlike figure, with a flower on it in relief. On the other side is a circular stamp, with raised letters on it; and within the margin, toward one end, two smaller sunk stamps with raised letters, which are different on each cobang; they are valued at 60 mace.

There are old cobangs occasionally met with, which are of fine gold, somewhat broader than the new. The old cobang weigh 371 Dutch asen, or 275 English grains, and the gold is said to be 22 carats fine, which would give 44s. 7d. for the value of the old cobang. But the Japanese coins are reckoned at Madras only 87 touch, which is 20, 22, 25 carats; this reduces the old cobang to 41s. 10d. The new cobang weigh 180 grains; the gold is about 16 carats fine, and the value 21s. 8d. The oban is thrice the value of the cobang. The itjib is called by the Dutch golden bean, and is made of pale gold, of a parallelogramical figure, and flat, rather thicker than a farthing, with many raised letters on one side, and two figures or flowers in relief on the other; the value of this is half of a cobang. There are old itjibs also to be met with; these are thicker than the new ones, and in value 22 mace 5 candarines. Nandiogin is a parallelogramical flat silver coin, of twice the thickness of a halfpenny, 1 inch long and $\frac{1}{2}$ inch broad, and formed of fine silver. The edge is stamped with stars, and within the edges are raised dots. One side is marked all over with raised letters; and the other on its lower and larger moiety, is filled with raised letters, and at the same time exhibits a double moonlike figure. Its value is 7 mace 5 candarines.

Itaganne and kodama are denominations by which various lumps of silver, without form or fashion, are known, which are neither of the same size, shape, nor value. The former of these, however, are oblong, and the latter roundish, for the most part thick, but sometimes, though seldom, flat. These pass in trade, but are always weighed in payment from one individual to another, and have a dull leaden appearance. Seni is a denomination applied to pieces of copper, brass, and iron coin, which bear a near resemblance to our old farthings. They differ in size, value, and external appearance, but are always cast, and have a square hole in the middle, by means of which they may be strung together; and likewise have always broad edges. Of these are current, sjumon seni, of the value of 4 common seni, made of brass, and almost as broad as a halfpenny, but thin. The common seni are the size of a farthing, and made of red copper; 60 of them = 1 mace. Doosa seni is a cast iron coin, in appearance like the last, of the same size and value, but is so brittle that it is easily broken by the hand, or breaks in pieces when let fall on the ground. The seni are strung 100 at a time, or as is most commonly the case, 96 on a rush. The coins in one of these parcels are seldom all of one sort, but generally consist of 2, 3, or more different kinds; in this case, the larger ones are strung on first, and then follow the smaller; the number diminishing in proportion to the number of large pieces in the parcel, which are of greater value than the smaller. The schuit is a silver piece of 4 oz. 18 dwts. 16 grs. Troy, and is 11 oz. fine, which gives it value £1 5s. 3d. The name is Dutch, referring, probably, to its shape, like a boat.

Weights.—These are the candarine, mace, tael, catty, and picul, thus divided:

10 candarines	=	1 mace.
10 mace	=	1 tael.
16 taels	=	1 catty.
100 catties	=	1 picul.

The picul = 125 Dutch lbs., or 133½ lbs. avoirdupois. It is, however, said to weigh only 130 lbs.

Measures.—The revenues of Japan are estimated by two measures of rice, the man and koif; the former contains 10,000 koifs, each 8000 bales or bags of rice. The long measure is the inc, which is about 4 Chinese cubits, or 6½ feet English nearly; and 2½ Japanese leagues are computed to be about 1 Dutch league.—*MILBURN'S Orient. Com.*

The principal, or more important towns of the empire, are Yedo (or Jeddo), Mijako (or Kio), etc.; Nangaski, Saga, Kokura, etc.; Simoda, Kotsi, Takamutsi, etc.; Hakodade, Matsumae, etc.

Commercial Intercourse.—At an early period the Portuguese founded a settlement, and established trade with the Japanese, having succeeded in winning the favor of several of the native princes, through the instrumentality mainly of Christian missionaries. In 1642, Fernando Mendez Pinto, a Portuguese, embarked in a junk from Macao to Lew-Chew; but encountering adverse winds, he was driven to one of the western islands of the Japanese archipelago. About the same period, the celebrated Xavier arrived at Goa, and, proceeding soon after to Koyosima, made so favorable an impression on the Prince of Satsuma that an active and profitable intercourse at once sprung up between the western ports of Japan and Macao. This intercourse continued uninterrupted during a period of nearly 40 years, when an edict was issued permitting the Portuguese to continue their trade as before, but forbidding them to bring any more missionaries, or even to speak on religious subjects. In 1635, under the reign of Yeye Mitson, a prison was constructed off Nangasaki, and all the Portuguese found in the country were there confined, and the commercial privileges which they had so long enjoyed were transferred to the Dutch, who were generally believed to be the instigators of the severe measures put in force against the Portuguese. A sanguinary battle between the Portuguese and native Christians, amounting to 38,000 men, on the one side, and the Dutch, and such of the natives as sympathized with them in their hostility to the Portuguese, on the other, was the result of these rigorous measures. The former fortified themselves in Simabara, and the latter made their attack under the command of the Dutch director Kockebecke. The fortress was soon reduced, and the Portuguese, rather than submit to their rivals, to whom they attributed all the misfortunes that had befallen them, perished to a man. An edict was immediately published, forbidding the Portuguese to enter the country. The intelligence of these proceedings soon reached Macao, and four of the most distinguished citizens were sent to conciliate the favor of the government of Japan. They arrived at Nangasaki in 1640, and were immediately put under arrest, and condemned to death for entering the country in violation of the edict. The following inscription, written, it is said, by the Dutch director, Kockebecke, was placed on their grave: "So long as the sun shall warm the earth, let no Christians be so bold as to come to Japan; and let all know, that the King of Spain himself, or the Christian God, or the Great Saca, if he violate this command, shall pay for it with his head." The Portuguese have never since been permitted to renew their intercourse with Japan.

The first formal edict in favor of the Dutch was issued in 1611, and the privileges of trade which were then conceded have continued, modified at various times, to the present day. In the earlier period of this trade, return cargoes consisted chiefly of silver and gold, Japanese copper being then but little known in Europe. This latter article, however, soon became one of the leading staples of Japanese export trade. In a work, entitled "Notes of the Voyage of the Morrison from Canton to Japan," published in 1839, the following reference to the Dutch trade at this period is made: "The Dutch were now left in sole possession of the trade with Japan; and, since that time, it is well known, their monopoly has never been disturbed. Their subsequent political intercourse has been limited to an occasional mission from Batavia, and the visits of the Dutch chief of the factory to Yedo, formerly made annually but now once in four years. Charlevoix mentions embassies in 1664, 1656, and 1659. It was while the second of these missions was at Yedo, that two thirds of that city and 100,000 of its population were destroyed by fire. It remains to trace, briefly, the use the Dutch have made of the monopoly to which they have so long aspired. Of the assortment

and value of their import cargoes, in the 17th century, we have little or no account. Their returns had been in silver, chiefly, until 1641, when the directors of the Company suggested returns in gold. Japanese copper was at this time in little estimation in Europe, because little known; but afterward, on a rise in value, it became an important return. The first order for 20,000 piculs was sent out in 1655."

Various restrictions and prohibitions have been, from time to time, imposed upon Dutch commerce by the Japanese authorities. The imports and exports were limited, and the number of vessels was finally restricted to four, three, and two, as before the late treaty. The profits realized by the Dutch from this trade have never been accurately ascertained. The author already cited, referring to the restrictions imposed by the Japanese government, remarks: "Under these circumstances, the trade, which had yielded an annual profit of 500,000 to 600,000 florins for the 30 years previous [to 1714], would no longer pay the charges." Efforts have been made, at different periods, by the English and French governments, as well as by that of the United States, to open commercial intercourse with Japan; but, with the exception of the very limited concessions granted by the treaty of 31st March, 1854, between the United States and Japan, and concessions nearly similar allowed to the British, by treaty, subsequently ratified, and the privileges granted to the Dutch by the treaty of 1855, without success. Some years since, Russia endeavored to establish commercial relations with Japan; but the proposal was declined, and the envoys were ordered not to return again on pain of death.

The treaty, already referred to, between the United States and Japan, which was concluded March 31, 1854, ratified August 7, 1854, exchanged February 21, 1855, and proclaimed June 22, 1855, is as follows: "The United States of America and the empire of Japan, desiring to establish firm, lasting, and sincere friendship between the two nations, have resolved to fix, in a manner clear and positive, by means of a treaty or general convention of peace and amity, the rules which shall in future be mutually observed in the intercourse of their respective countries; for which most desirable object the President of the United States has conferred full powers on his commissioner, Matthew Galbraith Perry, special ambassador of the United States to Japan, and the august Sovereign of Japan has given similar full powers to his commissioners, Hayashi, Daigaku-no-kami, Ido, prince of Tsus-Sima, Izawa, prince of Mima-saki, and Udono, member of the board of revenue. And the said commissioners, after having exchanged their said full powers, and duly considered the premises, have agreed to the following articles: Article I. There shall be a perfect, permanent, and universal peace and a sincere and cordial amity between the United States of America on the one part, and the empire of Japan on the other part, and between their people respectively, without exception of persons or places. Article II. The port of Simoda, in the principality of Idzu, and the port of Hakodade, in the principality of Matsumai, are granted by the Japanese as ports for the reception of American ships, where they can be supplied with wood, water, provisions, and coal, and other articles their necessities may require, as far as the Japanese have them. The time for opening the first-named port is immediately on signing this treaty; the last-named port is to be opened immediately after the same day in the ensuing Japanese year. [Note.—A tariff of prices shall be given by the Japanese officers of the things which they can furnish, payment for which shall be made in gold and silver coin.] Article III.—Whenever ships of the United States are thrown or wrecked on the coast of Japan, the Japanese vessels will assist them, and carry their crews to Simoda, or Hakodade, and hand them over to their coun-

trymen appointed to receive them; whatever articles the shipwrecked men may have preserved shall likewise be restored, and the expenses incurred in the rescue and support of Americans and Japanese who may be thus thrown upon the shores of either nation, are not to be refunded. Article IV.—Those shipwrecked persons and other citizens of the United States shall be free as in other countries, and not subjected to confinement, but shall be amenable to just laws. Article V.—Shipwrecked men and other citizens of the United States, temporarily living at Simoda and Hakodade, shall not be subject to such restrictions and confinement as the Dutch and Chinese are at Nagasaki, but shall be free at Simoda to go where they please within the limits of seven Japanese miles (or *ri*) from a small island in the harbor of Simoda, marked on the accompanying chart hereto appended; and shall in like manner be free to go where they please at Hakodade, within the limits to be defined after the visit of the United States' squadron at that place. Article VI.—If there be any other kind of goods wanted, or any business which shall require to be arranged, there shall be careful deliberation between the parties in order to settle such matters. Article VII.—It is agreed that ships of the United States resorting to the ports open to them shall be permitted to exchange gold and silver coin and articles of goods for other articles of goods, under such regulations as shall be temporarily established by the Japanese government for that purpose. It is stipulated, however, that the ships of the United States shall be permitted to carry away whatever articles they are unwilling to exchange. Article VIII.—Wood, water, provisions, coal, and goods required, shall only be procured through the agency of Japanese officers appointed for that purpose, and in no other manner. Article IX.—It is agreed that if at any future day the government of Japan shall grant to any other nation or nations, privileges and advantages which are not herein granted to the United States and the citizens thereof, that these same privileges and advantages shall be granted likewise to the United States and to the citizens thereof, without any consultation or delay. Article X.—Ships of the United States shall be permitted to resort to no other ports in Japan but Simoda and Hakodade, unless in distress or forced by stress of weather. Article XI.—There shall be appointed by the government of the United States consuls or agents to reside in Simoda, at any time after the expiration of 18 months from the date of the signing of this treaty: provided that either of the two governments deem such arrangement necessary."

The harbor of Simoda is near the south-eastern extremity of the peninsula of Idzu, and affords a safe and capacious anchorage. Hakodade lies on a spacious and beautiful bay of that name, and, for accessibility and safety, is one of the finest in the world—capable, says the *Hong Kong Register*, of holding all the fleets of the Pacific in security.

Port Regulations of Simoda.—Three natives have been appointed pilots for American vessels entering or departing from the port of Simoda, and the following rates of pilotage have been established by the proper authorities, viz.: Vessels drawing over 18 feet, pay \$15; over 13 feet, and less than 18 feet, \$10; under 13 feet, \$5.

"These rates shall be paid in gold or silver coin, or their equivalent in goods; and the same shall be paid for piloting vessels out, as well as into port. When vessels anchor in the outer roads, and do not enter the inner harbor, only half the above compensation shall be paid to pilots. A look-out place shall be established at some convenient point, from which vessels appearing in the offing can be seen and reported; and when one is discovered, making apparently for the harbor, a boat shall be sent to her with a pilot. And in order to carry this regulation into full effect, boats of suitable size and quality shall always be kept in

readiness by the harbor-master, which, if necessary, shall proceed beyond Rock Island, to ascertain whether the vessel in sight intends entering the harbor or not. If it may be the desire of the master of the said vessel to enter the port, the pilot shall conduct her to safe anchorage, and, during her stay, shall render every assistance in his power in facilitating the procurement of all the supplies, he may require. The prices for supplying water to American vessels at Simoda shall be 1400 cash* per boat-load (the casks being furnished by the vessel). And for wood delivered on board, about 7200 cash per cube of 5 American feet."

The foregoing is a full summary of the concessions granted to American intercourse by the treaty with Japan of March 31st, 1854. As a means of opening commercial relations with that empire, its provisions have proved inefficient; but, before submitting any notice of facts that have come to knowledge of the Department relative to this subject, it is deemed appropriate to give the leading provisions of the treaty entered into by Great Britain with Japan. The first article of this treaty opens the ports of Nangasaki and Hakodade to British vessels to repair and obtain supplies only. It opens all parts of these ports; but, as respects anchorage, vessels must conform to the instructions of the local government. Safe and commodious places are to be designated for the repair of vessels. Workmen, material, and other necessary supplies to be furnished by the local government, in accordance with a tariff to be agreed upon, which shall regulate the manner of payment. All official communications to be conducted in the English language, as soon as the Japanese shall have acquired a knowledge of that language. A place to be reserved as a burial-ground for the English at Medsuma Sima, which will be inclosed by a stone wall and suitably protected. The second article stipulates that at each of the ports of Nangasaki and of Hakodade, the regulations of the port shall be observed; but the Japanese government will see that these regulations shall be such as to create no difficulties and interpose no obstacle whatever to the general object of the treaty, which is essentially designed to facilitate amicable relations between Great Britain and Japan.

The third article declares that only vessels in distress or dismantled can enter other ports than Nangasaki and Hakodade, without permission of the Japanese government; but ships of war possess, as a necessary attribute of their public character, the general right to enter all the ports of friendly powers; while, however, this right shall suffer no prejudice or restriction, the vessels of war of her Britannic majesty will not enter any other than open ports, without necessity, nor without offering proper explanations to the imperial authorities. The fourth article provides that British ships and subjects in Japanese ports shall conform to the laws of Japan; and that if any subordinate British subjects commit offenses against the laws, they shall be delivered to their own officers for punishment; and that if superior officers, or commanders of ships, shall break the laws, it will lead to the closing of the ports specified: but it is not intended by this article that any acts of individuals, whether high or low, previously unauthorized or subsequently disapproved of by her majesty the Queen of Great Britain, can set aside the convention entered into with her majesty alone by his imperial highness the Emperor of Japan. The fifth article secures, in the fullest sense, to British ships and subjects, in every port of Japan, either now open or hereafter to be opened, an equality, in point of advantage and accommodation, with the ships and subjects or citizens of any other nation, without prejudice, however, to any peculiar privileges hitherto conceded to the Dutch and Chinese in the port of Nangasaki.

* 600 copper cash are equal to 43 cents (arbitrary value). The currency of Japan is similar to that of China, in which 1 tael = 10 maoe = 100 candareens = 1000 cash = \$1.48 U. S. currency.

If, therefore, any other nation or people be now, or hereafter, permitted to enter other ports than Nangasaki and Hakodade, or to appoint consuls, or to open trade, or to enjoy any advantage or privilege whatever, British ships and subjects shall, as of right, enter upon the enjoyment of the same. The sixth article declares that the convention shall be exchanged at Nangasaki, on behalf of her majesty the Queen of Great Britain, and on behalf of his highness the Emperor of Japan, within 12 months from the 14th day of October, 1854.

The governor of Nangasaki communicated, in October, 1854, to Sir James Sterling, the following standing port regulations: ARTICLE 1. Ships shall anchor within two sima, and there await the direction of the governor. 2. No fire-arms are to be discharged. 3. No person to land on any of the islands. 4. No soundings to be taken, nor boats to be pulling about. 5. Should any communications be desired, a boat of the upper officers shall be called; but no communication shall be held with merchant boats, and no exchange of articles take place, or trading of any sort.

The above being, according to the law of Great Japan, all commanders and other officers shall obey the same, and orders shall be given to the crew that the aforesaid law shall not be broken.

An arrangement, made subsequently to the convention with Great Britain, requires that British ships, intending to visit Japan, shall be provided with a document in proof of their nationality, and as a check upon the conduct of vessels in Japanese ports; and her majesty's government has directed a form of certificate of registration to be adopted, which has been accepted as satisfactory by the Japanese authorities; and merchant ships arriving in Japanese ports are to submit their certificate of registration to the officers to be appointed by the Japanese authorities, and to permit them to make such extracts from it as may seem good to them, before such ships can be admitted to obtain repairs and supplies. Her majesty's ships of war are not to be provided with such documents; but the officers in command, upon proper application, will afford all reasonable information regarding their ships.

Holland has also recently formed a provisional treaty with Japan, but it is stated that the Dutch government withholds it from publication. The Singapore papers give the following summary of its provisions: "The Dutch are no longer limited to Decima, but may freely resort to Nangasaki and the immediate neighborhood. The island of Decima is placed at the disposal of the Dutch, and the buildings thereon sold to Holland. This island will serve as an entrepôt for the Dutch, where they can land their goods without payment of duties or search. The keys of the water-gates and of the entrepôt warehouses will remain with the Dutch chief factor. The usual duties will not be exacted until goods are brought to Nangasaki. The trade with the Dutch government remains on the former footing. Free exercise of religion and right of burial is conceded to the Dutch. There shall exist, henceforward, freedom of communication with other ships entering or departing from the roads. A definitive treaty is to be hereafter concluded; but, until that takes place, the present agreement is to be considered in force."

The above is, in substance, all that has been published relative to the convention between Holland and Japan; but, until the definitive treaty, alluded to in the last paragraph, shall have been entered into, the intercourse between the two countries will be of the same limited character that has hitherto existed. Indeed, the Japanese evince an almost invincible repugnance to opening their ports to foreign commerce, and, in their interpretation of treaties, concede nothing beyond what is specifically granted. Thus, the term "temporary residence" in the treaty with the United States, is so strictly interpreted that citizens of this country, who desired to land at one of the open ports,

were required, before being permitted to go ashore, to state how long they intended so to reside; and intimations were given that "four or five days" would be sufficient to satisfy the words of the treaty. In one case, the applicants, whose object appears to have been to reside permanently at one of the open ports, for the purpose of establishing a dépôt for the supply of whaleships, were informed that, until they stated the exact number of days they intended to stay on shore for "temporary residence," they would not be permitted to sleep one night from their vessel.

On the 17th August, 1855, the American schooner *Wilmington*, Brown master, of New London, Connecticut, arrived at Simoda from Hong Kong, with a miscellaneous cargo, supposed to be suitable for trade at that port. Shortly after casting anchor, some 15 or 20 officers came on board, and desired to know on what business the vessel came into port. They were informed that she brought a cargo of American commodities, which the captain wished to sell or exchange for goods of Japanese manufacture. They then informed the captain that they could not trade; that the people at large would be much pleased to do so, but that the emperor had positively prohibited all commercial intercourse, under penalty of death to the offenders. A letter was addressed to the governor of the city of Simoda, which was returned in the same envelope, with a verbal message to the effect that he would not be permitted to land a single article for trade, nor could he present any for trade on shipboard. Wood and water (the former at \$5 per cord) were offered; but fresh provisions, it is stated by the captain, were refused. The vessel was, night and day, surrounded by guard-boats until she cleared from the bay. The *Wilmington* then proceeded to Hakodade, where she met with more liberal treatment, but permission to trade was refused, as at Simoda. The only provisions to be purchased consisted of beans, turnips, scallions, and such vegetables. The cattle the Japanese look upon as sacred, and will neither sell nor kill them. The captain and crew were permitted to go ashore and visit wherever they pleased. They were also exempted from the vigilance of guard-boats, as well as from the constant attendance of guards, as at Simoda.

It seems evident, therefore, so far as appears, that, under the present treaty, the Japanese government will not permit any trade to be carried on; nor is there much probability of the treaty receiving any more liberal interpretation than that given to it by the officials at Simoda. It is, as the Japanese aver, a treaty of peace and amity only, strictly guarded against any concession or clause under which American citizens could claim the privileges of general trade.—*Com. Rel. U. S.*

To America undoubtedly belongs the credit of having been the first to re-establish commercial relations with Japan. The increased traffic in this part of the world, particularly between eastern Asia and north-western America, and the importance of the whale-fishery in the Japanese seas, had rendered it very desirable to have free access to at least some of the ports of Japan. Repeated attempts had been made by England, Russia, and the United States, but without success, when at length the United States' government resolved to make an effort worthy of the object, and accordingly fitted out an expedition under the command of Commodore M. C. Perry. The commodore sailed from Norfolk in the *Mississippi* war-steamer, on the 24th of November, 1852, to be followed as soon as possible by the other vessels of the expedition. He arrived in the Bay of Yeddo on the 8th of July, 1853, with four vessels, two war-steamer, and two sloops of war, and after some negotiations he delivered the letter of the President, promising to return for an answer in the spring. The rest of the year was spent at Loo Choo and China, and on the 12th of February, 1854,

the squadron reappeared in the Bay of Yeddo, having by this time been increased to nine vessels, three steam-frigates, four sloops of war, and two store-ships. A treaty was concluded on the 31st of March, in terms of which the ports of Simoda in the island of Nipon, and Hakodade in Yesso, are opened for the reception of American ships, where they will be supplied with wood, water, provisions, coal, and other articles, so far as the Japanese possess them. Ships in distress, or from stress of weather, may enter other ports; and seamen shipwrecked on any part of the coast are to be aided and carried to either Simoda or Hakodade. Shipwrecked seamen and others temporarily residing at these ports, are, at Simoda, free to go anywhere within the limits of 17 English miles from a small island in the harbor, and in like manner at Hakodade within 12 miles. Ships of the United States are also permitted to trade under such regulations as shall be temporarily established by the Japanese government for that purpose. All the privileges that may hereafter be granted to any other nation are to be accorded to the United States. On the 7th of September following, an English squadron, consisting of a frigate and three steamers, under the command of Rear-Admiral Sir James Sterling, entered the harbor of Nangasaki. The primary object of this visit to Japan was to search for Russian vessels, but it was also intended to attempt to establish friendly relations between the two nations. A treaty was entered into, the effect of which is to open absolutely and at once to British ships of every description, for effecting repairs and obtaining fresh water, provisions, and other supplies, two of the most convenient harbors in Japan—Nangasaki and Hakodade; to open inferentially to British ships in distress any other port in Japan it may be expedient for them to seek shelter in; to secure eventually to British ships and subjects in every port of Japan which may hereafter be open to foreigners, equal advantages with the ships and subjects of the most favored nation, excepting only the advantages at present accorded to the Dutch and Chinese. It imposes in return for these concessions, no other obligation on British ships and subjects than that of respecting the laws and ordinances of the ports they visit. More recently the Russians have succeeded in obtaining a similar footing in Japan. See *Ency. Brit.*, 8th. edition; *HUNT's Mer. Mag.*, i., 208, xxxi., 234, 626, xxxiv., 120, 742; *Nor. Am. Rev.*, x., 83 (by N. HALE); *Quar. Rev.*, xxii., 107, lii., 159, vi., 357; *PERRY's Japan Exped.*, 1854; *Living Age*, x., xiv., xxiii.; *DE Bow's Rev.* ix., 441.

Japanned Wares (Ger. *Japanische ware*; Du. *Japansch lakwerk*; Fr. *Marchandises de Japon*), articles of every description, such as tea-trays, clock-dials, candlesticks, snuff-boxes, etc., covered with coats of Japan, whether plain, or embellished with painting or gilding.

Japanning, a species of lac-varnishing, in imitation of the lacquered ware of Japan, which, with that of China, is esteemed the best in the world. The ware may be lacquered upon wood, metal, or papier-maché grounds. A description of the process as practiced in China may serve to explain the sources of superiority. The article, if of wood, being made very dry, light, and smooth, is primed with a mixture of ox gall and rottenstone, which is rubbed smooth before the varnish is applied. The varnish is composed of 605 grains of gum-lac in 1200 grains of water, to which are added 38 grains of oil of *Camellia sasanqua*, pig's gall, and 19 grains of rice vinegar. The ingredients are well mixed in full daylight, when the varnish gradually deepens into a brilliant black. A very thin coat of this varnish is applied with a flat hair brush. The article is left in a steamy heat, and is then rubbed down in water with very fine pumice. A second coat of lac-varnish is next applied, and the polishing is repeated, which two operations are continued until a perfectly even and brilliant surface is

attained, a finer quality of lac being used for the later coats, of which there are never less than three, nor more than 18. The object is ornamented by an artist, who draws the design in white lead, engraves it, and fills up the details. The article is next painted with the camphorated lac of Kouang-si, which serves as a basis for the gilding. It is completed by varnishing.

In our method of japanning, the wood intended for the best works is thoroughly dried, since any warping or shrinking would be fatal to the finished surface; for which purpose well-seasoned wood is cut nearly into the required forms, and exposed for several days to a gradually increasing heat in the japanner's stove. The articles are then finished as to form, and are again stoved, after which the cracks are stopped with putty or white lead. For black japanned works, a ground of ivory-black mixed with dark-colored animè varnish is applied. This is dried in the stove, and coated with varnish three or four times, the work being stoved between every two coats. For colored grounds, the varnish mixed with the proper color is laid on in one or two coats, and the work is completed by several successive varnishings and dryings. Ordinary painters' colors ground with linseed oil or turpentine and mixed with animè varnish are employed for various black or brown surfaces with gilt edges, imitations of marble, fine-grained woods, tortoise-shell, etc. The colors mostly used are flake-white or white lead, Prussian-blue, vermilion, Indian-red, king's yellow, verdigris, lamp-black, and the various tints produced by their admixture. The varnishes used are copal, seed-lac, animè, and mastic. The lac varnish is the best for hardness, but its color prevents its use for delicate grounds, so that for such purposes it is either mixed with gum varnish, or copal varnish is used instead. Copal or animè varnish made without driers is applied, in from two to six coats, after the color has been laid on. See VARNISH.

Japanners sometimes use a priming of size and whiting, which is laid on with a brush, and left for a day or two to dry; it is then made smooth by rubbing with rushes and a wet cloth. When this is quite dry, the grounds are laid on, and finished by varnishing and polishing with rottenstone, or in the case of a white ground, with putty or starch, and oil. It must, however, be remarked, that a priming, or artificially prepared ground, is objectionable, the japanning being more liable to crack than when executed on the actual surface of the object itself. A gold ground is formed by varnishing the work with japanner's gold size, and when nearly dry, but still clammy, covering it with gold dust applied on a piece of wash-leather; the effect of such a ground when highly varnished is very brilliant. Japan work is ornamented with drawings or engravings, on the principle of transfer, for which purpose the engraving is printed, or the drawing executed on fine paper previously prepared with a coat of isinglass or gum-water. When this is dry it is placed face downward upon the japan ground, which is covered with a thin coat of copal varnish. A sponge dipped in warm water is then applied to the back of the paper, which dissolves the isinglass, loosens the paper, and leaves the print on the work. Another method is to execute the print on an elastic composition of glue, etc., which receives the impression well, and can be laid down at once on the japanned surface. The whole of the processes require so much drying, that stoves are requisite to hasten the work.

The great demand for japanning is for works in *papier maché*, to which article we must refer for further information on the subject. Common articles of furniture are sometimes said to be japanned, thereby implying that they are more durable than common painted articles. The term as thus used is, however, incorrect, since the colors employed on such common works are only mixed with turpentine instead of oil. For japanning works in metal, they are cleaned with

turpentine to get rid of grease or oil, unless the oil should be linseed, in which case the articles are stoved until the oil becomes quite hard. Japanning is then performed in the usual manner.—E. B.

Jasper (Ger. *Jaspiss*; Du. *Jasiss*; Fr. *Jaspe*; It. *Diaspro*; Sp. *Jaspe*; Rus. *Jaschma*). This stone is an ingredient in the composition of many mountains. It occurs usually in large amorphous masses, sometimes in round or angular pieces; its fracture is conchoidal; specific gravity from 2 to 27. Its colors are various; when heated it does not decrepitate; it is usually divided into four species, denominated Egyptian jasper, striped jasper, porcelain jasper, and common jasper. It is sometimes employed by jewelers in the formation of seals.

Java, the first in importance, although only the third in magnitude of the islands in the Indian Archipelago, lies between east long. 105° 12' and 114° 4', and south lat. 5° 52' and 8° 40'. In form it is long and narrow, being 666 miles in length from east to west, by from 56 to 136 miles in breadth. Area 50,260 square miles. To the north-west it is parted from Sumatra by a strait, at its narrowest part only 14 miles wide, and with islands between; and to the east from Bali, by a strait of no more than two miles broad. On its low, and in some measure sheltered north coast, Java has a good many islands, by far the largest and most important of which is Madura, separate from it by a strait at one part only about a mile wide. On the bold precipitous south coast there are very few islands, and only two of a considerable size, Baron and Kambangan. The coast line of Java, which is about 1400 English miles in extent, has many bays on its northern coast, but it is not deeply penetrated by any one of them, so that it has properly no harbor but one, that of Surabaya, formed between the main island and Madura, where the strait that divides them is still narrow. The southern coast is still less indented. Here there are two harbors only, Pachitan—inconvenient and unsafe—and Chalachap, formed between the main island and Kambangan, both out of the way of intercourse, and little frequented. On other parts of the south coast there is no safe anchorage, while dangerous surge rolls in on the shore in all seasons. With the single exception named, the ports of the northern coast are but open roadsteads, with good anchoring ground; but the want of land-locked harbors is not felt so near the equator, where hurricanes are never experienced, and where the weather is only occasionally tempestuous at the change of the monsoons.

The physical outline of Java may be divided into five different sections of various breadths. Beginning from the western end and following the line of the northern coast, the first section ends with the eastern side of the bay of Batavia. This is about 75 miles in average breadth. The second extends east as far as Cheribon, in long. 108° 36', and is about 95 miles broad. Both these divisions are mountainous, the mountains being of less elevation than in the other parts of the island, but more crowded, and with narrower valleys. They constitute the proper country of the Sundas, who speak a distinct language, and are less advanced in civilization than the Javanese, the nation which occupies all the rest of the island. The third section extends from Cheribon to the western side of the promontory of Japara, in about long. 110° 30', and its breadth does not exceed 60 miles, the island being greatly narrowed by the bay which extends for 140 miles from the point of Indramaya to that of Sapara. The fourth section extends from the promontory of Japara to that portion of the island which is opposite to the western end of Madura, and this has an average breadth of 100 miles. The fifth section embraces the remainder of the island, and is no more than 50 miles in breadth. In the three last sections, the mountains are of greater elevation, the

plains more spacious, and along their northern coasts there runs generally a belt of alluvial land varying from 5 to 15 miles in depth.

The geological formation of Java is eminently volcanic. A range of mountains runs in a longitudinal direction through the centre of Java, the peaks of which vary from the height of near 4000 to near 12,000 feet above the level of the sea. No fewer than 46 of those peaks are volcanoes, 20 of which are in a state of greater or less activity. The craters are sometimes of great extent, and their walls illustrate the structure of the mountains, which is either vertical and irregularly columnar, or disposed in oblique or horizontal strata.

Java has no extensive collection of water, salt or fresh, and no large lagoons connected with the sea. There exist, however, a few beautiful mountain lakes. One of those lies within the mountain Wilis ("the green"), which parts the plains of Madiyun and Kadiri, and is known by the name of *Gabal*. There is a second in the province of Cheribon, known by the Sanscrit name of *Talaga*, or the reservoir; and a third is in the province of Pasuruhan and called *Bafunila*, or the blue water. In Java, however, there are several extensive marshes, which, in the season of the rains, become lakes, are navigated, and have fisheries. The rivers of Java, especially on its northern side, are numerous; but from the form of the island, they are of small size. None of them are navigable for vessels of burden, and few even for boats beyond the reach of the tide. They are all, more or less, obstructed by mud or sand-bars at their mouths. Though of little utility for trade, they are excellently adapted for irrigation. Few of the rivers of Java have specific names, but take their appellations generally from the places they pass by, and change them with every new one, a circumstance which may, perhaps, be owing to their small size and great number. There are, however, a few exceptions, in some of the larger, as the *Saraya*, a river of the province of *Bafumas* and the *Praga*, with its tributaries the *Elos Rivers* of *Kadu*, all debouching on the southern coast.

Climate.—The climate of Java is what may be expected in a narrow sea-girt country between five and eight degrees south of the equator, having plains almost on a level with the sea, and inhabited land 5000 feet above it. The wet season begins with October and ends with March, and the dry with April and ends with September. The monsoons are those of the southern hemisphere, the north-western corresponding with the wet season, and the south-eastern with the dry. The setting in of these monsoons is irregular, and, even during their prevalence, there is some dry weather in the wet, and not unfrequently rain in the dry. At the equinoxes, when the monsoons change, the weather is very unsettled, and most tempestuous at the commencement of the winter solstice in September and October. Thunder-storms are then frequent, and often destructive to life. Land and sea-breezes are experienced within 15 miles of the northern and southern coasts, and in particular localities of its eastern and narrowest extremity the south-eastern monsoon blows with great force across the whole island. The temperature, so far as the seasons are concerned, is equable. Near the level of the sea, which is that of the great alluvial band, which runs along the northern side of the island, and of the wide plains of the interior, Fahrenheit's thermometer seldom falls below 70°, and seldom rises above 90°. According to the elevation of the land, every variety of temperature is experienced from this last to 5° below the freezing point. Snow never falls, even on the highest peaks; but on these at the height of winter, in July and August, ice a few lines thick is formed, and hoar frost is seen every morning, called by the natives, *poison-dew* (*ambun-upas*), from its pernicious effect on vegetation. In the inhabited mountain valleys, at

the height of 4000 feet, the thermometer is usually about 20° below what it is at the level of the sea. Here is experienced a climate agreeable and congenial to the European constitution; and here, the corns, fruits, flowers, and esculent vegetables of temperate regions, have long been acclimated. In point of salubrity, the climate of the high lands of Java is unexceptionable, and that of the low, containing the mass of the population, is generally equal to that of any other tropical country. In a few spots of the alluvial band of the northern coast, such as *Batavia* and *Cheribon*, deleterious malaria have occasionally prevailed, arising from the neglect of canals and water-courses, or from these being obstructed by volcanic débris; but these are exceptions, as are also a few forest tracts of the interior of the island. The extensive cultivation of rice by irrigation might have been expected to generate malaria, but such is not the case, nor has it ever been alleged to have done so in the country itself.

The elephant is not found in Java, nor does there exist any evidence of its ever having been indigenous, and this is the more remarkable as it is abundant in *Sumatra*. The animal, however, was known to the Javanese for ages, and was probably imported occasionally for the use of its princes. Java has one rhinoceros peculiar to itself, and differing even from those of *Sumatra*. It is an animal easily tamed, and when so, gentle in its habits. Besides the domesticated hog, Java has two wild species, the *Sus verrucosus* and *Sus vittatus*. Both are very numerous, and their depredations are a serious impediment to agriculture.

A wild ox is found in the forests of Java, the same as that found in the peninsula and *Borneo*, but which is wanting in *Sumatra*. It is the *Bos sondaicus* of naturalists. The Dutch naturalists inform us that all attempts to tame it have been vain, as in the case of the buffalo of the American prairies. According to the Javanese, however, it will pair with the domesticated cattle, producing a fertile offspring, to which they attribute the largest breed of their oxen. The buffalo, *Bos bubalus*, is found wild in many of the forests of Java, but considered by naturalists to be derived from individuals in the domestic state that had escaped from servitude. The horse nowhere exists in Java in the wild state, but the numbers of this animal and of horned cattle in the domestic state throughout the island are very large, the Dutch returns reckoning the first at 320,000, and the last at about 2,000,000.

Fish are plentiful along the whole northern coast of Java, and a few species are of excellent quality, but, upon the whole, the abundance and the quality are not equal to those of the shores of the Straits of *Malacca*. The fresh water fish are all of very inferior quality and no migratory species frequent the rivers for spawning as they do on the rivers of the eastern side of *Sumatra*. Shell-fish are very abundant on the northern coast, especially oysters of excellent quality, and prawns, the last being much used by the people in the shape of the condiment called by the Javanese *trasi*. The fisheries of the exposed southern coast of the island are unimportant.

Java, whether the inhabitants be of the Javanese or *Sunda* nation, is peopled by the same race, the *Malayan*. This is characterized by a short and squat person, the stature being about two inches less than that of the European, the Chinese, the Hindoo, the Persian, or Arabian. The face is round, the mouth wide, the cheek-bones high, the nose short, small, never prominent as with the European, and never flat as with the African negro. The eyes are always black, small, and deep-seated. The complexion is brown, with a shade of yellow, not so dark as with the majority of Hindoos, and never black as with some of them. Fairness is, indeed, in estimation with the Javanese and others of the same race. The hair of the head is abundant, always black, lank, and harsh, or at

least never soft or silky. The hair on other parts of the body is either scanty or altogether wanting. The beard consists only of a few short straggling hairs, and there is none at all on the breast or limbs. The Javanese, personally, are not an agile people, and make very indifferent runners or wrestlers. As to moral character, the Javanese of the present day may be described as a peaceable, docile, sober, simple, and industrious people. The practice of running a muck, so frequent with the other cultivated nations of the Archipelago, is of very rare occurrence with them. Java was populous, and to a considerable degree civilized for many ages before it was known to Europeans. De Barros describes the Javanese, at the arrival of the Portuguese, as what they still are, "the most civilized people of these parts" (*gentes de mais policia*). They were then found carrying on trade from Sumatra to the Moluccas; they furnished bread-corn and manufactures to the less advanced nations in return for their rude productions, and they had effected conquests or settlements in Malacca, Palembang in Sumatra, and in the two fertile islands of Bali and Lombok. In fact, it is certain that the Javanese were, at this time, a far more civilized, probably even a more numerous people than either the Mexicans or Peruvians, who became known to Europe nearly at the same time. The essential part of Javanese civilization seems to be of native origin and to have sprung up in the island itself, although it subsequently received considerable accessions by intercourse with Hindoostan.

With the exception of the people of Bali and Lombok, the Javanese are the only nation of the Archipelago that can be said to be almost exclusively agricultural. With the exception of the fishermen of the northern coast, and a small proportion of artisans, the computed ten millions of the population of the island is directly or indirectly engaged in agriculture, and have made a respectable progress in it. To regulate the processes of agriculture, the Javanese have a rural calendar still in use. This consists of a year of 360 days, beginning with the winter solstice of the southern hemisphere in the end of June, and divided into twelve seasons of unequal length, varying from 23 to 41 days each. It details the times for clearing and preparing the land, for sowing, for transplanting, and for reaping the different crops. The native terms by which the seasons are named, are, for the most part, the ordinal numbers of the vernacular language, while the adaptation of the seasons to the latitude of Java sufficiently show that this calendar is a Javanese invention, and not borrowed from strangers. Irrigation, in so far as the rice crop is concerned, multiplies the productive powers of the soil from five to tenfold, according to the abundance of water, and the facility of using it, and has been carried to such an extent in Java that the majority of the arable land of the island consists of rice fields. The perennial streams and rivers, as they descend from the mountains, are, by means of embankments and trenches, diverted into small fields surrounded by low dikes, which can be flooded or drained at pleasure. The process of forming such lands is expensive and laborious, but when once formed, they are easily preserved. When the water for irrigated lands is sufficiently abundant and continuous, two crops of rice are raised within the year, and in some cases even three within fifteen months, the sun being hot enough to ripen rice in every season. The husbandman may follow his convenience as to the time of sowing, and in contiguous fields may be seen at once sowing and reaping rice, with every intermediate stage of the growth of the plant. When the water is not sufficiently copious for two crops, the rice is sown in the wet or hot season; and in the dry, or cold, crops considered of secondary value are produced, such as pulses, oil-giving plants, and cotton. No manure is ever applied to irrigated lands, nor are fallows practiced.

Dry or upland arable is of small value compared to irrigated land. On the best dry lands rice is occasionally grown, but more generally these lands are used for such crops as pulses, oil-giving plants, cotton, sugar-cane, and tobacco, and on the mountain-slopes, at an elevation of 2000 and 3000 feet, for coffee. In the most fertile parts of Java, which, from the neighborhood of the high mountains, are usually also the most picturesque, the scenery is at once agreeable and magnificent, and certainly for grandeur and beauty excels all that may be seen, even in Italy, that country which in summer bears the nearest resemblance to Java. In such situations we have mountains 10,000 feet high, cultivated to half their height, the valleys below having all the appearance of a well-watered garden.

When Java first became known to Europeans, its principal agricultural products were rice, pulses, sesame, ground-pea, and other oil-giving plants, indigo and cotton, with palms and indigenous fruits. European intercourse has added to these, maize, tobacco, and coffee. The quantity of its great staple, rice, which it produces, can only be estimated. With the exception of a small quantity of maize, rice is the only bread-corn of the Javanese; and, therefore, if we take the consumption per head at a quarter, or 448 lbs., this, on a computed population of 10,000,000, will make the total annual produce the same number of quarters. The export is, at present, too inconsiderable materially to affect this computation, for in 1848 it amounted to no more than 217,000 quarters. From the first appearance of Europeans, and no doubt for many ages before, Java was the greatest granary of the other countries of the Archipelago. Recently the extensive culture by *corvée* labor of such products as sugar, coffee, and indigo, under an idle and pernicious hypothesis that some peculiar commercial advantage to the State belonged to their culture, has greatly interfered with the production of corn. The export of it has consequently diminished, and the price materially risen; the consequence of which has been, that countries immemorably supplied by Java, now draw their corn from other places, such as Bali, Lombok, Siam, and Arracan.

Mechanic Arts.—The state of the mechanic arts among the Javanese is far below that of their agriculture, but still in advance of that of the other nations of the Archipelago; and with the exception of textile fabrics, not below that of the Hindoos. About thirty different crafts may be enumerated as practiced among them, the most important of which are the blacksmith or cutler, the carpenter, the kris-sheath maker, the coppersmith, the goldsmith, and the potter. Both bricks and tiles are, at present, largely made; and excellent bricks are found in the remains of many ancient temples, proving that the art of manufacturing them has been known for many ages. Coarse unglazed pottery, similar to that of Hindoostan, is also made; and the names of the different sorts all belong to the vernacular language. Beyond the manufacture of this coarse article, the Javanese have not advanced—all their better pottery having been for ages received from China. Their skill in carpentry is displayed in house and boat building, in the fabrication of agricultural implements, and of the hilts, shafts, and scabbards of warlike weapons. The ordinary dwellings of the peasantry consist of a rough frame of timber, thatched on the coast with the leaves of the nipa palm, and in the interior with grass; having walls and partitions of split, flattened, and plaited bamboo work. They are always built on the ground. The dwellings of the upper classes differ, chiefly, in their greater size, with the exception of the palaces of the princes and higher nobility. Boat-building is an art extensively practiced all along the northern coast of Java. Their boats vary in form and size from mere fishing canoes to vessels of fifty tons. The building

of ships is, at present, carried on under the direction of Europeans, the workmen, however, being all Javanese. When Europeans became first acquainted with the Javanese, they were possessed of vessels of large size, well entitled to the name of ships. The agricultural implements of the Javanese are, like those of nearly every other Asiatic people, simple and rude.

The Javanese of the present day have no architecture that deserves the name, and apart from the temples of their ancient worship, no relics remain of any kind of domestic architecture, of bridges, of reservoirs, or of embankments of rivers, such as are found in the country of the Hindoos. The remains of the remarkable edifices connected with the Hindoo religion are abundant; but it is singular that an improved architecture ceased with that religion, and that no Mohammedan structure of solid materials or beauty has been constructed since the adoption of the Mohammedan religion toward the end of the 15th century.

It is in working the metals, however, that the Javanese have most excelled, and as they acquired this comparative excellence without possessing any of the metals themselves, but having all of them imported, the fact may be considered as evidence of comparatively advanced civilization. According to the Javanese, the first rank among artisans is to be ascribed to the blacksmith, or at least to the cutler. The most esteemed product of his skill is the dagger, the well known kris. Every man, and boy of 14, wears at least one kris as part of his ordinary dress, and men of rank two, and sometimes four. Even ladies of high rank occasionally wear one. Swords are used only in native warfare, and are much less esteemed than the kris, the national weapon. The Javanese spear, a plain pike with an iron head, is a formidable weapon, from its long shaft of from 12 to 14 feet. Some of the Javanese crises, from their antiquity, are highly appreciated, and when sold bring enormous prices. The Javanese had also, before the arrival of the Portuguese, a knowledge of gunpowder and artillery. De Barros, in describing an expedition which invaded Malacca in 1513, says, "that it was furnished with much artillery, made in Java, for," adds he, "the Javanese are skilled in founding or casting, and in all work in iron, besides what they have from India."

The Javanese, although they manufacture gold and silver ornaments of considerable beauty, execute nothing equal to the filigree work of Sumatra. In works in brass, their chief excellence consists in the fabrication of musical instruments, a full band of which is known throughout the Archipelago by the Javanese name of *gambelan*. The instruments consist chiefly of bars, constructed after the manner of the *staocata*, or of the gong, a word which has found its way into our dictionaries and is genuine Javanese. Some of these gongs have been made three feet in diameter. Musical instruments of this description are still manufactured in Java, and form an article of exportation, as, indeed, they are said to have done on the first arrival of the Portuguese.

The only textile material of native produce is cotton, rather a coarse article, and the only kind of cloth made from it is a stout durable calico, the muslins and other fine textures of continental India being unknown as manufactures. The processes of cleaning and preparing the cotton, of spinning, weaving, and dyeing, are all carried on by women, and are purely domestic operations, as is the case with all the other nations of the Archipelago. The usual mode of giving variety of colors to the web is the simplest possible, consisting in weaving the previously colored yarn in stripes, checkered or tartan patterns, so frequent with the other tribes, being against the taste of the Javanese. Another mode peculiar to this people consists in covering with melted wax the part of the cloth not intended to be dyed before putting it in the

vat, the process necessarily requiring repetition in proportion to the number of colors intended to be given. The only material, besides cotton, from which cloth is made by the Javanese is silk, and as the art of rearing the silk-worm has never been successfully introduced into Java, the raw material has always been imported. At present it is imported from China, an inferior silk, from which a coarse cloth is wrought with the same implements as that of cotton. Paper is a manufacture peculiar to the Javanese. It is of the nature of the papyrus of the ancients, and not of the beautiful and ingenious fabric which the nations of Europe acquired from the Arabs of Spain, and so long known to the Chinese.

Two languages are spoken in Java, of the same general structure, belonging to the same class of tongues, and having many words in common, yet essentially differing from each other. These are the Javanese and Sunda. The Javanese has been immemorably a written language, and its alphabet has extended to the Sunda language. Inscriptions on stone and brass carry us back in its history to the 12th century. The written character is of two descriptions, that found in ancient inscriptions, and that at present current. They seem, however, to be essentially the same, and not to differ more than black letter from modern manuscript.

History.—Java was unknown even by name to the civilized nations of ancient Europe, and even to those of the middle ages. It is first named by Marco Polo, who, in his junk voyage from China to the Persian Gulf, passed through the northern part of the Archipelago about the close of the 13th century. He gives the name as *Ciaua* or *Java*, but his information being mere hearsay, is in other respects erroneous. Thus, mistaking probably the products of its commerce for its indigenous productions, he enumerates among the latter cloves and nutmegs, and gold in quantity "exceeding all calculation and belief," although it produces none at all. No sooner had the Portuguese reached India by the Cape of Good Hope than the name became familiar enough to Europeans. L. Barthema visited the island and remained fourteen days in it, but his account is obviously false or worthless, for he describes parents as selling their children to be eaten by the purchasers, and himself as quitting the island in haste for fear of being made a meal of. Edoardo Barbosa, although he had not visited it, describes its productions, its trade, its manufactures of arms, and the persons, dress, and manners of its inhabitants, with much accuracy. Pigafetta, although his information respecting it was derived, as he tells us, himself, from the old pilot who accompanied him from the Moluccas, is even more correct than Barbosa. How very little, however, was really known of Java by the early Portuguese of India, is to be seen from what De Barros, master of all the Indian archives, says of it in his *Third Decade*, published in 1663, no less than 52 years after the conquest of Malacca, and several years after his countrymen had visited China, discovered Java, and traded with both. He makes it consist of two islands, Java and Sunda; and his work contains a rude map, in which a great river, or rather a strait of the sea, is represented as dividing them. This he calls the River Chiamo, which may possibly be the Chitando of the Sundas, a considerable stream at the eastern boundary of their country, and which, in their language, signifies, "boundary water or river."

It was in the reign of the second prince of this dynasty, that the Dutch made their first appearance in Java, under Houtman, in 1595. In 1610 they obtained permission from the Sunda prince of Jacatra, to build a fort near the spot on which now stands the city of Batavia. In 1619 this fort was besieged by the joint forces of the princes of Jacatra and Bantam, aided and abetted by the English. It was relieved by a Dutch fleet under admiral Koen, and the assailants defeated

and driven off. It was after this event that the name of Batavia first given to the fortress was bestowed on the town. In 1628 Batavia was besieged by a numerous army sent against it by the reigning prince of Mataram, with the hope of expelling the Dutch from the island; but by the skill and courage of the European garrison, the rude and disorderly host was baffled and routed. From this time the history of Java is properly that of its European conquerors. No considerable territorial acquisition, however, was made until 1677, when the Dutch obtained a cession of the principality of Jacatra. From that time up to the year 1830, every war carried on by them with the native princes, whether as principals or auxiliaries, invariably ended in a cession of territory to the former; so that, at present, hardly one fourteenth part of the island is in possession of native rulers, and even that is entirely tributary and dependent. From the year 1674 to 1880, the Dutch, as principals or auxiliaries, have been engaged in no fewer than four great wars, all of long duration; one of which, begun in 1674, lasted for 34 years; one in 1718, lasted for 5 years; one in 1740, for 15 years; and one in 1825, for 5 years; so that, of one third part, at least, of a period of 156 years, civil war raged in the island. The Dutch have divided their possessions in Java into 20 provinces or residences, each of which is administered by a resident or prefect. Six of these belong to the country of the Sundas, and 14 to that of the Javanese. The two remaining native States, although administered by their own princes, are virtually Dutch provinces, and placed under the control of an officer, with the same title as those of the provinces under direct Dutch rule.

Population.—Attempts have been made at various times to estimate the total population of Java. The first of these was by the historian Valentyn, who estimates the population in his time (1726) at 3,199,750; and including Madura, 3,591,500. This estimate was made shortly after a civil war of five years' duration. In 1755, immediately after the finest parts of the island had been the theatre of a civil war of 15 years, an estimate was made which gave Java only 1,941,911, or including Madura, 2,001,911. This would seem to show that in less than 30 years a decrease had taken place exceeding a million and a quarter. At the close of the last century, estimates of the population were made, which raised the joint population of Java and Madura to 3,559,611. This was after a continued peace of 45 years; and shows, compared to the last estimate, an increase exceeding a million and a half. In 1808 another estimate was made, and by this, the number was made 3,780,000. In 1815 a census was attempted during the temporary occupation of the English, which raised the population of Java to 4,390,661, or including Madura, to 4,615,270. In 1826 a census was taken which gave the population at 5,403,786. 10 years later, another was taken, and this raised the number to 7,861,551; and consequently gave a decennial increase at the rate of about 44 per cent. The census of 1845 made the joint population of Java and Madura 9,580,781, or of Java alone, 9,235,038. The last census is that of 1852, and this made the joint population of Java and Madura 9,943,075. The population was estimated as being, on 31st December, 1853, 10,290,000.

Revenue.—The revenue of the European government of Java is that of the whole island, including Madura; excepting as to some taxes on consumption, the territories are subject to the two remaining native princes, embracing an area of 2229 square miles, and a reputed population of 850,000. It is derived from multifarious sources, and may be briefly described, taking the figures from the public accounts of 1843, as given by Mr. Temminck. These may be sufficient for a general view, as no material change has since been made in the fiscal system.

During the five years' temporary occupation of Java by the British government, from 1811 to 1816, nearly

the whole ancient system of monopolies, forced deliveries, and corvée labor was overthrown, and free culture, open trade, and free labor substituted for them. The merit of this great revolution in the administration of the island belongs to the late Sir Stamford Raffles, the British lieutenant-governor of Java, under the supreme government of India; and he carried his bold and valuable innovations into effect with a courage, industry, and perseverance entitled to the greatest praise. The financial system which he adopted, however, was not so happy, in so far as the land-tax was concerned, for it proceeded on the principle of the States entering directly into an arrangement with each individual occupant of a few acres, in the case of Java probably not fewer than half a million. Under this system, the tax was paid either in money or in kind, at the option of the occupant; and being generally paid in the latter, it followed that the government was converted at once into warehouse-keepers, and corn-merchants. As in other territories on the continent of India, the new system was found mischievous and impracticable. The land was over-assessed, and the hypothetical land-tax could not be realized.

After two years' trial, the Dutch commissioners who received charge of the island, judiciously abandoned the Ryotwarrie system of 1814, and arranged with the heads of the village corporations for the land-tax, leaving its distribution among the occupants to these corporations themselves. This natural and simple system, the only one suited to such a state of society as that of Java, after being in operation for 14 years, was partially relinquished in 1832, and the old system of forced deliveries of certain agricultural products, and of corvée labor in raising them, was, to a large extent, restored. The pretext for this was the hope of greater gain, and the assumption that, by the immemorial usage of the country, the State was entitled to take, at its option, its tax in money, in kind, or in corvée labor. Under this system, a considerable portion of the tax on rent is remitted, and some of the best land with the labor of its peasantry has been appropriated to the cultivation of products deemed peculiarly fitted for the markets of Europe, such as coffee, sugar, and indigo, with tea, cinnamon, and cochineal, and the last three expressly introduced into the island for this special purpose. By this impolitic measure, the Dutch government has become, once more, a cultivator, a trader, and necessarily, from its position, to a certain extent, a monopolist trader. The evil effects of such a system on that wealth, which is the only source of public revenue, must be obvious to every enlightened statesman.

The actual amount of the tax on rent or land-tax remaining to the Dutch government, after deducting exemptions, was, in 1843, allowing 20d. to the florin, £835,551. To this, however, is to be added a sum of £26,215 for the quit-rents of land sold at various times in fee-simple to Europeans, with other items of the nature of a land-tax, as the rents of certain fish-ponds, or stews, amounting to £27,302, making the total land-tax realized £889,128. No account is rendered of remissions on account of land appropriated to the culture of produce for government, but a few facts are stated which will give a tolerable notion of the extent to which this very barbarous system is carried. The number of Javanese families from which corvée labor was exacted for the culture of coffee, in 1841, was 453,289, and for that of sugar, indigo, and cinnamon, 350,955, making the total number, exclusive of those employed in the cultivation of tea and cochineal, which is not stated, 704,244 families, equivalent to a population exceeding three millions and a half, or 40 parts in 100 of the entire population of the European portion of the island. The quantity of land set aside for the cultivation of sugar, indigo, and cinnamon, amounted in 1841 to 317,635 acres, and this consisted of the richest irrigated lands of the island, usually yielding two

yearly harvests, and equal in value to 10 times that of the average of all dry lands. The quantity of land, of an inferior description, appropriated to the culture of coffee and tea, all peculiarly fitted for the growth of maize, is not stated, but some notion of it may be formed from the number of families employed, as above given, and from the number of trees, which amounted in 1841 to 336,922,460.

The taxes on consumption are multifarious, consisting of monopolies, excises, customs, transit and market duties, taxes on fisheries, and on the slaughter of cattle. The chief monopolies are those of the vend of opium and salt. In 1843 the first of these amounted to £796,630, and the last to £384,159. The monopoly of opium is at once productive and unexceptionable in principle. That on salt is, of course, a poll-tax, which amounts to about 4s. on each family, and is only less onerous than our own in Bengal, from the salt of Java, the produce, chiefly by solar evaporation, of its northern coast, being better, cheaper, and more economically distributed to the consumers than that of Bengal. Another monopoly is that exercised in certain caves producing the esculent swallow-nests, and this, as the birds are the chief manufacturers, and strangers the chief consumers, is an unexceptionable source of revenue. In 1843 its amount was £24,271. The sale of timber from the teak forests, which are the exclusive property of the government, constitutes another monopoly, of which the produce in the same year was £42,141. These different items make the total revenues arising from monopolies £1,247,201. In the public accounts the monopoly of the tin of Banca is set down as Javanese revenue, and stated at the sum of £250,000. As the revenue of Java alone supplies the funds with which the mining and smelting is carried on, this branch is therefore correctly enough included in the financial resources of that island.

The export and import duties of Java in 1843, including port charges, amounted to £460,840; and the market, transit, and ferry dues, came to £262,672. The tax on the slaughter of cattle was £39,341, and that on fish and fisheries £27,911. It is not necessary to add that the two last, as taxes on necessities of life, are injurious imposts. A strange want of attention to an obvious principle is evinced by the European government of Java, connected with the slaughter of cattle. The slaughter of the buffalo is expressly prohibited, with the avowed object of increasing the number of this animal for the benefit of agriculture. The certain effect of the prohibition, however, must of course be the very reverse of what is intended, for the rearing of these animals, is surely discouraged, not promoted, by depriving the owners of a market for the old, imperfect, or superfluous ones.

The expenses of the government of Java in 1843, were given at the sum of £6,291,606. Thus, then, the expenditure exceeded the amount of the taxes by the enormous sum of £3,082,249, to be made good by the contingency of profits on produce remitted to Europe. The civil charges came to £827,825, the military to £720,319, the naval to £138,846, and the extraordinary expenditure, on account of Sumatra, to £220,076. The expense of dispatching government produce, exclusive of freight and charges, amounted to £75,212, while the interest of the public debt, nearly all incurred in 27 years' time, came to £1,018,463, or about half of that of British India, with 120,000,000 of inhabitants, and which it has taken a century to incur.

Trade.—The internal trade of Java embraces that of all the Netherlands possessions in India, as it is the entrepôt for the whole of it. It includes also a large remittance for the public revenue in the shape of produce, as coffee, sugar, indigo, tin, and spices. Java and the other Dutch possessions were delivered over by the English in 1816, with a considerably improved commerce, and certainly, at all events, with a clear field for the establishment of a liberal system. The

opportunity has assuredly not been taken advantage of. Double duties have been imposed on all goods imported under a foreign flag, and other contrivances of the exploded mercantile system have been had recourse to, in order to give trade a direction to Holland, a costly expedient, injurious to the colony, and of no substantial value to the mother country. In 1824, and within eight years after the restoration, a new East India Company was set up as one of these contrivances, the Handel Maatschappij or trading association. This association is merchant, shipowner, agent, for the sale of the government produce in Europe, carrier of this produce, and farmer of some branches of the public revenue of Java. Originally, there was guaranteed to it a fixed and certain interest on its capital stock, and even the sovereign of the Netherlands was a sleeping partner of it. The false hypothesis on which this retrograde policy was adopted, was a supposed necessity for encountering what was called the overgrown capitals and enterprise of England and America, as if the free capital and enterprise of Holland, which, under greater difficulties had achieved much greater things, was unequal to carry on the trade of its own colony without pillowing and bolstering.

The values of the exports from Java, and their destination, in 1846, 1836, and 1826, were as follows:

Countries.	1846.	1836.	1826.
	Florins.	Florins.	Florins.
Netherlands.....	89,608,848	27,232,588	6,518,525
Indian Archipelago.	9,826,548	6,708,153	4,857,788
Great Britain.....	2,865,987	189,592	349,098
China, Macao, etc.	1,886,703	3,818,706	1,976,192
France.....	1,326,149	1,944,145	42,232
America.....	1,199,644	1,002,529	211,231
Hamburg.....	615,041	108,142	63,884
Sweden.....	845,949	258,959	57,172
Other places.....	711,868	369,315	959,735

The previous statements show that the produce and trade of Java have increased during the last 12 years with a rapidity unknown in any other colony, Cuba, perhaps, excepted; and if the resources and capabilities of this noble island be fully developed, it is quite impossible to say how much further her trade may be extended and her resources developed.

Principal Port.—Batavia, a city of the island of Java, the capital of the Dutch possessions in the East Indies, and the principal trading port of the Oriental Islands, lat. 6° 8' south, long. 106° 50' east, on the north-west coast of the island, at the mouth of the Jacatra River, on an extensive bay. The harbor lies between the main land and several small uninhabited islands, which, during the north-western monsoon, afford sufficient shelter and good anchorage. Population in 1842, 53,860, including about 8000 Europeans; the rest are Chinese, Javanese, Malays, etc. It is built on marshy ground, and intersected by canals in the Dutch style. It is defended by a citadel and several batteries, and has a considerable garrison and marine arsenal. Other authorities represent the population of Batavia, in 1832, at 118,000; viz., Europeans, 3000; Chinese, 25,000; Aborigines, 80,000; Moors, 1000; Arabs, 9000. Batavia has a bank, with branches at Samarano and Surabayo. This place was long considered very unhealthy, but has been much improved by drainage. Mean temperature of year, 78°.

The Jacatra is navigable by vessels of 40 tons two miles inland; ships of from 800 to 400 tons anchor in the bay, 1½ miles from shore. Batavia is the great commercial emporium of the Asiatic Archipelago, and absorbs by far the greatest proportion of the trade of Java and Madura; the annual exports of which islands amount to 60,300,000 florins (\$25,123,000), and the imports to 30,000,000 florins (\$12,000,000).—E. B.

See *Quar. Rev.*, vi., 487, xvii., 72; *HUNT'S Mer. Mag.*, ii., 328, xxxiii., 369; *Ed. Rev.*, xxxi., 395.

In 1853 the foreign commerce of Java and Madura amounted to \$17,712,241 for general imports, and to \$28,677,183 for exports. The imports and ex-

ports during this year exceeded those of the preceding year—the former \$1,596,164, or 9.9 per cent.; the latter \$6,294,489, or 21.83 per cent.; thus exhibiting the most practical illustration of the increasing trade of these rich and fertile islands. The share assigned to

the Netherlands in the general trade of 1853 represented, for imports, 42.23 per cent of the whole; and for exports, 76.09 per cent. The trade with the United States with these islands, during the same year, was 1.39 of the whole.

COMMERCE OF THE UNITED STATES WITH THE DUTCH EAST INDIES, FROM OCTOBER 1, 1850, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
Sept. 30, 1821.....	\$188,040	\$1,581,808	\$1,714,818	\$134,369	\$1,257,995	.....	5,610	....
1822.....	121,441	999,571	1,121,012	858,144	877,641	\$2,300	5,286	....
1823.....	151,120	1,750,981	1,902,101	419,680	998,940	240	4,990	....
1824.....	61,669	688,616	700,285	147,458	419,818	.....	8,814	....
1825.....	169,022	1,864,884	1,527,906	198,402	669,558	24,808	7,556	1,234
1826.....	57,506	874,957	482,468	518,556	278,069	.....	3,825	....
1827.....	88,859	127,749	166,608	286,447	96,222	2,067	1,143	....
1828.....	88,710	818,277	896,987	118,462	265,450	2,000	3,028	....
1829.....	62,074	176,818	238,892	121,348	149,550	8,398	1,985	....
1830.....	63,278	107,293	170,566	181,843	52,600	10,000	1,501	220
Total.....	\$935,684	\$7,435,449	\$8,371,133	\$2,409,714	\$5,060,868	\$44,808	87,695	1,454
Sept. 30, 1831.....	\$123,884	\$631,442	\$760,326	\$319,895	\$480,975	\$4,527	6,498	....
1832.....	24,516	508,504	528,020	668,974	428,598	.....	7,456	680
1833.....	98,852	680,999	774,841	750,290	477,988	10,251	7,477	1,483
1834.....	115,011	466,188	581,199	582,159	836,875	1,615	8,323	846
1835.....	230,608	1,213,682	1,444,290	800,383	1,106,498	925	20,476	....
1836.....	172,691	906,331	1,079,022	1,477,906	706,746	224	16,958	447
1837.....	263,250	285,324	548,574	1,019,769	285,828	.....	5,441	7,340
1838.....	166,214	329,747	495,961	576,896	308,184	8,742	11,480	....
1839.....	86,619	396,984	483,553	692,196	373,626	636	9,234	663
1840.....	182,751	202,552	385,303	817,897	176,724	21,619	1,828	485
Total.....	\$1,414,396	\$5,615,543	\$7,030,939	\$7,705,370	\$4,685,032	\$48,559	95,141	11,449
Sept. 30, 1841.....	\$178,876	\$224,150	\$403,026	\$266,425	\$208,500	\$3,000	5,324	....
1842.....	85,578	193,580	279,158	741,048	178,271	.....	794	....
9 mos. 1843.....	90,289	108,742	198,931	121,524	89,577	.....	2,890	....
June 30, 1844.....	98,818	261,070	359,888	985,984	244,325	11,950	4,656	....
1845.....	129,151	72,007	201,158	588,608	68,516	121	4,692	....
1846.....	40,700	42,842	83,542	430,358	88,440	.....	3,679	....
1847.....	91,902	108,288	200,140	894,982	106,120	.....	5,370	....
1848.....	138,905	107,954	246,859	249,946	92,884	.....	4,575	....
1849.....	280,823	54,118	334,941	854,528	32,000	.....	6,688	1,438
1850.....	180,538	262,952	443,490	444,404	219,400	1,800	4,070	3,320
Total.....	\$1,310,020	\$1,430,658	\$2,740,678	\$5,027,202	\$1,272,488	\$21,871	42,688	4,758
June 30, 1851.....	\$204,480	\$48,140	\$247,570	\$410,143	\$31,500	.....	3,016	5,651
1852.....	142,997	181,185	324,182	1,015,994	154,430	.....	3,689	14,022
1853.....	202,822	180,884	383,706	884,588	149,800	.....	3,826	6,605
1854.....	109,203	75,573	184,776	1,041,609	68,500	2,386	3,638	4,313
1855.....	287,937	53,886	341,823	1,082,270	87,170	.....	8,406	3,453
1856.....	120,444	89,112	210,156	1,399,289	71,000	17,000	10,877	2,141

Tariff.—The tariff regulations of Java are divided into six different classes, viz.: Class 1 relates to duties on wines and spirits, etc.; class 2 relates to duties on cotton and woolen goods; class 3 relates to sundry imports from Europe, America, and the Cape of Good Hope; class 4 prescribes the duties on the products of the Indian Archipelago; class 5 relates to merchandise being the produce of countries east of the Cape of Good Hope, not included in any of the foregoing classes; class 6 prescribes the export duties levied on the products of Java. All these classes recognize a discrimination in favor of the Dutch flag; but, under the treaty of August 26, 1852, between the United States and Holland, these discriminations do not apply to the American flag when importing or exporting from or to the same places as the national flag. The article, by virtue of which the vessels of the United States are equalized with those of Holland, reads thus: Art. II. "The above reciprocal equality in relation to the flags of the two countries is understood to extend also to the ports of the colonies and dominions of the Netherlands beyond the seas, in which goods and merchandise, whatever their origin may be, imported or exported from and to any other country in vessels of the United States, shall pay no higher or other duties than shall be levied on the like goods and merchandise imported or exported from and to the same places in vessels of the Netherlands. The bounties, drawbacks, or other privileges of similar denomination, which may be there granted on goods and merchandise imported or exported in vessels of the Netherlands, shall also, and in like manner, be granted on goods and merchandise imported or exported in vessels of the United States."

TABLE EXHIBITING THE NAVIGATION OF THE ISLANDS OF JAVA AND MADURA IN THE YEARS SPECIFIED.

Nationality.	Vessels entered.		Vessels cleared.	
	1852.	1853.	1852.	1853.
Dutch.....	1,858	1,886	1,819	2,038
English.....	56	77	48	85
French.....	19	14	16	13
Belgian.....	.....	3	.....	8
Hamburg.....	10	17	10	15
Bremen.....	10	.....	10	12
Prussian.....	1	1	3	1
Swedish.....	12	13	17	12
Russian.....	1	1	1	1
Danish.....	4	5	5	2
American.....	7	28	10	23
Portuguese.....	2	3	1	3
Chinese.....	1	1	2	1
Siam.....	19	12	12	19
Other Asiatic countries.....	51	100	58	52
Total.....	2,046	2,170	2,012	2,230

From the preceding table it appears that in 1853 the United States just trebled in one year the number of vessels bearing their flag in that remote corner of the globe. This is to be ascribed to the liberal commercial treaty of 1852, equalizing the United States' and the Dutch flags in the colonial trade. The subjoined tariff of duties of the island of Java has been prepared from a copy printed at Batavia in 1844, with modifications and changes down to June, 1855, transmitted from the United States' consulate at that port:

Port Charges at Java.—The harbor dues are one half a rupee per ton; but a ship having once paid this charge can touch either at Samarang, Soerabaya, or go to a foreign port and return, if within six months from date of payment, without further expense. Ships can

anchor and remain in the roads, and can communicate with the shore, receive provisions, water, etc., without charge of anchorage fees. The roads are south of a line drawn from the Rhoneland to the Neptune shoal. All letters must be immediately delivered at the custom-house, except consignees' letters, and such as may be intended for the captain or supercargo. There are no pilots for Batavia or Samarang. For Soerabaya pilots can be had at Point Pauka coming from the west, and at Passaroeng coming from the east. Filtered water is sent alongside in government tanks, with a force-pump and hose, at a charge of 57 cents

per hogshead, and in the outer roads at 66 cents. When a blue flag is flying at the main-mast head of the guard-ship, or at the signal staff of the lookout-house at the head of the canal, it is unsafe to attempt entering the river.

Tariff of Duties for the Island of Java.—By Dutch vessels are meant vessels belonging to Holland, and no others. Under the Dutch flag are comprehended the flags of Asiatic princes which are placed on the same footing as the Dutch flag. The pound in this tariff is the old Amsterdam pound. To the duties in the tariff, 5 per cent. is added for breakwater.

DUTIES ON COTTON AND WOOLEN GOODS IMPORTED INTO JAVA.

Articles.	Rate of duty.	Remarks.
Dutch	25 per cent.	
In Dutch vessels, with certificates of Dutch origin	12½ "	On appraised value, according to tariff of prices, corrected every three months.
European and American, if from countries between which and Holland friendly relations subsist.	25 "	
From countries between which and Holland friendly relations do not subsist.	50 "	
From Dutch India and favored States in the Indian Archipelago	25 per cent.	On appraised value, according to the market price of the day.
From do, in Dutch Indian vessels, provided they have not touched at any foreign port.	12½ "	
All other countries east of the Cape of Good Hope, except Chinese goods in Chinese junks.	25 "	On invoice value, with addition of 80 per ct., or appraisement according to market prices.

IMPORT DUTIES ON SUNDRY GOODS THE PRODUCTS OF EUROPE, AMERICA, AND THE CAPE OF GOOD HOPE.

Articles.	Rate of duty.	Remarks.
Beef, salted, smoked, etc.	24 per cent.	In Dutch vessels, with certificate of Dutch origin, 12 per cent.
Books, music, maps, and charts.	6 "	
Butter	24 "	As above, free.
Cheese.	24 "	As above, one half these duties.
Candles, wax.	\$0 10 per lb.	
" spermaceti.	0 10 "	
Clothing, wool and cotton	25 per cent.	Direct from Holland in Dutch vessels, 12 p. ct.
" silk and linen	12 "	In Dutch vessels, with certificate, etc., 6 p. ct.
Copper and copper ware.	24 "	As above, 12 per cent.
Coal.	Free.	Direct from Holland, in Dutch vessels, free.
Corks.	12 per cent.	In Dutch vessels, with certificate, etc., 6 p. ct.
Carriages.	24 "	As above, 12 per cent.
Cards, playing.	24 "	As above, 12 per cent.
Cordage.	24 "	As above, 12 per cent.
Casks, new.	24 "	
Cattle, as cows, sheep, etc.	Free.	
Drugs and medicines.	12 per cent.	Direct from Holland, in Dutch vessels, 6 p. ct.
Flour.	24 "	Dutch flour packed according to the tariff of 1828, 12 per cent.
Furniture.	24 "	
Glass, china, and earthenware.	24 "	In Dutch vessels, with certificate, etc., 12 p. ct.
Gold and silver plate, lace, thread, and military ornaments.	24 "	In Dutch vessels, with certificate, etc., 12 p. ct.
Gold and silver coin.	Free.	As above, 12 per cent.
Gold and silver bullions.	"	
Hams.	24 per cent.	As above, 12 per cent.
Horses and mules.	Free.	
Hats.	24 per cent.	As above, 12 per cent.
Iron, in bars, pigs, rods, etc.	12 "	Direct from Holland, in Dutch vessels, 6 p. ct.
Iron ware and machinery.	24 "	In Dutch vessels, with certificate, etc., 12 p. ct.
Jewelry, pearls, and precious stones, set or not, if real.	Free.	
Lumber.	12 per cent.	Direct from Holland, in Dutch vessels, 6 p. ct.
Leather, and articles of leather.	24 "	In Dutch vessels, with certificate of Dutch origin, 12 per cent.
Lead.	24 "	
Linen of hemp or flax.	24 "	As above, free.
Musical instruments.	6 "	As above, free.
Naval stores, except cordage.	12 "	Direct from Holland, in Dutch vessels, 6 p. ct.
Opium, prohibited.		
Provisions, other than those named in this tariff.	24 "	Direct from Holland, in Dutch vessels, 12 p. ct.
Paper.	24 per cent.	In Dutch vessels, with certificate, etc., 12 p. ct.
Perfumery.	24 "	Direct from Holland, in Dutch vessels, 12 p. ct.
Paints, linseed oil, etc.	12 "	In Dutch vessels, with certificate, etc., 6 p. ct.
Pictures, plates, and prints.	12 "	As above, 6 per cent.
Pork, salt, smoked, etc.	24 "	As above, 12 per cent.
Steel in bars, etc.	12 "	Direct from Holland, in Dutch vessels, 6 p. ct.
Steel ware.	24 "	In Dutch vessels, with certificate, etc., 12 p. ct.
Stone for building.	12 "	As above, 6 per cent.
Marble tiles.	12 "	Direct from Holland, in Dutch vessels, 6 p. ct.
Flints, prohibited, unless especially permitted.	12 "	As above, 6 per cent.
Segars, Havana	\$0 80 per lb.	Direct from Holland, in Dutch vessels, \$0 40.
All other kinds, European and American.	0 40 "	In Dutch vessels, with certificate of origin,
Snuffs of all kinds.	0 16 "	one half these duties.
Saddles and harness (same as leather).		
Soap.	12 per cent.	Direct from Holland, in Dutch vessels, 6 p. ct.
Silver. (See Gold.)		
Silk and silk goods.	12 "	As above, 6 per cent.
Salt, prohibited.		
Tin and tin ware.	24 "	In Dutch vessels, with certificate, etc., 12 p. ct.
Tobacco leaf, manufactured.	\$0 06½ per lb.	Direct from Holland, in Dutch vessels, one half of this duty.
Tar. (See Naval stores.)		
All goods not mentioned in this tariff, the products of Europe, America, and Cape of Good Hope.	12 per cent.	As above, 6 per cent.

JAVA TARIFF—EXPORT DUTIES.

Articles.	Rate of duty.	Remarks.
Arrack.....	Free.	
Birds' nests.....	12 per cent....	Under Dutch flag, 6 per cent.
Camphor, Japan.....	\$2 80 per tub.	To Holland, in Dutch vessels, \$1 40.
Cotton goods, Japanese.....	4 per cent....	Under Dutch flag, 2 per cent.
Coffee.....	Per picol of 125 lbs., 12 p. ct.	To Holland, in Dutch vessels, 6 per cent, giving bond for the difference.
Copper, Japan.....	\$2 80 per picol	Under Dutch flag, \$1 40.
Copper coin, Dutch.....	Free.	
Gold and silver coin, by Chinese, to China.....	5 per cent....	In sums less than \$200, for owner's use, free, provided permission be obtained.
In other cases.....	4 " " " " " "	
Gold and silver not coined, and Japan cobangs.....	4 " " " " " "	
Horses.....	\$16 00 each....	Under Dutch flag, one half these duties.
Hides, cow.....	8 20 per 100....	
" buffalo.....	2 40 p. picol	To Holland, in Dutch vessels, one half these duties.
Indigo.....	4 per lb.	
Jewels, pearls, and precious stones.....	Free.	
Oil, coconut.....	\$1 20 per picol	
Ratans.....	12 " " " " " "	
Rum, Java.....	4 80 p. legger	Under Dutch flag, one half these duties.
Rice.....	4 per picol	
Spices, cloves.....	7 60 " " " " " "	
" mace.....	8 00 " " " " " "	
" nutmegs.....	7 60 " " " " " "	To Holland, in Dutch vessels, one half these duties.
" wild nutmegs.....	4 per cent....	
" pepper, black.....	30 cts per picol	
Sugar, Java, 1st and 2d sorts.....	6 per cent....	As above, free.
" brown, and molasses if, in the opinion of the collector, not suitable for export to Europe or America.....	20 cts. per picol	Under Dutch flag, free.
Salt.....	Free.	
Tortoise-shell.....	4 per cent....	Under Dutch flag, 2 per cent.
Tobacco, Java.....	4 " " " " " "	
Tin.....	\$1 60 per picol	To Holland, in Dutch vessels, 80 cents.
Triparang.....	4 per cent....	Under Dutch flag, 2 per cent.
Wax.....	4 " " " " " "	
Wood, sandal wood.....	40 ct. per picol	Under Dutch flag, one half this duty.
sapan wood.....	8 " " " " " "	To Holland, in Dutch vessels, one half this duty.
Goods not mentioned above, being the products of the Indian Archipelago.....	4 per cent....	Under Dutch flag, 2 per cent.
Goods, the maximum import duty on which is 25 or 24 per cent.....	4 " " " " " "	As above, free.
All other goods.....	4 " " " " " "	As above, 2 per cent.

Jeddo, Jedo, or Yedo, the capital of Japan, and the largest city in that empire, is situate on a gulf, on the western side of the island of Nipon, in N. lat. 35° 32', E. long. 140°. It stands on a large plain at the head of the gulf, which is here so shallow that vessels generally discharge their cargoes a league or two below the city. Jeddo is said to be 7 miles in length by 5 in breadth, and to have a circumference of 20 miles. It is not inclosed by walls, but is intersected by numerous broad canals and ditches, having on each side high embankments, on the top of which are planted rows of trees. A river of considerable size flows through the town into the harbor. The houses are small and low on account of the frequency of earthquakes. They are built of wood with thin clay walls, and are divided into rooms by paper screens. The floors are covered with mats, and the roofs with shavings of wood. Being thus entirely composed of combustible materials, fires are frequent and destructive. As the families of princes, lords, and nobility of the empire are obliged to reside continually at Jeddo, there are numerous houses of a superior class. These, however, are only one story in height, and have no towers. They are distinguished from the other houses by large court-yards, stately gates, and fine varnished steps leading up to the door. There are besides numerous temples, monasteries, and other religious buildings. The imperial palace is near the middle of the town, and is said to be more than eight miles in circumference. It consists of several palaces or castles, with large gardens and orchards. Besides being the residence of the court, Jeddo contains flourishing manufactures, and carries on an extensive commerce. The population is variously estimated from 700,000 to 1,500,000, and even more. See JAPAN.

Jeremie. This is the smallest port in the island of Hayti open to foreign commerce. The anchorage at Jeremie is so dangerous that scarcely a year passes without one or more shipwrecks, or other serious casualties, being recorded. In 1849 there entered and

cleared 76 vessels, with an aggregate of 8200 tons; and in 1850 there entered and cleared 91 vessels, measuring 11,536 tons. The following summary exhibits the general trade of this port for 1850:

Countries.	Value of imports.	Articles and quantities of exports in 1850.	Pounds.
United States.....	Francs. 1,064,000	Coffee.....	4,593,919
France.....	244,000	Cocoa.....	541,371
Great Britain.....	248,000	Campeche.....	6,429,059
Denmark.....	118,000	Guyac.....	54,500
		Wax.....	3,128

Jersey, the largest and most important of the English Channel Islands, is situate in the Bay of St. Michael, 13 miles west of the nearest coast of France, and 85 miles from the nearest point on the English coast; N. lat. (St. Helier's) 49° 11' 3'', W. long. 2° 7'. It is 12 miles in length, from east to west, and 7 in breadth from north to south, and has an area of about 40,000 acres. The north coast of the island is rocky, bold, and precipitous, rising sometimes to the height of more than 200 feet above the sea. The Channel Islands are considered as belonging to the crown, but as forming no part of the realm, so that they are not represented in Parliament; and Acts of Parliament, as such, have no legal force as regards them, unless they are therein specially named, or unless the acts, in virtue of an order of council, are registered on the records of the islands. In their institutions, customs, and laws, the people still retain much that is Norman; and, in this respect, Jersey has retained considerably more of the old institutions and of their free spirit than the sister island of Guernsey. The people appear to have at all times enjoyed much freedom and great privileges.—E. B.

Jet, or Pitch Coal (Du. *Git*, *Zwarte barnsteen*; Fr. *Jais*, *Jayet*; Ger. *Gagat*; Lt. *Gogata*, *Lustrino*; Lat. *Gagus*, *Gagates*), of a black velvet color, occurs massive, in plates; sometimes in the shape of branches of trees, but without a regular woody texture. Internal lustre shining, resinous, soft; rather brittle; easily

frangible; specific gravity 1.3. It is used for fuel, and for making vessels and snuff-boxes. In Prussia it is called black amber, and is cut into rosaries and necklaces. It is distinguished by its brilliancy and conchoidal fracture.—*THOMSON'S Chemistry.*

Jetsam. See FLOTSAM.

Jettée, the border made round the stilts under a pier, in certain old bridges, being the same with stalling; consisting of a strong framing of timber filled with stones, chalk, or other materials, to preserve the foundations of the piers from injury.

Jetty-head, a name usually given in the royal dockyards to that part of a wharf which projects beyond the rest; but more particularly the front of a wharf, the side of which forms one of the cheeks of a dry or wet dock.

Jewelry. Worn by most of the early nations. So prodigious was the extravagance of the Roman ladies, that Pliny the elder says he saw Lollia Paulina wearing ornaments which were valued at \$1,605,000. Jewels were worn in France by Agnes Sorel, in 1434. The manufacture was extensively encouraged in England in 1685. See GOLD.

Jib, a large triangular sail, between the fore-top-mast head and the boom (thence called jib-boom), which projects beyond the bowsprit.

Jidda, or **Djidda**, a sea-port town of Arabia on the Red Sea, 64 miles west from Mecca, of which it is the port; N. lat. 21° 29', E. long. 39° 15'. It stands on a gentle elevation, rising from the sea, while the surrounding country is a bare desert. Jidda, as respects cleanliness and regularity of plan, is superior to most eastern towns. The streets, though unpaved, are comparatively well laid out and wide. The houses are built of coralline stone, from the shores of the Red Sea, and from the perishing nature of this material, are not very durable. In the suburbs, the houses are mere huts constructed of reeds and bushwood.

Jidda has long been famous as the commercial emporium of Arabia, and indeed is solely dependent for its existence upon its trade. Situate about the middle of the east coast of the Red Sea, only about 120 miles distant from the opposite shore of Nubia, and within two days' journey of Mecca, it is peculiarly fitted for the importation of foreign goods as well as for the exportation of home produce. The harbor, however, like most of the other ports on the Red Sea, is inconvenient, and the entrance rather intricate. On account of the shallowness of the harbor, large ships are obliged to discharge their cargoes in the offing about two miles from the shore. The imports from Egypt and Abyssinia comprise corn, rice, butter, sugar, clothing, oil, tobacco, musk, and incense; from India, muslins, shawls, spices, and cocoa-nuts; while the Malay islands and the Mozambique coast send hither slaves. The imports are conveyed by ships to Suez, whence they find their way to the Mediterranean ports, or by caravans to Mecca and Medina, from which cities they are dispersed to Syria, Asia Minor, and Turkey. Dates, and the celebrated balm of Mecca, are brought from the interior for shipment. Next to grain, the most important article of trade is perhaps coffee, which is obtained in large quantities from Mocha. The number of vessels belonging to the port is estimated at about 250. The government of Jidda is in the hands of the Pasha of Egypt, and the town is garrisoned by Egyptian troops, amounting usually to about 400. The population is very fluctuating; the permanent population does not probably exceed 10,000, while, on the arrival of the merchant fleets, and during the feast of Ramadthan, there may be as many as 20,000 strangers within its walls.—E. B.

Jobber, a person who undertakes jobs, or small pieces of work. In some statutes, jobber is used to signify a person who buys and sells for others. See BROKER.

Jobbing is the business of a jobber.

Stock-jobbing denotes the practice of trafficking in the public funds, or of buying and selling stock, with a view to its rise or fall. The term is commonly applied to the practice of buying and selling stock for time, or of accounting for the differences in the rise or fall of any particular stock for a stipulated time, whether the buyer or seller be possessed of any such real stock or not.

Joint-stock Companies are, in England, a species of partnership in which a number of persons contribute funds or "stock" for the accomplishment of some trading or other profitable object. The peculiarity from which the term is derived is the contribution of stock apart from joint management. In an ordinary partnership the members bring more or less of their own personal management into the affairs of the company; and although, in peculiar circumstances, a partner may abstain from any interference, such a person, called in the trading world "a sleeping partner," is treated by the law in all respects as if he participated in the privileges and responsibilities of his working brethren. The distinctive peculiarity of the joint-stock company is, that their members throw their stock into the venture without directly participating in the management, which may be either in the hands of a selected number of the shareholders, or in that of persons who do not contribute at all to the undertaking. The subject thus presents considerations stretching far beyond the boundary of the mere laws affecting the rights and obligations of individual partners into the field of politics and history. It is at once obvious that these arrangements, by which the wealth of indefinite numbers can be concentrated in the hands of a few, are capable of creating a political influence which will have more or less the character of a ruling or governing power, according to the strength of the otherwise constituted authorities with which it may come in contact. It was by this sort of concentration of the wealth of many in the hands of a few that some of the religious societies of the middle ages became formidable rivals of the monarchies; the Society of the Knights Templars rising conspicuously above all others, and threatening to establish a sort of corporate empire, presiding over the European monarchies. Subsequently the Jesuits, in their government of Paraguay, afforded evidence of the power at the command of clever men regulating a common fund, which alarmed crowned heads no less than the usurping tenor of their doctrines. The great union of the Hanse Towns, before which the robber monarchies and aristocracies of central Europe fell, was again an instance of the power of concentrated wealth when measured against pure monarchical and aristocratic authority; and the expanding resources of the republic of Venice, and of other wealthy oligarchies, seemed to be raising a new ruling power which would gradually absorb and supersede the old dynasties, whether autocratic or aristocratic, by which nations were ruled. The expansion of trade by the discovery of America and a new passage to India, and still more perhaps the recasting of the political state of Europe by the Reformation, broke up these great concentrated masses, and distributed the power of collective wealth into smaller groups. Still the influence of joint-stock associations has ever, from time to time, arisen in formidable rivalry with other forms of political power, sometimes creating an effectual barrier to political oppression, but at others threatening the liberties and just rights of communities by a spirit of aggrandizement and rapacity. Perhaps the most curious single instance of a struggle between concentrated wealth and a ruling dynasty will be found in the history of Russia. The merchants of Novgorod increased in wealth and influence until they became a virtual republican government, gradually absorbing under their influence the surrounding territory. "Who can resist God and the great Novgorod?" became a saying of

the 15th century. The Grand Dukes of Muscovy commenced a systematic war against the royal company of merchants, and it seemed for some time a question whether Russia should be ruled by a commercial company or an autocracy. After many scenes of cruelty and rapacity, the latter prevailed. But the influence of Novgorod was not entirely extinguished until the foundation of St. Petersburg drew the northern trade of Russia into a new channel, where it came effectually under imperial control.

British history affords many memorable instances of the influence of joint-stock operations. It became the policy of the crown, from Queen Elizabeth's reign downward, to cherish commercial combinations, as a balance against the power of the aristocracy, and sometimes the body thus started with a stock of exclusive privileges acquired an influence dangerous alike to the authority of the crown and to the rights of the subject. The Russian Company, which had been licensed just before the accession of Elizabeth, acquired so much influence under her fostering care as to spread its transactions into Persia on the one hand, and embark in the whale fishery of Spitzbergen on the other. This potent body was in use to send ambassadors to the Grand Duke of Muscovy. But his successors, the czars, were not inclined to encourage such fellowship, and gradually enfeebled the haughty corporation by restricting its foreign privileges, and encouraging the rival company of Holland. The celebrated Turkey or Levant Company was chartered in 1581. Just 18 years afterward was formed, under far less pompous auspices, that East India Company which has been destined to rule over a greater empire than that of Julius Caesar or Charlemagne. See INDIA. Many African and American companies were formed in the 17th century, and created much excitement by their aggressions and rivalries. The Scots, excited by witnessing the enterprise and prosperity of England, in which the invidious navigation law of Charles II. prohibited them from participating, resolved to establish a great national joint-stock company for themselves. In 1695 they formed the "African Company," better known as the Darien project, subscribing a capital of four millions, the greater portion of which was paid up. This was held in its day to be a marvelous pecuniary effort for a portion of the empire which, a century and a half later, entered on railway projects involving in one year an outlay of sixteen millions. The company obtained from the Scottish Parliament more absolute power than even the great corporations of England; being authorized to hold a monopoly of certain trades, to occupy and govern territories, and to make peace and war. It commenced the execution of a variety of projects on a grand scale, and their disastrous result was a signal instance of that unscrupulous spirit of aggrandizement and oppression to which trading corporations are so liable. The Scottish company, probably, like many of the other bodies of adventurers, committed some questionable acts, but none sufficient to justify the rancorous hatred of the English rival companies, which, while the Scots were prevented, as an alien nation, from having their share in the English companies, denounced the corporation set up by the nation, which they thus counted separate and independent, for an infringement of a monopoly purely English. King William was too dependent on the moneyed power in England to hold an even balance of justice between opponents so unequally matched, and the Scottish colony was ruined.

Among the English companies of that age, several were successively established for trading with Africa and America. Their chief object and source of gain was one that would be fortunately held in detestation by the greater portion of British speculators at the present day—the supply of captured negroes to the plantations, foreign as well as British. The culmination of these projects in the great South Sea scheme

of 1719 is a well-known chapter in English history. The names of the many preposterous satellite schemes by which it was surrounded have often been cited as instances of folly calculated to tax the credulity of soberer periods, as projects in which the inhabitants of the wisest of nations actually embarked. If it were any consolation to find their neighbors guilty of greater follies than their own, the British of that age might find such consolation in a view of the French Mississippi scheme. The corporate power thus created not only professed to absorb the trade, finance, and banking of France, but projected the creation of a transatlantic empire, which, from its centre in Louisiana, should gradually absorb the American continent.

Since the passing of the Patents Act in the reign of James I., the crown alone was precluded from granting powers of trading monopoly in royal charters, and the companies which, since that period, have obtained any monopolies in England beyond those created by the simple instance of their large capital, have held their powers from Parliament. The crown continued to grant monopolies in foreign trade till 1693; when, in the celebrated question of the old East India Company, the practice was condemned by a vote of the House of Commons. A remarkable instance lately occurred of an attempt by some enterprising men to carry out a project something like that of the East India Company, independently of authority either from the crown or Parliament. It was represented that the islands of New Zealand were admirably suited for colonization, and should be immediately attached to the British colonial empire by the right of occupancy. There was, however, a strong disinclination on the part of British statesmen at that period to encumber the imperial government with the management of additional colonies. The adventurers conceived the idea of occupying the islands with independent British emigrants. The novelty of their views, and the energy and eloquence with which these were enforced, attracted a number of ardent spirits around them, who were taught that in these happy islands, possessed of all the advantages of our British climate without its drawbacks, they were to found that empire of Anglo-Saxon origin, by which the southern portion of the world was to be eventually ruled. It seemed hard that the government, declining to occupy the colonies, should discourage this project; but there were many grounds for dreading from it evil consequences, among which the most obvious and immediate was, that when the colony began slightly to prosper, it would attract the cupidity of some other European power, from which it could not be protected without an interference which might involve the British government in formidable disputes. Hence, in the year 1840, the British flag was hoisted in New Zealand, and although "The New Zealand Company" was incorporated, and afterward became the medium for the disposal of large tracts of land, its position was so humble in comparison with the splendid visions entertained by its promoters, that after a long series of intricate disputes, they resigned their charter to the government in 1850.—E. B.

The chief objects for which joint-stock companies have lately been constituted are banking, insurance, works for the supply of cities with water and gas, canals, shipping, and harbors, and, at the head of all, railways. The railway system, indeed, is the form in which both the government and the people have of late felt the pressure of joint-stock power, and known the influence of which it is susceptible. The history and effect of the railway system will be found under its proper head.

Jonk, Jonque, or Junk, in naval affairs, is a kind of small ship, very common in the East Indies. These vessels are of various dimensions; and differ in the form of their building, according to the different

methods of naval architecture used by the nations to which they belong. Their sails are frequently made of mats, and their anchors of wood.

Journal, a day-book, register, or account of what passes daily. *Journal*, in merchants' accounts, is a book in which every particular article is posted out of the waste-book, and made debtor. This is to be very clearly worded and fairly engrossed. *Journal*, in navigation, a sort of diary or daily register of the ship's course, winds and weather, together with a general account of whatever is material to be remarked in the period of a sea voyage. In all such journals, the day, or what is called the 24 hours, terminates at noon, because the errors of the dead-reckoning are at that period generally corrected by a solar observation. The daily compact usually contains the state of the weather; the variation, increase, or diminution of the wind; and the suitable shifting, reducing, or enlarging the quantity of sail extended; as also the most material incidents of the voyage, and the condition of the ship and her crew; together with the discovery of other ships or fleets, land-shoals, breakers, soundings, and the like.

Juan Fernandez, or **Mas-a-tierra**, a rocky island in the Pacific Ocean, about 400 miles off the coast of Chili, of which it is a dependency. Lat. $33^{\circ} 45'$ S., long. $79^{\circ} 2'$ W. It is 18 miles long and 6 miles broad, rises to 3,000 feet above the ocean, has steep shores, and a desolate appearance from the sea; but in its north half, in which is Cumberland Bay, are some fertile valleys, producing figs, grapes, and sandal wood, cork, and other timber trees, and it is leased from the Chilean government by settlers from the United States and Tahiti. The solitary residence here for four years of a Scotchman, named Alexander Selkirk, is supposed to have formed the basis of Defoe's well-known tale of "Robinson Crusoe." **Mas-a-fuera** is another rocky and precipitous island, lying to the west. Lat. $33^{\circ} 49'$ S., long. $80^{\circ} 27'$ W.

Juniper. The juniper-tree belongs to the natural order *Coniferae*, and is useful both for its wood and its berries. The Virginian species, which is called *red cedar*, affords a light and durable material valuable in ship-building. It attains the height of about 30 feet, and grows well in barren soil. The berries used for flavoring gin are obtained from the *Juniperus communis*, and about 200 tons of them are annually imported to this country. They are also used for imparting pungency to beer. When roasted and ground, they afford a substitute for coffee. The oil of juniper is an important ingredient in varnish for pictures, wood-work, etc. The berries have also a diuretic property, and are used in medicine. The heavy duty to which they were subject in England was abolished in 1845.

Junk, in nautical language, a name given to any remnant or piece of old cable, which is usually cut into small portions, for the purpose of making points, mats, gaskets, sennets, and the like. See **JONK**.

Jute. Jute is a remarkably beautiful fibre—soft, silky, and easily spun; and if to its other advantages were added those of strength and durability, it would probably supersede all other fibrous materials. But it is as rapid in its decay as in its growth, and is, in reality, the most perishable of fibres. From the period of its first production in the clear state, it slowly, and of its own accord, changes its color, losing the beautiful pearly white, which at first distinguishes it, and assuming successive shades of fawn-color and brown. At the same time, its strength proportion-

ately diminishes. Circumstances hasten or retard this decay, and moisture is particularly injurious to it. High-pressure steam almost melts it away, so that when sail-cloth, adulterated with jute, is submitted to high-pressure steam (of only 30 lbs. pressure), for four hours, mere washing afterward removes the jute. It is believed that an improvement in the process of setting would increase both its strength and durability; but it is very doubtful if it can ever be rendered equal in these respects to either hemp or flax.

The extent of the foreign traffic which has already been established in this fibre, notwithstanding its imperfections, may be judged of from the fact, that in the years 1850 and 1851, the quantity of jute exported from Calcutta alone was valued at 2,000,000 rupees, or £200,000, and the jute or gunny-cloth at an equal sum, and that it has already obtained a considerable place among the raw materials employed in manufactures.—P. J. of T. See **HEMP**.

According to Braithwaite's "Commerce of Liverpool," 100,000 bales of jute are used annually in England, valued at £20 per bale. The grass is sent to Dundee and other places, and the fibre so resembles caterpillar's thread, that it is used to adulterate silk. It is made into coverings, called "baggings," for cotton bales; and, after various uses, finds its way to the paper-mill, for the manufacture of coarse wrapping-papers.—**HEREPATH'S Journal**.

This article is now largely introduced in the manufactures of England. It much resembles a coarse flax, having a long fibry texture, and when dyed has a very woolly appearance. In and around Dundee, Scotland, there are no fewer than 76 mills, all engaged, spinning this jute and flax—the principal of which is said to be the largest mill in Scotland. There are in this mill some 2000 hands, all wholly employed spinning jute, which is used to a large extent in the manufacture of carpets and rugs. Some three houses in that quarter dye for this branch of trade alone about seven tons a day. The carpets are sold as low as from 7d. to 11d. per yard; the rugs again as low as 8s. sterling. Jute can be spun to a very fine thread. It might be turned to a good account in the shawl trade, as a substitute for cotton. In its unmanufactured state it is said only to cost 11s. per cwt.; a very great contrast to the very coarsest wool—at least 1s. per pound in its oily state.

Jury-mast. In naval affairs, a temporary mast erected in a ship in the room of one that has been carried away by tempest or any other accident. Jury-masts are sometimes erected in a new ship to navigate her down a river, or to a neighboring port, where her proper masts are prepared for her.

Jury Trial, the most thoroughly expressive feature in the administration of modern justice, is, in its essential principle, nothing more than the citizen's right to have the judgment of an impartial committee of his fellow-citizens on any question of fact tending to affect his life, his liberty, or some important patrimonial interest. The origin of the practice has been traced by juridical antiquaries into many and far diverging sources, but they have all been found converging in one direction, by the influence of a common determination, which seems to have ever guided the purpose of the Anglo-Saxons and some other northern races in the practical application of such existing institutions as could be influenced to the end in view. See *North Brit. Rev.*, viii., 44; *Quar. Rev.*, lvii., 177; *Dem. Rev.*, vi., 463; **BLACKWOOD**, xxvii., 736; *Knicker.*, xv., 478, xviii., 247; *NILES'S Reg.*, xiii., 189.

K.

Kaleidoscope. This optical instrument, which combines mirrors, and produces a symmetrical reflection of beautiful images, was invented by Dr. Brewster of Edinburg; it was first suggested in 1814, and the instrument perfected in 1817, after which large numbers were manufactured. It is intended to assist jewelers, glass-painters, and other ornamental artists, in the formation of patterns, of which it produces an infinite number. See BLACKWOOD, iii.

Kane, Elisha Kent, the Arctic explorer, was born in Philadelphia on the 3d of February, 1822, and graduated at the University of Pennsylvania in 1843, first in the college and subsequently in the medical department; and when he started upon his active career of adventure, he was esteemed a good classical scholar, and a good chemist, mineralogist, astronomer, and surgeon. His frame, even in boyhood, was delicate, and, with a view of strengthening his constitution, he solicited an appointment in the navy as surgeon, and obtained it, and was attached to the first American embassy to China. This position gave him an opportunity to explore the Philippine Islands, which he effected mainly on foot. He was the first man who descended into the crater of Tael, lowered more than 100 feet by a bamboo rope from the overhanging cliff, and clambering down some 700 more through the scoriae, he made a topographical sketch of the interior of this great volcano, collected a bottle of sulphurous acid from the very mouth of the crater, and, although he was drawn up almost senseless, he brought with him a sketch of this hideous cavern and the specimens which it afforded. Before returning home from this expedition he had ascended the Himalayas, visited Ceylon, the upper Nile, and all the mythological regions of Egypt—traversing the route and making the acquaintance of the learned Lepsius who was then prosecuting his archeological researches. He also traversed Greece on foot, and returned to the United States through Europe. Soon after his arrival he was again ordered on duty—this time to the western coast of Africa. He now attempted to visit the slave marts of Whydah, but having taken the African fever, he was sent home in a precarious state of health. He recovered, however, and we next find him a volunteer in the Mexican war. His adventures in Mexico proved him to be the possessor of lion-like courage, and of a most generous and noble heart; but he fell a victim to one of the fevers of the country, and was very near dying. When he recovered and returned, he was employed in the Coast Survey department, from which he was transferred by the Secretary of the Navy to the post of surgeon on the Grinnell Arctic expedition. His history of that expedition gave him a high position as an author. Not yet satisfied, however, he scarcely gave himself time to recover from the hardships of that cruise, before he set on foot the second Grinnell or Kane expedition, the results of which have been pronounced by the highest European authorities as among the wonders of the present century. Dr. Kane died of consumption, at Havana, February 16th, 1857. See *Arctic Explorations and Life of Kane*.

Kansas Territory extends from the 37th degree of north latitude to 40 degrees north, and from the west boundary of Missouri to the crest of the Rocky Mountains. Area, 122,000 square miles. Drained by the main branch of the Arkansas, by the Kansas, and by head branches of the south fork of Platte or Nebraska River. Surface level, consisting of an immense plain, with a gentle slope from the base of the Rocky Mountains to the Missouri border, and the abrupt descent from the mountain ridge to the base of about 75 miles in width. The soil is various, rich alluvial bot-

tom lands bordering the streams, some fertile prairie lands and extensive sandy plains, but these are of sufficient fertility to furnish nourishment to immense herds of the American bison. It was formed into a Territory by the act of Congress of May, 1854, together with the Territory of Nebraska.

Kedge, a small anchor used to keep a ship steady while she rides in a harbor or river, particularly at the turn of the tide, when she might otherwise drive over her principal anchor, and entangle the stock or flukes with her stack cable, so as to loosen it from the ground. This is accordingly prevented by a kedge rope that hinders her from approaching it. The kedges are particularly useful in transporting a ship; that is, removing her from one part of the harbor to another, by means of ropes, which are fastened to these anchors. They are generally furnished with an iron stock, which is easily displaced for the convenience of stowing them.

Keel, the principal piece of timber in a ship, which is usually first laid on the blocks in building. By comparing the carcass of a ship with the skeleton of the human body, the keel appears as the back-bone, and the timbers as the ribs. The keel supports and unites the whole fabric, since the stem and stern posts, which are elevated on its ends, are, in some measure, a continuation of the keel, and serve to connect and inclose the extremities of the sides by transoms, as the keel forms and unites the bottom by timbers. The keel is generally composed of several thick pieces placed lengthways, which, after being scarfed together, are bolted and clinched upon the upper side.

False Keel, a strong thick piece of timber, bolted to the bottom of the keel, which is very useful in preserving its lower side. The false keel is provided when the thick pieces which form the keel can not be procured large enough to give a sufficient depth thereto. In large ships of war the false keel is composed of two pieces, called the *upper* and *lower* false keels. The lowest plank in a ship's bottom, called the *garboard streak*, has its inner edge let into a groove or channel, cut longitudinally on the side of the keel. The depth of this channel is therefore regulated by the thickness of the garboard streak.—E. A.

Keel-hauling, a punishment inflicted for various offenses in the Dutch navy. It is performed by suspending the culprit by a rope from one yard-arm, with a weight of lead or iron upon his legs, and having another rope fastened to him, leading under the ship's bottom, and through a block at its opposite yard-arm. He is then suddenly let fall from the one yard arm into the sea, where, passing under the ship's bottom, he is hoisted up on the opposite side of the vessel to the other. This punishment is not altogether unknown in British ships; but, as it is dangerous, it is very rarely, or, indeed, scarcely ever, now practiced.

Keelson, or **Kelson**, a piece of timber forming the interior or counterpart of the keel, being laid upon the middle of the fore-timbers immediately over the keel, and serving to bind and unite the former to the latter, by means of long bolts driven from without, and clinched on the upper side of the keelson. The keelson, like the keel, is composed of several pieces scarfed together; and, in order to fit with more security upon the floor-timbers and crotchets, it is notched about an inch and a half deep opposite to each of those pieces, thereby scored down upon them to that depth, where it is secured upon them by spike-nails. The pieces of which it is formed are of only half the breadth and thickness of those of the keel.—E. A.

Kelp, a substance composed of different materials, of which the fossil or mineral alkali, or, as it is com-

monly termed, soda, is the chief. This ingredient renders it useful in the composition of soap, in the manufacture of alum, and in the formation of crown and bottle glass. It is formed of marine plants, which, being cut from the rocks with a hook, are collected and dried on the beach to a certain extent; they are afterward put into kilns prepared for the purpose, the heat of which is sufficient to bring the plants into a state of semi-fusion. They are then strongly stirred with iron rakes; and when cool, condense into a dark blue or whitish mass, very hard and solid. Plants about three years old yield the largest quantity of kelp. The best kelp has an acrid caustic taste, a sulphurous odor, is compact, and of a dark-blue greenish color. It yields about 5 per cent. of its weight of soda.—BARRY'S *Orkney Islands*; THOMSON'S *Dispensatory*. The manufacture of kelp in Great Britain, is, or rather was, principally carried on in the Western Islands, and on the western shores of Scotland, where it was introduced from Ireland, about the middle of last century. Toward the end of the year 1815, the kelp shores of the island of North Uist let for £7000 a year. It has been calculated that the quantity of kelp annually manufactured in the Hebrides only, exclusive of the mainland, and of the Orkney and Shetland Isles, amounted, at the period referred to, to about 6000 tons a year, and that the total quantity made in Scotland and its adjacent isles, amounted to about 20,000 tons. At some periods during the war, it sold for £20 a ton; but at an average of the 23 years ending with 1822, the price was £10.—ART. SCOTLAND, *Edinburg Encyclopedia*. Unluckily, however, the foundations on which this manufacture rested were altogether factitious. Its existence depended on the maintenance of the high duties on barilla and salt. Inasmuch, however, as kelp could not be substituted, without undergoing a very expensive process, for barilla, in a great many departments of industry in which the use of mineral alkali is indispensable, it became necessary materially to reduce the high duty in Great Britain on barilla during the war. The ruin of the kelp manufacture has been ascribed to this reduction; but though barilla had been altogether excluded from the markets which could not have been done without great injury to many most important manufactures, the result would have been perfectly the same, in so far as kelp is concerned, unless the high duty on salt had also been maintained. It was the repeal of the latter that gave the kelp manufacture the *coup de grace*. The purification of kelp, so as to render it fit for soap-making, is a much more troublesome and expensive process than the decomposition of salt; and the greatest quantity of alkali used, is now obtained by the latter method. The manufacture is now almost extinct. Shores that formerly yielded the proprietors a rent of £200 to £500 a year, are now worth next to nothing. The price of kelp since 1822 has not been, at an average, above £4 a ton; and the article will, most probably, soon cease to be produced.

This result, though injurious to the proprietors of kelp shores, and productive of temporary distress to the laborers employed in the manufacture, is not to be regretted. It could not have been obviated, without keeping up the price of some of the most important necessities of life at a forced and unnatural elevation. The high price of kelp was occasioned by the exigencies of the late war, which, besides obstructing the supply of barilla, forced government to lay high duties on it and on salt. The proprietors had not the vestige of a ground for considering that such a state of things would be permanent; they did right in profiting by it while it lasted; but they could not expect that government was to subject the country, during peace, to some of the severest privations occasioned by the war, merely that they might continue to enjoy an accidental advantage.

Kelp is chiefly used in the United States as a ma-

nure, and for this purpose is very valuable. Large quantities are thrown on the beaches after a storm, and the Gulf Stream constantly brings it to our shores, from whence it is carted by our farmers to their fields, and allowed to decompose.

Kentledge, the name sometimes given to the iron pigs cast in a particular form for ballasting ships, and employed for that purpose.

Kentucky, one of the central United States, is situated between 36° 30' and 39° 10' north lat. and between 82° and 89° 40' west long. Its length is about 400 miles, and its breadth 170 miles, containing 37,680 square miles. Population in 1790 was 73,667; in 1800, 220,959; in 1810, 406,511; in 1820, 564,317; in 1830, 688,844; in 1840, 779,823, and in 1850, 982,405. The State is divided into 100 counties.

Surface, Soil, etc.—A tract from 5 to 20 miles wide along the Ohio River, through the whole length of the State, is hilly and broken, but has a fertile soil. The margin of the Ohio for about a mile in width, consists of bottom lands, which are overflowed when the river is high. Between this tract of hilly country the more mountainous eastern counties and Green River is a fertile tract, frequently denominated the garden of the State. It is about 150 miles long, and from 50 to 100 wide. The soil is excellent, the surface gently undulating, and the forest-growth, black-walnut, black-cherry, buckeye, paw-paw, sugar-maple, mulberry, elm, ash, cotton-wood, white thorn, and an abundance of grape-vines. The country in the south-west part of the State, between Green and Cumberland Rivers, is called the "barrens." In 1800 the legislature of the State made a gratuitous grant of this tract to actual settlers, under the impression that it was of little value, but it proves to be excellent grain-land, and also adapted to the raising of cattle and swine. The whole State below the mountains, has, at the usual depth of eight feet, a bed of limestone which has frequent apertures through which the waters of the rivers sink into the earth, causing some of them to disappear for a time, and others to be greatly diminished in the summer season. The rivers have generally worn deep channels in the calcareous rocks over which they flow. The precipices formed by the Kentucky are in many places stupendous, presenting perpendicular banks of solid limestone 300 feet high, above which is a steep and difficult ascent several times as high. In the south-west part of the State, between Green and Cumberland Rivers, are several remarkable caves. One called the Mammoth Cave, 180 miles from Lexington, on the road to Nashville, has been explored for a distance of eight or ten miles. Iron ore and coal, are widely diffused, coal especially occupies an extensive field. Salt springs are numerous, and mineral springs are found in many localities. There were in this State in 1850, 5,968,270 acres of land improved, and 10,981,478 of unimproved land in farms; cash value of farms, \$155,031,262, and the value of implements and machinery, \$5,169,037; live stock—horses, 315,682; asses and mules, 65,609; milch cows, 247,475; working oxen, 62,274; other cattle, 442,763; sheep, 1,102,091; swine, 2,891,163; value of live stock, \$29,661,436.

Agricultural Products, etc.—Wheat, 2,142,822 bushels; rye, 415,073; Indian corn, 58,672,591; oats, 8,201,311; barley, 95,343; buckwheat, 16,097; peas and beans, 202,574; potatoes, 1,492,487; sweet potatoes, 998,179; value of products of the orchard, \$106,230; produce of market gardens, \$303,120; pounds of butter made, 9,947,523; of cheese, 213,954; sugar, 284 hhds.; maple sugar, 437,405 pounds; molasses, 30,079 gallons; beeswax and honey, 1,158,019 pounds; wool, pounds produced, 2,297,433; cotton, 758; flax, 2,100,116; silk cocoons, 1201; hops, 4309 pounds; tobacco, 55,501,196; hay, tons of, 113,747; hemp, 16,432 tons; clover seed, 3230 bushels; other grass seeds, 21,481; flax seed, 75,801 bushels; and were made 8093 gallons of wine; value of slaughtered animals, \$6,462,598.

The Ohio River, by its various windings, borders this State on the north for 637 miles. Cumberland and Tennessee Rivers pass through its western part as they approach their entrance into the Ohio. Cumberland rises in the eastern part of this State. The Big Sandy is 260 miles long, and for a considerable distance forms the boundary between this State and Virginia. It is navigable 50 miles for boats. The Kentucky River rises in the Cumberland Mountains, and after a course generally through a deep rocky bed, falls into the Ohio 77 miles above Louisville. It is navigable for steamboats 60 miles to Frankfort. Licking, Green, and Salt, are other considerable rivers. The Mississippi runs on the western border. Tonnage of the State, January, 1853, 12,166, composed entirely of steamboats.

Manufactures, etc.—There were in this State in 1850, 8 cotton factories, with a capital invested of \$541,000, employing 206 males and 307 females, producing 1,078,084 yards of sheeting, etc., and 725,000 pounds of yarn, valued at \$440,095; 27 woolen factories, with a capital of \$260,320, employing 289 males and 81 females, manufacturing 878,034 yards of cloth, valued at \$424,544; 24 establishments making pig iron, with a capital of \$1,027,500, employing 1922 persons, producing 28,609 tons of pig iron, etc., the entire value of products, \$629,937; 20 establishments, with a capital of \$502,200, employing 578 persons, and making 5888 tons of castings, etc., valued at \$744,316; 4 establishments, with a capital of \$176,000, employing 183 persons in manufacturing 3070 tons of wrought iron, valued at \$299,700; 320 flouring and grist-mills 362 saw-mills, and 890 tanneries; 51 printing offices, 9 daily, 5 tri-weekly, 2 semi-weekly, 88 weekly, 1 semi-monthly, and 7 monthly publications; total copies printed annually, 6,582,838.

There were in this State January 1857, 33 banks, with a capital of about \$12,000,000. There were in operation January, 1856, 233 miles of railroad, and 452 miles in course of construction.

The foreign commerce of Kentucky is very small. Effort is being made to increase it, and also the foreign commerce of some of the other western States, by giving facilities for the direct importation of goods. At several of the western cities, fine custom-houses have been built; at St. Louis and Cincinnati, and at others, Louisville and Dubuque, it is proposed to erect them. There are no records of the foreign commerce of Kentucky prior to 1835. Since that time it has been as follows:

FOREIGN COMMERCE OF KENTUCKY.

Years.	Exports. Domestic.	Imports.	District Tonnage. Enrolled.
Sept. 30, 1835, to Sept. 30, 1840.	\$3,723	\$39,435	In 1836.... 1,714
Sept. 30, 1840, to June 30, 1850.	....	390,885	" 1841.... 8,359
July 1, 1850, to July 1, 1853...	....	574,493	" 1851....12,989

Kepler, John. This eminent man, known in the annals of astronomical science as discoverer of the laws of motion of the planetary bodies which compose the solar circle, was the son of a military officer, and was born at Weil, Duchy of Wirtemberg, 27th December, 1571. In 1591 he became the pupil of Michael Mastlins, under whom he made great progress as a mathematician. Having added divinity to his studies, he acquired considerable celebrity as a preacher; but, relinquishing the clerical gown, he succeeded, in 1594, in obtaining the mathematical chair in the university of Gratz, in Styria. In 1598, having professed the Protestant faith, he was removed from his office, but was soon recalled again by the States. In 1600 he accepted an invitation from Tycho, urging him to settle at Prague, and assist him in the prosecution of astronomical researches, under the patronage of the Emperor Rodolph. The death of Tycho, and Kepler's own illness almost immediately on his arrival in Prague, prevented the desired co-operation; but on his introduc-

tion to the emperor, he was requested to complete the tables his late friend had begun, which were to be called the *Rodolphine Tables*. This work, which occupied him during the greater part of the remainder of his life, he carried on and completed in 1627, amid the inconveniences and difficulties which arose from the irregular payment of his pension, and the other expenses attending the undertaking. His health now again failed, and as a means of restoration, together with the desire of obtaining the arrears due him by the emperor, he went to Ratisbon; but the fatigue of traveling and mental uneasiness threw him into a sickness which closed his life, soon after his arrival in that city, in November, 1630. His published works on astronomical subjects are numerous, besides which he wrote on chronology, geometry of solids, trigonometry, logarithms, and dioptries. To this great philosopher the world is indebted for the discovery of the true figure of the orbits of the planets, which he demonstrated to be ellipses, together with those principles of planetary motion generally denominated "the laws of Kepler."

Kermes (Ger. *Scharlachbeeren*; Du. *Grein Scharlakenbessen*; It. *Grana*, *Chermes*, *Cremese*, *Cocchi*; Sp. *Grana Kermes*, *Grana de la coscoja*), an insect (*Coccus illicis* Lin.) of the same species as the true Mexican cochineal, found upon the *quercus ilex*, a species of oak growing in Spain, France, the Levant, &c. Before the discovery of America, kermes was the most esteemed drug for dyeing scarlet, and had been used for that purpose from a very remote period. Beckmann inclines to think that it was employed by the Phœnicians, and that it excelled even the famous Tyrian purple. (*Hist. of Invent.*, vol. ii., p. 197, Eng. ed.) From the name of *coccus* or *coccus*, cloth dyed with kermes was called *coccinum*, and persons wearing this cloth were said by the Romans to be *coccinati*. (*Mart.*, lib. i., epig. 97, lin. 6.) It is singular, however, notwithstanding its extensive use in antiquity, that the ancients had the most incorrect notions with respect to the nature of kermes; many of them supposing that it was the grains (*grana*) or fruit of the *ilex*. This was Pliny's opinion; others, after him, considered it in the same light, or as an excrescence formed by the puncture of a particular kind of fly, like the gall-nut. It was not till the early part of last century that it was finally and satisfactorily established that the kermes is really nothing but an insect, assuming the appearance of a berry in the process of drying.—The term kermes is of Persian origin. The Arabians had been acquainted with this production from the earliest periods in Africa; and having found it in Spain, they cultivated it extensively as an article of commerce, as well as a dye drug for their own use. But since the introduction of cochineal, it has become an object of comparatively trifling importance. It is still, however, prepared in some parts of Spain. Cloths dyed with kermes are of a deep red color; and though much inferior in brilliancy to the scarlet cloths dyed with real Mexican cochineal, they retain the color better, and are less liable to stain. The old tapestries of Brussels, and other places in Flanders, which have scarcely lost any thing of their original vivacity, though 200 years old, were all dyed with kermes. The history of this production has been treated with great learning by Beckmann (*Hist. of Invent.*, vol. i., pp. 171-191, 1st ed. trans.); and by Dr. Bancroft (*Permanent Colors*, vol. i., pp. 393-409).

Kersey (probably a corruption of Jersey, whence it originally came), a kind of coarse cloth, usually ribbed, and woven from long wool. It is chiefly manufactured in the north of England. *Kerseymere*, on the other hand, is a thin stuff, generally woven plain from the finest wools; and hence it has been inferred that these two terms, whose meaning is so distinct, can not be referred to the same origin. *Kerseymere* is said to have derived its appellation from Cashmir, a country which produces the finest wool, and is consequently

most celebrated for the works of its looms. In England it is principally manufactured in the western district.

Ketch (It. *caicchio*), an old English term applied to a vessel equipped with two masts, and from 100 to 250 tons burden. It was nearly synonymous with the modern term *yacht*, being used chiefly by ambassadors or other distinguished personages in voyages from one place to another, and was furnished with all the apparatus necessary for defense or aggression.

Keys. The invention of them is ascribed to Theodore, of Samos, by Pliny, about 780 B. C. But this is an error, as keys are mentioned in the siege of Troy, 1193 B. C. Keys were originally made of wood, and the earliest form was a simple crook similar to the common picklock now in use. The ancient keys now to be found in the cabinets of the curious are mostly of bronze. The late Francis Douce, Esq., had some of remarkable shapes, the shaft terminating on one side by the works, on the other by a ring. Keys of this description were presented by husbands to wives, and were returned again upon divorce or separation.

Keys are certain sunken rocks lying near the surface of the water, particularly in the West Indies, from the Spanish *cayo* (an islet rock). The keys, so called, off the Florida coast, are prolific in wrecks of the larger class of vessels. For an account of these wrecks, see articles **KEY WEST, FLORIDA,** and **WRECKS.**

Key-West, a small island from four to five miles in length, by one in width; 56 miles south-west from Cape Sable, in Florida. It is one of the Florida keys, or of that extensive circular range of low islands, banks, and reefs, which fences the coast of Florida, and forms the northern boundary of the Gulf Stream, from the Tortugas islands on the west round to Cape Florida on the north. A light-house erected on the south-west point of the island, lat. $24^{\circ} 32' 32''$ N., long. $81^{\circ} 48' 30''$ W., has a fixed light elevated 67 feet above the level of the water. The town of Key-West, near the north-west part of the island, has about 1600 inhabitants, and has an excellent harbor, with about 25 feet of water. A safe passage, about six miles in length, leads by Key-West from the Gulf Stream to the Gulf of Mexico. It has 12 feet of water at ebb tide, and vessels from the north bound for New Orleans, Mobile, etc., or from the latter for the former, by passing through it, avoid the delay and danger of the more westerly passage round the Tortugas. Owing to the frequent accidents to shipping from coming in contact with the banks and reefs in this dangerous vicinity, the American government has organized an establishment at Key-West for the assistance of ships in distress, and made it the seat of an admiralty court for the adjudication of claims for salvage. The former consists of above 20 licensed vessels, with crews of about 10 men each. These are kept constantly cruising about on the look-out for ships in distress or wanting pilots; and as their emolument principally depends on the fees they obtain for their assistance, it may be fairly assumed that it will be rendered with the greatest alacrity. But the desirable thing is to hinder vessels from getting on shore, the assisting them when in that predicament being, though an important, a secondary consideration. The latter, however, and not the former, is the main object which the licensed cruisers of Key-West have in view; and it would be preferable, could means be devised for making their remuneration depend rather on their success in preventing disasters, than, as at present, in mitigating their influence. This, however, is by no means easily done. Shipwrecks will, perhaps, be more effectually prevented by increasing the number of light-houses, light-vessels, and sea-marks along the edges of the islands and reefs, than in any other way. We subjoin an account of the sums awarded as salvages by the court of Key-West, in each of the 16 years ending with 1851. These, though of small amount,

show a general uniformity, making it probable that they are from local causes.

1836.....	\$174,182	1844.....	\$92,712
1837.....	107,495	1845.....	69,592
1838.....	84,578	1846.....	124,400
1839.....	90,797	1847.....	50,554
1840.....	83,118	1848.....	125,800
1841.....	71,178	1849.....	127,870
1842.....	88,108	1850.....	122,831
1843.....	88,811	1851.....	75,852

See **BLUNT'S American Pilot;** **DEBOW'S Industrial Resources;** *Account of Light-houses, U. S., in 1850.*

Kiakhta, a Russian settlement of more than a century old, a little to the south of Lake Baikal, and constitutes, with the Chinese frontier town Maimachen (which is in immediate juxtaposition), the emporium through which the whole of the overland tea for Russia passes, and it is from this fact that this place acquires its present importance. It is by this channel that the article originally reached western Europe; and if all intercourse with the Chinese seaboard were stopped, by this channel only would all consumers, not only in Europe, but in America also, be able to obtain it. The whole tea-drinking world would have to content itself with obtaining from St. Petersburg what supplies it could, after it had been brought a distance of nearly 8000 miles by land transport and river navigation. The cost of transit is such that before the late war with Russia scarcely anything was drunk throughout the whole kingdom of Poland but smuggled Canton tea, which was every year penetrating further and further into the interior of Russia, as will be believed, when it is stated that the average wholesale price of the common tea was 270 copecks (\$2 10) and of the best 410 copecks (\$3 28) at Moscow in the year 1854. To what price it would reach, were the demand suddenly increased to any great extent, is mere conjecture. One thing is plain—it would deprive not merely the common people, but the great bulk of the middle class, of all participation whatever in this great necessity.

The duties on this overland tea form an important item in Russian finance. A most serious diminution in them was occasioned by the treaty with China which threw open the northern ports. In 1842 no less than 467,679 poods of Chinese merchandise, the far greater part of it being tea, left Kiakhta; in 1854 little more than half as much. If a perfectly free intercourse with the interior of China were allowed, the Kiakhta trade would be proportionably diminished; and it is quite conceivable that it would even be superseded altogether, except as regards the so-called "brick-tea"—a compost of tea-leaves and sheep's blood, in which the Mongol palate exclusively delights. This inference is drawn confidently from the positive statement of the Russian statist, M. Tengoborskii, that the Kiakhta tea costs 20 copecks the pound in transport before it even reaches the emporium; whereas the same article from the same dépôt may be taken to Shanghai for only 8 copecks, and all the way to London for 10. It is plain, therefore, that the question of open or closed ports in China is the question between the annihilation of the Russian revenue from tea, and the compelling of the consumers of the commodity throughout the world to enrich the Russian treasury by purchasing a tithe of their requirements at tenfold the price they need pay for an ample supply.

The only country which has an interest in sealing the Chinese seaboard is likewise the only one which enjoys, and has long enjoyed, the privilege of being represented at Peking. Ever since the year 1727 the Russian government has maintained an establishment in that capital, the members of which are changed regularly every 10 years. It originally professed to be for the spiritual behoof of the descendants of some Siberian settlers who had been carried off about half a century before from the upper valley of the Amoor,

but the mission still continues, although the necessity has ceased; and, while authentic information relative to the resources and the administration of the Celestial Empire is derived through this channel by the foreign office at St. Petersburg, no doubt whatever opinions are current at Peking of the powers of western Europe owe their shape and color to the same agency.—*London Times*.

Kidderminster, a manufacturing town of England, county Worcester, on the Oxford, Worcester and Wolverhampton railroad, and on both sides of the Stour, near its confluence with the Severn, 15 miles north of Worcester. Population, 18,462. Kidderminster was noted for its woollen manufactures in the reign of Henry VIII. The fabrics now made are carpets and finger rugs, with some bombazines, button coverings and waistcoat pieces. The carpets are unrivaled for excellence of workmanship at the low prices charged. In 1838, upward of 2000 looms, and 4000 hands, were employed in this manufacture. The Stafford and Worcester canal passes the town, and opens a communication with Liverpool, Hull, and Bristol. The Kidderminster and Scotch carpets are woven on the principle of damask patterns, all being wool, and the patterns being effected by arranging and interchanging two colors, so that while one predominates on one side, the other pattern shows itself on the other side. They have little substance, and soon wear out; their low price being their only advantage. They are made in widths of a yard, and are sold at about 3s. sterling per yard, or sometimes even below that price.

Kidney Beans, or **French Beans**, were introduced into England about A.D. 1633. The kidney bean-tree (*Glycine frutescens*) was brought to that country from South Carolina about the year 1724, though some authorities say earlier. Kidney beans are a summer pulse, and are of peculiar delicacy early in the season. They are much esteemed, both in this country and in England.

Kilogramme. In France, the unit used in weighing is the gramme, which has been fixed by law, and is equal to the specific weight of the distilled water contained in one cubic centimetre. The gramme thus fixed weighs 15.433 grains Troy and 16.924 grains avoirdupois, while the kilogramme, which consists of 1000 grammes, is found to be equal to 2 livres (pounds) 5 gros, 35 grains—15.100ths poids de marc—and to 2 pounds, 8 ounces, 3 pennyweights, 6.355 grains Troy, or 2 pounds, 3 ounces, 4 dramchans, 16 grains avoirdupois weight English. As the most common things of daily consumption are sold by weights in small quantities, a great difficulty arose in introducing this part of the system; and the old denominations of weights have therefore been allowed to remain, with some modification in their actual value, taking the kilogramme as the basis. The kilogramme is divided into 2 livres, the livre is subdivided into 16 ounces, the ounce into 8 gros, and the gros into 72 grains. The new livre, therefore, exceeds the old one (poids de marc) by 2.100ths; so, to reduce kilogrammes into old measure, it is necessary to multiply by 2 and add 2.100ths. In the decimal system adopted in France, the prefixes for multiplying are Greek, and for dividing are Latin. Thus:

Deca means	10 times.	Deci means	10th part.
Hecto "	100 "	Centi "	100th "
Kilo "	1,000 "	Milli "	1,000th "
Myria "	10,000 "		

We have, therefore, the milligramme, centigramme, decigramme, GRAMME, decagramme, hectogramme, kilogramme, and myriagramme, as the names of the various weights.

Kino (Fr. *Gomme de Kino*; Ger. *Kinoharz*; It. *Chino*), a gum, the produce of trees that grow in the East and West Indies, Africa, Botany Bay, etc. The kino now found in the shops is said by Dr. A. T.

Thomson to come from India, and to be the produce of the *nauclea gambir*. The branches and twigs are bruised and boiled in water. The decoction is then evaporated until it acquires the consistence of an extract, which is kino. It is imported in chests containing from 1 to 2 cwt.; and on the inside of the lid of each chest is a paper, inscribed with the name of John Brown, the month and year of its importation, and stating that it is the produce of Amboyna. It is inodorous, very rough, and slightly bitter when first taken into the mouth; but it afterward impresses a degree of sweetness on the palate. It is in small, uniform, deep brown, shining, brittle fragments, which appear like portions of a dried extract broken down; being perfectly uniform in their appearance. It is easily pulverized, affording a powder of a lighter brown color than the fragments. But it may be doubted whether the inspissated juice of the *nauclea gambir* ought to be considered as kino. Dr. Ainslie says that Botany Bay kino is the only kind he had seen in an Indian bazaar. The tree which yields it grows to a great height: it flows from incisions made into the wood of the trunk.—Thomson's *Dispensatory*; AINSLIE'S *Materia Indica*.

Knee, in a ship, a crooked piece of timber, having two branches or arms, and generally used to connect the beams of a ship with her sides or timbers. The branches of the knees form an angle of greater or smaller extent, according to the mutual situation of the pieces which they are designed to unite.

Knee of the Head, a large, flat piece of timber, fixed edgewise upon the fore part of a ship's stem, and supporting the ornamental figure or image placed under the bowsprit. The *knee of the head* is a phrase peculiar to shipwrights, as this piece is always called the *cut-water* by seamen, if we except a few, who, affecting to be wiser than their brethren, have adopted this expression, probably on the presumption that the other is a cant phrase or vulgarism.

Carling-Knees, in a ship, those timbers which extend from the ship to the hatchway, and bear up the deck on both sides.

Knives (Ger. *Messer*; Du. *Messen*; Fr. *Couteaux*; It. *Coltelli*; Sp. *Cuchillos*; Rus. *Noshi*) well known utensils made of iron and steel, and employed to cut with: they are principally manufactured in London and Sheffield. Knives are made for a variety of purposes, as their different denominations imply; such as table-knives, pen-knives, oyster-knives, pruning-knives, etc. Although England at present excels every part of the world in the manufacture of knives, as in most branches of cutlery, the finer kinds were imported until the reign of Elizabeth. It is stated by Mr. Macpherson (*Annals of Com.*, A.D. 1563), that knives were not made for use in England till 1563; but there can be no doubt that this is an error. They had been made, though probably of a rude and clumsy pattern, for centuries before, in the district called Halamshire, of which Sheffield is the centre; the cutlers of London were formed into a corporation in 1417.—*Manufactures in Metal*, in LARDNER'S *Cyclopædia*. See **HARDWARE** and **CUTLERY**. Forks were in use on the Continent in the 13th and 14th centuries.—VOLTAIRE. This is reasonably disputed, as being too early. In FYNES MORYSON'S *Itinerary*, reign of Elizabeth, he says: "At Venice each person was served (besides his knife and spoon) with a fork to hold the meat while he cuts it, for there they deem it ill manners that one should touch it with his hand." Thomas Coryate describes, with much solemnity, the manner of using forks in Italy, and adds, "I myself have thought it good to imitate the Italian fashion since I came home to England," A.D. 1608.

Königsberg, the capital of east Prussia, in lat. 54° 42' 11" N., long. 20° 29' 15" E. Population, in 1846, 75,234. Königsberg is situated on the Pregel, which flows in the Frische Haif, or Fresh Bay, a large

lake having from 10 to 14 feet water. The bar at the mouth of the Pregel has only from 10 to 11 feet water, so that vessels of more than that draught of water require to be lightered to come up to Königsberg. Pillau, in lat. 54° 33' 39" N., long. 19° 52' 30" E. on the north side of the entrance from the Baltic to the Frische Haff, is properly the port of the town. Within these few years, a light-house has been erected on a rising ground, a little to the south of Pillau, the lantern of which is elevated 95 feet above the level of the sea. The light is fixed and brilliant. The entrance to the harbor is marked by buoys; those on the larboard side being surmounted by small flags. A Gothic building, 120 feet above the level of the sea, has been erected to serve for a land-mark; at a distance it looks like a three-masted ship under sail. There is usually from 15 to 16 feet water between the buoys on entering the harbor; but particular winds occasion material differences in this respect. Being situated on a navigable river of considerable importance, Königsberg has a large command of internal navigation, and is the principal emporium of a large extent of country. Wheat, rye, and other species of grain are the chief articles of export. The wheat is somewhat similar to that of Dantzic, but of inferior quality, being larger in the berry, and thicker skinned. The rye is of good quality, but barley, with few exceptions, is thin and light. A few remarkable large and fine peas are exported; but the bulk are of small size, and inferior. Oats are common feed, with a slight admixture of tares, but as these last answer in some degree the purpose of beans, the value of the oats is rather enhanced than otherwise by the circumstance. More tares are shipped here than from any other port in the Baltic. The price of all sorts of grain is usually lower at Königsberg than at the neighboring Prussian ports. Linseed and rapeseed, hemp, flax, linens, oil-cake, oil, bristles, refined sugar, etc., are largely exported.

ACCOUNT OF THE ARTICLES EXPORTED FROM KÖNIGSBERG BY SEA IN 1851, SPECIFYING THE QUANTITIES SHIPPED TO GREAT BRITAIN, THE TOTAL QUANTITIES EXPORTED, AND THEIR VALUES, WITH THE TOTAL QUANTITIES EXPORTED IN 1850.

Articles.	Exports in 1851.			Total quantities exported in 1850.
	Total quantities.	Value in Prussian currency.	Value in sterling.	
		R. th.	£	
Wheat.....lasts*	8,756	1,109,099	166,864	14,328
Rye....."	22,447	1,496,467	224,470	23,344
Barley....."	2,890	154,133	23,120	5,056
Oats....."	1,055	45,717	6,858	4,808
Peas....."	1,826	139,998	20,999	4,108
Beans....."	639	47,925	7,139	1,512
Tares....."	37	2,343	351	636
Linseed and rapeseed....."	4,411	499,918	74,937	5,101
Clover & Timothy seed, cwt.†	2,095	19,908	2,985	2,046
Flax....."	13,835	124,515	18,677	20,468
Flax codilla....."	16,770	75,465	11,320	8,724
Hemp....."	2,352	22,344	3,352	3,501
Hemp codilla....."	202	1,010	151	171
Linen....."	4,132	125,466	18,819	4,175
Bristles and hair....."	157	14,130	2,120	64
Feathers and quills....."	104	11,440	1,716	126
Oilcakes....."	70,364	93,820	14,078	67,998
Oil....."	9,005	90,005	13,507	13,421
Bones....."	1,826	2,130	320	1,456
Bone Black....."	7,839	3,920	588	568
Sugar ref'd & molasses....."	12,716	225,888	34,838	11,668
Butter and cheese....."	62	1,240	186	166
Hides and skins....."	363	10,890	1,634	....
Ashes....."	56	120	18	64
Rags....."	802	906	136	....
Mats.....bundles of 5	5,060	3,096	455	5,810
Sundries....."	....	50,000	7,500	....
Total value of exports 1851	....	4,374,551	656,228	....

* 10½ imperial quarters.

† 20 to a ton.

The imports are sugar, tea, herrings, iron and steel, coffee, wines, tin and tin plates, dye-woods, tobacco, spices, drugs, coals, etc. Salt is a government monopoly; any person being allowed to import it, but he must either sell it to government at a price fixed by them, or export it again.

ACCOUNT OF THE PRODUCTS IMPORTED INTO KÖNIGSBERG BY SEA IN THE YEAR 1851, SPECIFYING THE QUANTITIES IMPORTED FROM GREAT BRITAIN AND ELSEWHERE, WITH THEIR ESTIMATED VALUES.

Articles.	From the United Kingdom.	From all other places.	Total quantities.	Value in sterling.
Arrack, rum, & brandy, cwt.	614	13,539	14,203	33,348
Ashes, calcined....."	20	296	316	417
Cotton wool....."	1,422	918	2,340	7,020
Cotton ware....."	32	224	256	3,072
Cotton yarn....."	5,963	64	6,027	22,601
Coffee....."	816	14,694	15,510	53,510
Cheese....."	7	526	533	959
Copperas and vitriol....."	2,087	532	2,669	1,201
Coals....."	190,300	360	190,660	7,627
China and earthenware....."	53	1,173	1,226	6,988
Cement....."	7,868	....	7,868	1,180
Dye wood....."	1,218	9,553	10,771	11,310
Drugs....."	3,414	11,656	15,070	11,302
Fruit, southern....."	133	4,058	4,191	6,287
Fruit, fresh and dried....."	....	1,198	1,198	1,258
Fire clay....."	2,104	....	2,104	105
Glass and glassware....."	10	1,922	1,932	4,347
Gypsum....."	....	81,225	81,225	1,375
Honey....."	....	1,239	1,239	2,280
Hops....."	37	718	755	2,382
Hides and skins....."	435	2,544	3,029	9,037
Herrings.....barrels	4,230	75,089	79,299	77,295
Indigo.....cwt.	442	24	466	10,435
Iron and steel ware....."	1,493	13,951	15,444	34,749
Iron and steel, raw....."	30,718	1,490	32,208	9,662
Iron and steel, new....."	1,435	23,123	24,558	35,536
Lead....."	1,993	329	2,322	2,094
White lead....."	76	175	251	490
Litharge....."	119	30	149	179
Limestone.....lasts	143	....	143	38
Linen.....cwt.	49	1,156	1,205	19,000
Mill and grind-stones, files and bricks.....lasts	261	566	827	3,722
Malt liquors.....cwt.	1,538	17	1,605	2,167
Molasses....."	....	207	207	218
Mustard....."	116	....	116	696
Oil, different sorts....."	7	3,675	3,682	3,060
Paper....."	....	361	361	975
Rice....."	4,906	4,908	9,809	11,770
Salt....."	145,347	3,013	153,365	9,370
Spices of all kinds....."	1,937	14,453	16,290	24,435
Sugar, refined....."	....	735	735	1,654
Sugar, raw....."	100,400	24,943	125,343	150,413
Succory root....."	....	9,642	9,642	7,239
Tea....."	9,053	4,394	13,447	121,023
Tin....."	84	133	217	651
Tinplate....."	635	1,396	2,031	9,230
Tobacco, manufactured....."	....	2,341	2,341	17,046
Tobacco leaves....."	....	1,111	1,111	3,333
Tar and pitch....."	600	14,267	14,867	3,345
Train oil....."	2,143	2,150	4,293	5,152
Vinegar....."	....	971	971	437
Wine....."	175	17,466	17,641	31,739
Woolen ware....."	145	69	214	2,889
Wool, not European....."	....	960	960	720
Sundry imports of various descriptions.....}	....	....	....	7,500
Total value of imports.....	....	....	....	806,385

Money, Weights, and Measures, same as at Dantzic; see DANTZIC.

Kurachee, or Karachee, the principal sea-port town of Scinde, on an inlet of the Indian Ocean, 18 miles from the west branch of the Indus. Lat. 24° 47' 3" N., long. 66° 56' 2" E. It stands on a low, sandy shore, and a few years ago consisted, with its extensive suburbs, mostly of straggling huts; but the latest accounts state that it has been almost rebuilt, and greatly improved since it has become a British possession. Its trade and consequence are rapidly augmenting. The harbor is the only port along this coast for vessels drawing more than 10 feet water, and is sheltered by Cape Munorah, four miles south-west.

L.

Laboring of a ship, implies pitching or rolling heavily in a turbulent sea, an effect by which the masts and hull are greatly endangered; because by the rolling motion the masts strain upon their shrouds with an effort which increases as the sine of their obliquity; and the continual agitation of the vessel often loosens her joints and makes her extremely leaky.

Labrador, a large peninsula of North America, nearly of a triangular shape, extending from N. lat. 50° to 63° , and from W. long. 56° to 79° . It is bounded on the south by Canada and the Gulf of St. Lawrence, east by the Atlantic Ocean, north by Hudson's Straits, and west by Hudson's Bay. Labrador is thus detached from the arctic lands, but is nevertheless a country as frozen, desolate, and barren, as those on the west of Hudson's Bay. The coast along that spacious inland sea is called East Main, and the climate there is peculiarly rigorous. The whole surface of Labrador, indeed, is as sterile and naked as any part of the globe. The prevailing features are rocks, swamps, and water; and vegetation appears as the last effort of expiring nature. Small, scraggy poplars, stunted firs, creeping birch, and dwarf willows, thinly scattered in the southern parts, constitute the whole of the trees. Herbs and grass are also in sheltered places to be met with, but in the most northerly parts only varieties of moss and lichens are to be found. The whole of the interior, from the aspect of what has been explored, and from the reports of the Esquimaux and other Indians, seems to be broken up with rivers, lakes, and rocks. The prevailing rock continuous to the sea-shore of Labrador, is gneiss. On this, at L'Anse à Loup, the most fertile part of the country, a bed of old red sand-stone, about 200 feet thick, is superimposed, and extends about half a mile inland. Here, also, as on other parts of the coast, the appearances of the cliffs and of the land near them, and the rolled masses inland, which have evidently been exposed to the action of the sea, seem to prove that the latter has considerably receded.

On the coast of Labrador the winter is extremely severe, the thermometer often falling 80 degrees below the freezing point; and although the houses of the Moravian missionaries are heated by large cast-iron stoves, the windows and walls are all the winter covered with ice, and the bed-clothes freeze to the walls. Rum is frozen in the air as rapidly as water, and rectified spirits soon become thick like oil. From December to June, the sea is completely frozen over, and so intense is the cold during the winter months, that traveling is sometimes attended with the most painful consequences. The summer months, again, are extremely hot along the coast, the thermometer rising to 86 degrees of Fahrenheit, when swarms of mosquitoes infest the air.

The climate is not insalubrious; and, notwithstanding all its disadvantages, Labrador is of considerable importance to Great Britain. No country is better provided with large, convenient, and safe harbors, or supplied with better water; and vast multitudes of all those kinds of fish common to the arctic seas abound on the coast. Herrings are very fine and plentiful in August, but there is no weather to cure any kind of fish after the 10th of September. The rivers are frequented by salmon and sea trout; and pike, barbel, eels, river trout, and the like, are likewise found in them. On the numerous islands which are scattered along the east coast, multitudes of eider-ducks and other water-fowl breed. Those of large size have deer, foxes, and hares upon them. On the continent the wild animals are principally bears, wolves, foxes,

and otters; beavers and deer are not numerous, but their furs are remarkably close and beautiful. The birds of the country are the white-tailed eagle, falcons, hawks, and owls of various kinds; raven, white grouse, ptarmigan, spruce-game, whistling-curlew, gray plover, various kinds of sand-pipers and other waders; geese, ducks of various sorts, shags, gulls, divers, and some few species of small birds. During the short summer insects are very numerous, especially in swampy places. In winter they exist in a state of torpidity, from which they are aroused by the solar heat or artificial warmth. The phenomenon of the aurora borealis is uncommonly brilliant in this region, and exercises a very marked influence over the compass.

No accurate account of the trade of Labrador can be obtained, as there are no custom-houses or public officers in the country; but the following estimate is probably as close an approximation as can be made to the annual value of the exports:

In Newfoundland vessels	£240,000
" Nova Scotia	96,000
" American	96,000
" Canadian	29,000
" Vessels owned or chartered by English or Jersey houses.....	96,000
Total.....	£557,000

Some, however, estimate the total exports at £800,000.—E. B.

The exports of Labrador are cod, herring, pickled salmon, fresh salmon (preserved in tin cases), seal-skins, cod and seal oil, furs, and feathers.

Fisheries of Labrador.—As late as 1761, it is not probable that fishermen of any flag had visited the waters of Labrador. The English whale and sea fisheries were the first, and employed upward of 100 vessels, at times, prior to the year 1775. The earliest adventures were near 1763; as at that time the Labrador country was politically separated from Canada, and annexed to the government of Newfoundland by royal proclamation, to the end that the "open and free fishery of our subjects may be extended." The pursuit of the cod and salmon followed. Meantime the Moravians, whose principal settlement is at Nain, who have ever led a quiet and simple life, and who now annually ship furs, oils, and other productions of that region to England, in payment for the manufactured commodities which they require, had founded a colony. The islands are so numerous, and so near each other, as to resemble, and often to be mistaken for, the main land. Back from the coast, the country is still unknown. Labrador still forms a part of the colony of Newfoundland. The natives bear the general name of Esquimaux. The resident inhabitants of European origin are English, Irish, Jerseymen, and Canadians, who are employed either on their own account, or as servants of others, as furriers, seal-catchers, and cod and salmon-fishers.

The Canadian fisheries are small. They send 8 or 10 vessels to the coast, with 80 or 100 men. They fish for cod and salmon. They carry a part of what they catch to Quebec, and send a part to Europe. The colonists of Nova Scotia and New Brunswick adventure at Labrador to a considerable extent; but they do not pursue the business as regularly and with as much system as do those of Newfoundland. Sometimes they send more than 100 vessels in a year; at others the number is much less. They engage principally in the cod-fishery, making a single fare and curing their fish at home. The Labrador fisheries have "increased more than sixfold," says Macgregor, "principally in consequence of our fishermen (the

English) being driven from the grounds now occupied by the French," since the year 1814; and he estimates that about 20,000 British subjects are at present required during the fishing season, in the catching, curing, and transporting the various products of these remote seas.

STATISTICS OF FISHERIES.

Year.	Vessels	Men.	Dry fish produced.		Salmon produced.	Seals caught.	Oils produced.		Value.
			Quintals.	Tierces.			Tuns.	Dollars.	
1829	608	9,110	678,000	.....	.....	.....	1,682	.....	.....
1831	700	11,200	720,000	2,480	16,000	.....	2,200	1,450,000	.....

The fishing establishments of the English and Jersey merchants are extensive and well conducted. They are engaged in the cod and salmon fisheries, and in the taking of seals. In the year 1831, the value of their shipments to Europe was upward of \$200,000. The number of these commercial houses is from 10 to 12, who manage their business at Newfoundland, either by the temporary presence of junior partners or clerks, or by resident agents. The people of Newfoundland, averring that the French and Americans have driven them from their own "bank-fishery," resort to Labrador. They employ 200 or 300 vessels. A part make two voyages in a season. The first fare is commonly cured on the coast; but the second is carried home without drying. Some of the merchants of Newfoundland ship both cod and salmon directly to correspondents in Europe; while others order their captains to return to the island and unlade their fish and oil at their own warehouses.—SABINE'S *American Fisheries*.

Labuan, a small island off the north-west coast of Borneo, a dependency on the British crown, about six miles distant from the nearest point of the mainland, and 80 miles north from the city of Borneo or Bruni, lat. $50^{\circ} 12' N.$, long. $115^{\circ} 19' 36'' E.$ It is from 25 to 30 miles in circumference, flat, and covered with wood. The anchorage on the south side of the island is protected by a greater and three smaller islands; and the town of Victoria has been commenced at the embouchure of a rivulet in a small bay, at the head of the anchorage. Coal of good quality is found on the island, and it is well supplied with fresh water. It was ceded by the Sultan of Borneo to Great Britain in 1844; and Sir James Brooke, who negotiated its cession, was afterward appointed its governor. When it came into possession of the English it was uninhabited; but its situation is such that, provided it be moderately healthy, it can hardly fail to become an important emporium. It lies near the best route for shipping from the Straits of Singapore to China, and, while it is extremely well situated for carrying on trade with the west and north coasts of Borneo and the Philippine Islands, it will serve as a harbor of refuge, and as a convenient station for the steamers and other ships of war required to put down the piracy that has been, to the great injury of commerce, carried to so great extent from the ports and rivers of Borneo, and of some of the adjacent islands. In this respect, its abundant supply of coal will be of the greatest service. In war, the possession of Labuan will give to the English entire command of the Chinese Sea.—BROOKE'S *Journal*.

Borneo, or Bruni, on the adjacent shore of the mainland, and the residence of the Sultan of Borneo proper, has been termed the Venice of the East. It contains from 80,000 to 40,000 inhabitants, mostly Malays, and really seems as if it floated on the waves. It is situated on an estuary, and though built with little regard to regularity, it is intersected crosswise by two main streets, which divide it into four portions, one only of which stands on dry land. The houses in the other three parts are of wood, built on piles, which support them above the water, with streets, if so they may be called, to admit the passage of canoes. The steamer

which conveyed Sir James Brooke to Borneo, when Labuan was ceded, anchored in the main street, in the centre of the town! "The greatest novelty at Bruni," says Mr. Marryat, from whom we have borrowed these details, "is the floating bazaar. There are no shops in the city, and the market is held every day in canoes. These come in at sunrise every morning from every part of the river, laden with fresh fruit, tobacco, pepper, and every other article which is produced in the vicinity; a few European productions, such as handkerchiefs, check-cotton prints, etc., also make their appearance. Congregated in the main street, the canoes are tacked together, forming lanes, through which the purchasers, in their own canoes, paddle, selecting and bargaining for goods with as much convenience as if the whole were transacted on *terra firma*. Iron is here so valuable that it is used as money. 100 flat pieces, an inch square, are valued at a dollar; and among the lower classes these iron pieces form the sole coin. They are unstamped, so that any person appears to be at liberty to cut his own iron into money; but whether such is really the case, I can not vouch."—MARRYAT'S *Borneo*.

But though deficient in iron, the gold mines of Borneo are said to be of the richest description. Sir Stamford Raffles estimated that in his time about 32,000 Chinese laborers were employed in these mines on the west coast of Borneo; and it is not easy to say how productive they might become were the miners in a condition to prosecute their undertakings in safety, and to bring the resources of science and of capital to their aid. Antimony is also found in abundance in Borneo, especially in the district of Sarawak, of which Sir James Brooke is rajah; and the diamonds of Borneo rival those of India and Brazil. But independently of its coal, and of its precious and other metals, its vegetable products might alone furnish the materials of an extensive commerce. The sago-palm grows in great perfection in many parts of the island, and sago is largely exported in a rough state to Singapore. The areca nut, rattan, gutta-percha, gum-benjamin, camphor, birds' nests, etc., are also considerable articles of export; and sugar, pepper, and all the products of tropical regions, might, with a little care, be raised to any extent in most parts of this vast island. The numbers and ferocity of the savages by whom it is occupied present, indeed, formidable obstacles to its improvement. But civilization is beginning to make its way among them; and, though probably slow, its progress can not well be arrested.

Lac or Gum Lac (Ger. *Lack*, *Gummilack*; Fr. *Lacque*, *Gomme lacque*; It. *Lacca*, *Gommilacca*; Sp. *Goma laca*; Rus. *Laka*, *Gummilak*; Arab. *Laak*; Hind. *Lak'h*; Sans. *Lākshā*), a substance which has been improperly called a gum, produced in Bengal, Assam, Pegu, Siam, etc., on the leaves and branches of certain trees, by an insect (*Chermes lacca*). The trees selected by the insect on which to deposit its eggs are known by the names of the bihar-tree (*Croton lacciferum* Lin.), the pepel (*Butea frondosa*), bott and coosim-trees, etc. After being deposited, the egg is covered by the insect with a quantity of this peculiar substance, or lac, evidently intended to serve, in the economy of nature, as a nidus and protection to the ovum and insect in its first stage, and as food for the maggot in its more advanced stage. It is formed into cells, finished with as much art as a honeycomb, but differently arranged. Lac yields a fine red dye, which, though not so bright as the true Mexican cochineal, is said to be more permanent; and the resinous part is extensively used in the manufacture of sealing-wax and hats, and as a varnish. Lac, when in its natural state, incrusting leaves and twigs, is called *stick lac*. It is collected twice a year; and the only trouble in procuring it is in breaking down the leaves and branches, and carrying them to market. When the twigs and sticks are large, or only partially cov-

ered, the lac is frequently separated from them, as it always ought to be when shipped for market, to lessen the expense of freight. The best stick lac is of a deep red color. When held against the light it should look bright, and when broken should appear in diamond-like points. If it be not gathered till the insects have left their cells, it becomes pale, and pierced at the top; and it is of little use as a dye, though probably better for a varnish.

Lac dye, lac lake, or cake lac, consists of the coloring matter extracted from the stick lac. Various processes have been adopted for this purpose. It is formed into small square cakes or pieces, like those of indigo. It should, when broken, look dark-colored, shining, smooth, and compact; when scraped or powdered, it should be of a bright red color, approaching to that of carmine. That which is sandy, light-colored, and spongy, and which, when scraped, is of a dull brick-dust color, should be rejected. Notwithstanding the continued fall in the price of cochineal, the use of lac dye has been extending. The annual consumption in 1858 was estimated at about 1,200,000 lbs., having more than quintupled since 1818. The finest qualities of lac dye are seldom met with for sale in Calcutta, being generally manufactured under contract for the European market. When stick lac has been separated from the twigs to which it naturally adheres, and coarsely pounded, the native silk and cotton dyers extract the color as far as it conveniently can be done by water. The yellowish, hard, resinous powder which remains, having somewhat of the appearance of mustard-seed, is called *seed lac*. When liquefied by fire, it is formed into cakes, and denominated *lump lac*. The natives use the latter in making bangles, or ornaments in the form of rings, for the arms of the lower class of females; the best *shellac* being used in manufacturing these ornaments for the superior class.

Shellac is produced from seed lac, by putting the latter into bags of cotton cloth, and holding it over a charcoal fire, when the lac melts, and being strained through the bag, the resinous part, which is the most liquefiable, is obtained in a considerable degree of purity; it is formed into thin sheets or plates. Thin, transparent, or amber-colored shellac is best. Avoid that which is thick, dark, and speckled. It should always, when broken, be amber-colored on the edge. That which has a dark-brown fracture, however thin, should be rejected. When laid on a hot iron, shellac, if pure, will instantly catch fire, and burn with a strong but not disagreeable smell. It used to be principally employed in this country in the manufacture of sealing-wax and as a varnish, but it is now very extensively used in the manufacture of hats. In Bengal lac is chiefly produced in the forests of Sylhet and Burdwan. The finest dye is said to be obtained from the stick lac of Siam and Pegu; but the shellac or resinous part obtained from the latter is inferior to that produced from Sylhet stick lac. It may be obtained in almost any quantity.—BANCROFT on *Permanent Colors*; AINSLIE'S *Mat. Med.*; MILBURN'S *Orient. Com.*

Lac of Rupees, is 100,000 rupees, which, supposing them standard or siccas, at 2s. 6d. each, amounts to £12,500 sterling.

Laccadives, an archipelago of low islands lying off the western coast of India, between 8° and 13° N. lat. There are 19 considerable ones; but as most of them are surrounded with reefs and steep rocks, with a great depth of water close to them, the approach to them is very dangerous. Between these islands there are many channels, through which ships from India, bound to Persia or Arabia, frequently sail. The safest of these is called Mamale, or the Nine-degree Channel, which runs between the islands of Seuhilipar and Kulpenny. The largest of these islands is about 7 miles in length and 2½ in breadth. Most of them are inhabited by a race of Mohammedans called

Moplays. They do not yield grain, but produce an infinite quantity of cocoa-nuts, from the husks of which they form the *coir* cables, which are more elastic and durable than hemp, as the sea-water, instead of rotting, preserves them. These islands are well supplied with fish, and carry on a trade with the small shells called *couries*, which pass as coin all over India and most of Africa. Most of these islands are under the uncontrolled management of the beebees of Cannanore, subject to the payment of an annual tribute to the British government. A proposal has been made to the beebee to transfer them to the British, in consideration of a pecuniary equivalent. They were discovered by Vasco de Gama in 1499, but have since been little frequented by Europeans.

Lace (*Du. Kanten*; *Fr. Dentelle*; *Ger. Spitzen*; *It. Merletti, Pizzi*; *Rus. Krushewo*; *Sp. Encajes*), a plain or ornamented net-work, tastefully composed of many fine threads of gold, silver, silk, flax, or cotton, interwoven, from *Lacinia* (Lat.), the guard hem or fringe of a garment. This delicate fabric appears to have claims to high antiquity, but its origin is involved in considerable obscurity. That it was worn by Grecian females is certain, and the derivation of the word *lace* affords presumptive evidence that it was also in use among the Romans. In Venice, and the neighboring States of Italy, it was very early worn; and Mary of Medicis is supposed to have been the first who introduced its use into France; but as early as 1483 it was included in a list of articles prohibited from importation into England. Hence it had been made in this country prior to the period above mentioned; and this prohibition, like many other subsequent acts, was for the protection and encouragement of home manufactures. But *pins*, which are indispensable in the process of fine lace-making, were unknown till long afterward; so that it is probable the fabric made was neither very fine in texture nor produced to any great extent. It is uncertain by whom the manufacture of lace was originally introduced into this country. About the middle of the 17th century the lace trade was flourishing in Buckinghamshire; and so greatly had it advanced in England, that, by a royal ordinance in France, passed in 1660, a mark was established upon the thread lace imported from this country and from Flanders, and upon point lace from Genoa, Venice, and other countries.

Pillow, or Thread Lace, is made by placing a perforated pattern on a hard stuffed pillow, and the thread required is wound upon bobbins with a groove in the upper part for retaining the thread; while, to form the meshes, pins are stuck in the cushions, and threads woven or twisted round them, the pattern showing the points of insertion for the pins, and also the direction for the gimp, which is interwoven with the fine threads of the fabric to form the pattern. At the commencement of the work the bobbins are arranged on one side of the cushion, and are brought to the front side, two pairs at a time, and twisted together. The woman holds one pair of bobbins in each hand, and twists them three times over each other to form the sides of the mesh, the adjacent bobbins of each pair are next interchanged, so as to cross these threads over one another to form the bottom of the next. Supposing the four bobbins to be marked 1, 2, 3, 4,—No. 1 is twisted round 2, and No. 3 round 4; these, in order to cross 2 and 3, are interchanged, so that 1 and 3 and 2 and 4 come together, and at the next twist these pairs of threads will be combined. As the meshes or half-meshes are formed, they are secured by pins. These four bobbins are now put on one side of the cushion; two more pairs are brought forward, twisted and crossed as before, and these operations are repeated until a row of meshes is formed of the required breadth, when the bobbins are worked over again to form another row. From 48 to 60 bobbins are required for every inch of breadth. Pillow or thread

lace, formerly employed a large number of women and children in the counties of Bedford, Buckingham, Northampton, and Oxford, but the demand for this kind of white thread lace failed, and black lace took its place. *Honiton lace* differs from pillow lace in having the pattern made separately. The ornaments were formerly confined to simple sprigs and borders; but the fabrics now produced show extreme delicacy of execution, with beauty and taste in design: flouncings, shawls, scarfs, handkerchiefs, berthes, etc., now vary in price from 10 to 200 guineas. The Honiton lace district extends about 30 miles along the coast of Devonshire, and about 12 miles inland. In 1851 from 7000 to 8000 persons were employed in the manufacture.

British point, tambour, and Limerick laces are chiefly imitation, and are produced in shawls, scarfs, dresses, court trains, flouncings, lappets, etc. *British point* is made chiefly in the neighborhood of London, *tambour* chiefly at Islington, Coggleshall, and Nottingham, while *Limerick lace* is peculiar to Ireland. Black laces now occupy a considerable portion of the attention of the trade. The most celebrated laces have been classed as—1. *Brussels*, the most valuable. There are two kinds: *Brussels ground*, having a hexagon mesh, formed by plating and twisting four threads of flax to a perpendicular line of mesh; *Brussels wire ground*, made of silk; meshes partly straight and partly arched. The pattern is worked separately, and set on by the needle. 2. *Mechlin*: a hexagonal mesh, formed of three flax threads twisted and platted to a perpendicular line or pillar. The pattern is worked in the net. 3. *Valenciennes*: an irregular hexagon, formed of two threads, partly twisted and platted at the top of the mesh. The pattern is worked in the net similar to Mechlin lace. 4. *Lille*: a diamond mesh, formed of two threads platted to a pillar. 5. *Alençon*, called *blond*: hexagon, of two threads, twisted similar to Buckingham lace; considered the most inferior of any made on the cushion. 6. *Alençon point*: formed of two threads to a pillar, with octagonal and square meshes alternately.

In the manufacture of lace, France takes the lead; and it is calculated that the production of lace by hand gives employment in that country to upward of 200,000 females of all ages. It is all made with bobbins upon a small pillow, except at Alençon, where the needle only is employed. The materials used are hand-spun linen thread, cotton, wool, silk, and gold and silver thread. *Point d'Alençon* is the only lace made with pure linen hand-spun thread; this thread is worth from \$500 to \$600 per pound. White lace is now chiefly made with cotton thread, Nos. 120 to 320. The principal seats of the manufacture are—Caen and Bayeux, Chantilly and its neighborhood, Lille, Arras, Mirecourt, Puy, Bailleul, and Alençon. Each of these districts has its own peculiar style; and although the lace may be made in the same way, and with the same material, in all these districts except the last, yet each is easily recognized. Silk blond originated at Caen, and was so called from being made of undyed silk of a nankeen color: the finest white or the finest black silk is now employed. Caen and Bayeux excel all other places in the production of piece goods, and manufacture shawls, robes, mantles, etc., more extensively than any other districts in the world. By means of a stitch called *rucroe*, the women of the department of Calvados join several parts into one piece so cleverly as to defy detection, even with a magnifying glass. Most of the improvements and novelties in lace-making originate at Mirecourt; it produces the same kind of lace as Lille and Arras, viz., clear foundation, *fonds clair*, and also *fonds de champs*, in white thread, also a lace resembling the Honiton called *guipure*.

Flowers are also made, and sewed upon the extremely fine net called *Brussels net*, closely resem-

bling the Belgian fabric. The whitest and cheapest French lace is produced at Bayeux.

Belgium is the great rival of France in the manufacture of laces, the chief varieties of which are known as *Brussels*, *Mechlin*, *Valenciennes*, and *Grammont*. Brussels produces two descriptions of lace, known as *point à l'aiguille*, and *Brussels plait*, the one made entirely with the needle, and the other on the pillow. The finest kind is made of very fine flax thread, and some of cotton. It is remarkably soft and clear, but very costly. Mechlin laces are made at Malines, Antwerp, etc. They are made in one piece on the pillow, and the flowers are surrounded by a plait thread, which designs the outline, and has the effect of embroidery. Valenciennes laces are made chiefly at Ypres, Menin, Courtrai, Bruges, Ghent, Alost, and their respective neighborhoods, each town having its characteristic peculiarities by which its productions are identified. Ypres produces laces of the finest square grounds, varying in price from 12 cents to \$250 the English yard.

It is natural to suppose that attempts would be made to lessen the cost of production of so beautiful and costly an article as lace. It was not, however, until machinery had been largely introduced for the purpose of manufacturing textile fabrics that lace machinery can be said to have been successfully employed. About the year 1768 a frame-work knitter of Nottingham employed the common stocking-frame in the manufacture of lace, and about the same time another person of the same place introduced a pin machine for making single-press point-net in imitation of the Brussels ground. Various machines were from time to time introduced, all of which, except the *warp machine*, have been superseded by the *bobbin-net machine*, so called from the circumstance that the thread that makes the lace is partly supplied from bobbins and partly from a warp. The first successful machine of this kind was made and patented by John Heathcote in 1809, the principle of which was to pass the bobbins from front to back, and from back to front, while a lateral motion was imparted to the warp-threads, thus causing one series of threads to wrap round the other. The first machine was so complicated, that 60 motions were required to complete one hole—an effect that can now be produced with six. The cost of production has also more than proportionally decreased; for in 1815 one square yard of the produce was worth \$7, and can now be purchased for eight to ten cents. Up to the year 1831 plain net and quillings were the chief produce of the bobbin-net machine; but about this time methods were introduced to *purl* and *bullet-hole* the edges of narrow laces, finishing them afterward, with a gimp thread, with the needle. The machines used were known as the *Leavers*, named after the original constructor; the *pusher machine*, so called from having independent pushers to propel the bobbins and carriages from front to back, instead of pulling or hooking them; the *circular machine*, so called from the bolts or combs on which the carriages pass being made circular instead of straight; the *traverse-warp machine*, so called from the warp traversing, instead of the carriages. About the year 1839 the *Jacquard* apparatus was successfully applied to a pusher machine; and since 1841, when a plan was discovered for applying the Jacquard to the guide-bars, scarcely a machine has been worked without the ornaments being applied by means of cards. New sources of manufacture soon developed themselves, such as flouncings, scarfs, shawls, window-curtains, etc.

Bobbin-net lace owes much of its beauty to the quality of the threads, and the correct shape of the meshes. By increasing the number of warp-threads within a given space the meshes are reduced in size, and finer lace is formed. There may be from 700 to 1200 and upward of warp-threads in a piece one yard wide. The fineness, or *gauche* or *points*, as it is called, depends

on the number of slits in the combs, and hence on the number of bobbins in an inch; thus *guage nine points* indicates nine openings in one inch of the comb. The length of work counted vertically, and containing 240 holes or meshes, is called a *rack*. A circular-bolt machine may produce about 360 racks per week. Bobbin-net is made up in pieces of from 20 to 30, or more yards in length, and of variable breadth. Narrow quillings are worked together in a number of breadths, united by threads, which are afterward drawn out. In well-made lace the meshes are slightly elongated in the direction of the selvage. Ornaments, consisting of separate flowers, sprigs, etc., are worked in by a Jacquard apparatus attached to the frame; but as the ornaments are all necessarily connected by the thread of gimp which forms them, the connected thread is afterward cut out with scissors, by children employed for the purpose. Where the machine produces only one plain net, the pattern is worked in by hand, the lace-runner being guided by a lithographic pattern placed under the net. When the embroidery is complete, it is examined, defective parts are marked by tying the lace in a knot, and these are restored by a distinct set of women called *lace-menders*.

In addition to the bobbin-net machine for making lace, there is also the *warp machine*, invented about the year 1775. It was suggested by the stocking-frame, in which only one thread is required, while in the warp-frame there is a thread to each needle. The first articles made by it were silk stockings, with blue and white zig-zag stripes, or *vandykes*, as they were called, from the name of one of the four claimants to the invention of the warp-frame, the other three being Englishmen. About 1784 a Nottingham mechanic greatly improved the warp-frame by the application of the rotatory motion, and the cam-wheels to move the guide-bars, still known as *Dawson's wheels*. The improved frames produced officers' sashes, purses, braces, and other elastic textile fabrics, the manufacture of some of which still continues. In 1796 a new fabric was produced from the warp, and employed for sailors' jackets, pantaloons, and the article known as Berlin, so much used for making gloves. Warp machines were the first to produce ornamental patterns on lace, such as spots, bullet-holes, etc., which had been previously embroidered or tamboured by hand. The bobbin-net machine, invented in 1809, soon became a formidable rival of the warp, and influenced its fortunes in various ways, until 1839, when the Jacquard apparatus was applied to it, and so much increased its capabilities as to introduce into the warp-lace trade of Nottingham a new class of products of elaborate design, such as shawls, scarfs, mits, falls, laces, etc. Of late years the *twist machine* has been employed on similar goods, and has to a great extent superseded the warp. Great improvements have also been introduced in the English methods of *dressing* lace, especially in silk goods. Many new kinds of elastic fabrics, in gloves, in silk, and other materials, have been introduced. Velvet, and velvet in combination with lace, have also been produced at the warp-frame. At the time of the Great Exhibition there were about 1400 warp-frames in operation, namely about 600 in Leicestershire, about 400 in Derbyshire, and about the same number in Nottinghamshire. The employment in the various branches was estimated as follows: 150 machines engaged in the production of blond, and other silk laces; 150 in cotton tatting, 550 in Leicester hosiery, etc.; 100 in lace gloves and mits, 150 in woollen cloth, hosiery, purses, and various fabrics for gloves, etc. The first machines were about 16 inches in width; they are now, in the Nottingham trade, from 90 to 150 inches in width, and in the Leicester hosiery trade, from 44 to 72 inches. The number of persons employed in the warp trade in Great Britain, in 1851, was estimated at 10,000, and the capital invested at \$1,800,000, making a return per annum of

\$3,500,000. In the Great Exhibition was exhibited a power machine, capable of producing (working 12 hours per day) 800 racks per week, which, when dressed, would be equal to about 1200 square yards. A yard of 4-quarter white silk blond, which in 1830 cost 50 cents, can now be had for 12 cents.

Gold and Silver Lace.—The textile fabric known as gold or silver lace consists of warp threads of silk, or of a mixture of silk and cotton, while the weft or shoot is a silk thread covered with silver, or with silver gilt, as the case may be. The production of this thread is a remarkable illustration of the extensibility of gold, and of the ductility of silver. The silver preferred by the wire-drawers is that which has been separated from argentiferous galena, this being less brittle than the silver obtained from purer sources. From 400 to 500 ounces are cast into an ingot about 2 inches in diameter, and from 20 to 24 inches in length. This is made red-hot in a charcoal fire, and hammered until sufficiently reduced to pass through the first hole of the draw-plate, the hammering increasing the tenacity and elasticity of the metal. After the bar has been reduced by passing through 10 or 12 holes, it is planed, in order to remove any imperfections from the surface which would interfere with the perfect gilding; the blemishes are readily detected by the reflection of a sheet of foolscap paper slightly arched, and placed over the bar. The bar is now gilt, by placing on it a number of gold leaves, varying from 10 to 30, according to the richness of the wire required, the higher qualities being used for military purposes, and pearls and bullions for embroidering, while the lower qualities are used for liveries, the ends of muslins, and for skein threads exported to India and China. The gold leaves are placed in a row, side by side, nearly the length of the bar, on a piece of cartridge paper: the bar is then gently placed on the leaves, pressed close, and the edges of the leaves raised up until the silver is entirely covered. The bar is next enveloped in paper tied tightly round with cord, and placed in a charcoal fire, where it is left until it becomes of a bright red heat, the paper not burning, but becoming red with the metal, when it slowly consumes, after which the bar is withdrawn. While still red-hot it is burnished with a blood-stone or with South Sea ax-stone, for the purpose of uniting the gold and the silver perfectly. When cold the surface is covered with wax, and the bar is drawn into wire through graduated steel dies, and, after one or two annealings, finished by drawing through perforated rubies, so fine that from an ounce of metal a wire a mile and a quarter in length is produced. At this point the wire has not so rich and deep a shade of yellow as is required, but this is given by winding the wire round a copper cylinder, with the addition of a small portion of wax, and filling the cavity of the cylinder with red-hot charcoal made from birch-wood, the effect of which is to deepen the color, and render it permanent. The next process is to flatten the wire by passing it between a couple of steel rollers, one of ten, and the other of four inches in diameter, made of the finest steel, and of exquisite polish. They are manufactured in Rhenish Prussia, at a cost of \$600 for a single pair of rollers. The flattened wire is wound on small bobbins, which are placed in the centre of circular rings, attached to a bar over a spinning frame. On the front of the frame are bobbins of silk, the threads of which pass through the centre of the ring to which the reel of wire is fixed. The whole is set in motion, and while the thread is being twisted, the ring with the wire revolves round the thread in the opposite direction. In this way from 30 to 40 threads are covered at once, the result being a resplendent flexible gold thread, adapted to the purposes of lace-making, embroidery, etc. Of this thread, although gold only appears, probably 9-10ths of its bulk is silk, while of the remaining 1-10th only 1-50th part is gold. See details on this subject in the *Journal*

of the Society of Arts, No. 178, in the Report of Mr. F. Bannoeh's paper on "Thread or Fibre Gilding."—E. B.

The exports of laces from the United States for the year 1856, were as follows:

Countries.	Thread and Insertings.	Value.
Canada.....	\$15,730	\$25,378
British possessions.....	1,440	.....
Mexico.....	249	1,472
Total.....	\$17,458	\$26,845

STATEMENT SHOWING THE IMPORTS OF LACES AND EMBROIDERIES INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Laces.		Embroideries of wool, cotton, silk, and linen.
	Thread and Insertings.	Cotton Insertings, trimmings, laces, braids, &c.	
Sweden and Norway.....	.....	.....	\$12
Hamburg.....	\$29	.....	11,542
Bremen.....	82,704	\$13,655	186,754
Holland.....	.....	.....	746
Belgium.....	111	35	2,254
England.....	275,546	1,151,222	3,294,092
Scotland.....	279	3,940	198,194
Malta.....	27	28	.....
Canada.....	.....	.....	15
British West Indies.....	.....	373	46
British pos. in Africa.....	.....	.....	40
British East Indies.....	.....	.....	252
France on the Atlantic.....	100,252	19,743	953,483
France on the Mediter.....	112	.....	1,725
Canary Islands.....	.....	.....	258
New Granada.....	1,502	2,023	7,210
China and other places.....	29	.....	2,724
Total.....	\$410,591	\$1,191,019	\$4,664,353

Lacquer, or **Lacker**, a yellow varnish, consisting of a solution of shellac in alcohol, colored by gamboge, saffron, annatto, or other yellow, orange, or red coloring matters. Lacquers are chiefly used for varnishing brass and some other metals, in order to give them a golden color and preserve their lustre.

Lacquer Ware, is derived from the Hindoo name *lac*, which is the resin secreted together with lac-dye by the lac insect. The lacquer ware has a covering or coating of lac; but two different processes are often confounded in India under this name—the one prevailing in the southern parts of India and in Burmah; the other in Cashmere and Lahore. The former of these wares, comprising lacquered cabinets, boxes, &c., was much appreciated in the last century; part being brought from Burmah and India, and part from China; but the lacquered or japanned work of Japan, seems to have been superior to either; many fine specimens of it may still be seen in the forms of large folding screens, &c. The chief expense of the manufacture arises from the care with which successive layers of varnish must be laid on. Boxes have been sent to this country in various stages of progress, which show the gradual production of the desired effect. The other kind of lacquered ware partakes somewhat of the nature of papier-maché, covered with one or more layers of lac varnish. Many of the lacquered boxes belonging to this class, from Cashmere and Lahore, are remarkable for the elegance of their patterns.

Lading, bill of. See **BILL OF LADING**.

Laden, in nautical language, the state of a ship when she is charged with a weight or quantity of any sort of merchandise or other materials equal to her tonnage or burden. If the cargo with which she is laden be extremely heavy, her burden is determined by the weight of the goods; if it be light she carries as much as she can stow, that she may be fit for the purposes of navigation. As a ton in measure is generally estimated at 2000 pounds in weight, a vessel of 200 tons ought, accordingly, to carry a weight equal to 400,000 pounds, when the matter of which the cargo is composed is specifically heavier than the water in which she floats; or, in other words, when the cargo is so heavy that she can not float high enough with so great a quantity of it as her hold will contain.

Laden in bulk, the state of being freighted with a cargo which is neither in casks, boxes, bales, nor cases, but lies loose in the hold, being defended from the moisture or wet of the hold by a number of mats, and a quantity of dunnage. Such are usually the cargoes of grain, salt, or such materials.

Ladoga, a lake in Russia, the largest in Europe, lies between the governments of Viborg on the north and west, Petersburg on the south, and Olonetz on the east. Its greatest length is about 130 miles, breadth above 70. The coast is generally low, much indented, and abounding in dangerous reefs. The depth in some places reaches about 150 fathoms, in others it is insufficient for safe navigation. Storms are frequent, and the influx of many considerable streams produces strong currents. The chief rivers entering the lake are the Swir (or Sver) from the east, bearing the waters of Lake Onega; the Volkhoff on the south; those of Lake Ilmen and the Saima on the north, draining the reticulation of waters of that name. It empties itself on the south-west by the Neva, into the Gulf of Finland. There are numerous islands scattered along the north-western shore, several of them inhabited. The principal towns on the coast are Kexholm, Schlusselburg, and Novaya Ladoga. A canal executed in the reign of Peter the Great connects the two latter, forming a direct communication between the Neva and Volkhoff.

Ladrone, or Marianne Islands (so called respectively from the thievish habits of the natives, and in honor of Queen Mary Anne of Spain), a group in the North Pacific Ocean, between lat. 13° and 21°, long. 144° and 146°. They are about 20 in number, of volcanic origin, irregular and picturesque in outline, and clothed with luxuriant vegetation. The intervening straits abound in shoals and currents, and there are few good harbors. The heat of the climate is somewhat tempered by the trade-winds. Among the vegetable products are sugar, rice, Indian corn, tobacco, cotton, indigo, &c. Of wild animals, the most numerous are swine, sometimes of large size; cattle, horses, asses, mules, and llamas, have been introduced by the Spaniards. The principal island is Guaitan, or St. John, the most southerly of the group. It is about 80 miles in circumference, and has a good fortified harbor, some miles to the south of St. Ygnacio de Agaia, the seat of government. The aboriginal inhabitants, an active and athletic race, have gradually given place to a mixed population, descended of colonists from Mexico and the Philippine Isles. This group was discovered in 1521 by Magellan; but no settlement was made in them for about 150 years, when the widow of Philip IV. sent out a body of missionaries to convert the natives. They were visited in 1742 by Anson, who spent some time on the island of Tinian, where he discovered architectural remains, indicating a considerable progress in the arts of civilization. There are two other small island groups of this name, the one on the coast of China, at the mouth of the bay of Canton, a great stronghold of pirates, the other off the coast of Guatemala.

Lager-Bier was introduced into this country, generally, about nine years ago. The process of manufacturing the peculiar and popular beer under consideration, differs very much from that in making common beer, or ale. The only materials used are malt, hops, and water, and an inspection of the breweries is convincing that much care and cleanliness are exercised in all the operations. Lager-bier ferments downward. Common beer can be made fit to drink in four or five days, according to the heat of the weather; but it requires as many weeks before lager-bier can be drank, and it is thought to improve constantly if it be given years of probation.

Breweries, &c.—The art of fermenting grain was early known to the ancients, who employed it advantageously in fattening animals. Urquhart has noticed

that Penelope steeped the grain with which she fed her geese. The earliest mention of beer is found in the history of the Egyptians, who are said to have invented it more than 12 centuries before the Christian advent. They called it, however, not *beer*, but *Pelusian liquid*, from Pelusium, a city near the mouth of the Nile, where it was first made. Hops were first used in England, A. D. 1524, where, it appears, they were for a time prohibited as a "poisonous drug." The famous *white beer* was made from wheat, at Nuremberg, in Germany, about A. D. 1541. *Ale* was brewed by the English Saxons as early as A. D. 728, and their "barley-wine" was celebrated for its exhilarating qualities. *Porter* was originally a mixture of different draught beers, first compounded in 1730 for the laboring classes in London, who required a beverage of more nutritive qualities than had been produced by the mixture of ales of two, three or four "threads" or draughts. The celebrated German *mumm* was first brewed at Brunswick, A. D. 1492, by Charles Mumm, who gave his name to his invention. England has, however, till recently, been the great "beer country." Official returns show that in 1850 the licensed brewers in the United Kingdom were:

In England, 5631; malt consumed, 24,955,202 bush.; Scotland, 1510; 950,105; Ireland, 951; 164,702.

Of this last quantity, the greater portion was doubtless used in distillation! The licensed tavern-keepers in Scotland are shown by these returns to have numbered 14,971, and the number in Ireland to have been 13,793, many of whom were also licensed to brew or distill.

The quantity of ale and beer brewed in the United States, in 1850, was 1,177,924 barrels; of whisky and high wines, 42,133,955 gallons; of rum, 6,500,500.

The amount of capital invested in the United States' breweries averaged \$8,384,254; and the number of persons employed in this branch of commerce, 5487. The breweries in our American States have been greatly increased of late years by the addition of German capital, amounting nearly to \$7,500,000, distributed among upward of 500 establishments. In 1847, the German breweries first introduced into this country the beverage known as *lager-bier*; perhaps the drink more extensively used than any other beer compound in the present day. The process of brewing this peculiar and popular *bier* differs, we are told, very much from that employed in making common ale or beer. The only materials, we learn, are malt, hops, and water, but the quantities employed, and the mean temperature observed, are a secret to all but the initiated. An inspection of the different breweries, will show that a studied care and cleanliness are exercised in all the operations. Fermentation, which in common beer is upward, we are told, in the instance of *lager-bier*, is the reverse, or downward; but as it is the nature of all fermentation processes for the "workings," as they are termed, to *ascend* for a certain period before they finally settle, we are inclined to believe this "downward fermentation" an ingenious joke, in order to stifle further inquiry. The word *lager*, in German language, means "*rest, repose*," an attention this peculiar drink requires in order to secure a ripening or maturity of perfectness; and from this word the *bier* derives its prefix, *lager*.

The *lager-bier* annually made in New York city and suburbs is estimated at 85,000 barrels, a number we are inclined to believe beneath the actual average. The entire city consumption, however, of this *bier* from all parts, is computed to be not less than 3,075,000 barrels! The city retailers number about 2000, exclusive of the large hotels and restaurants, which alone consume from \$5000 to \$6000 worth annually. In the city of St. Louis, Missouri, there were drank, from 1st March to September 17, 1854, more than 17,500,000 glasses of lager and common beer, and the entire stock of 24 breweries of that district was com-

pletely exhausted. Philadelphia has 22 breweries of lager-bier, and the stock accumulated during the fall and winter of 1855, was valued at \$600,000 wholesale! The city of Cincinnati has 7 first-class and 22 second-class breweries; the value of the "plant" (machinery, tubs, etc., etc.) of the former is estimated at \$150,000 each. The first-class breweries average each about 4000 barrels per year. Most of them have large excavated vaults for stocking or lagering this *bier*. M. Von Beck's store-cellar, in the rocks at Rondout, New York, which will contain 30,000 casks, cost \$15,000 for excavations, etc.

The brewing of *lager-bier* usually commences about October, and is then deposited till the succeeding April or May, when it is considered to be in "fine condition." The Cincinnati lager-bier breweries employ about 250 brewers, and as many others as assistants, etc., etc. The salary of a good foreman is \$1000 per annum and house-rent; his assistants receive from \$30 to \$50 per month. They commence operations at four A. M., and get through in from 9 to 10 hours. These men are remarkable for good health. Some of these establishments make 9 brewings a week. The fall stock of Milwaukee lager-bier, in 1856, was fully 60,000 barrels. The western lager requires to be of a stronger quality than that made in the northern breweries. Of the beneficial qualities of this *bier*, opinions are far from unanimous; the partisans in favor of the beverage profess that from 10 to 60 glasses per day may be drank with impunity! While the editor of the *New York Scalpel*, in his issue for October, 1856, asserts that its continued use produces the most injurious effects on the human constitution, and which, if persisted in, induces disease and gradual decay, mentally and physically.

Lagoon, from the Latin *lacuna*, a ditch, means a morass. The name is given particularly to those creeks which extend along the coast of the Adriatic, in the present government of Venice, and which are formed by water running up in the land. They contain many islands. Venice, for instance, is built on 60 of them. In some places they are deep; in others so shallow that their exhalations are offensive and dangerous. The Austrian government does less toward clearing them out than the former Venetian government did; and Venice in consequence is considerably less healthy than it was. Toward the sea the islets are secured by dams, natural or artificial.

La Guayra, the principal sea-port of the republic of Venezuela, in the province of Caraccas, on the Caribbean Sea, lat. 10° 36' 19" N., lon. 67° 6' 45" W. Population 8000? In 1810, the population is believed to have amounted to 13,000; the reduction being a consequence of the loss of life caused by the tremendous earthquake of 1812, and the massacres and proscriptions incident to the revolutionary war. The population of the city of Caraccas, of which La Guayra may be considered as the port, fell off, from the same causes, from 43,000 in 1810, to 23,000 in 1830; but they are now both increasing. There is neither quay nor mole at La Guayra. Ships moor E. N. E. and W. S. W., with their heads to the north, at from $\frac{1}{2}$ to $\frac{3}{4}$ of a mile from the land, in from 9 to 13 fathoms. The holding ground is good; and notwithstanding the openness of the road, vessels properly found in anchors and cables run very little risk of being driven from their moorings. The principal articles of export are coffee, cocoa, indigo, hides, sarsaparilla, etc. La Guayra shares the trade of Venezuela with the ports of Cumana, Puerto Cabello, Maracaybo, etc., having about a half of its entire amount.

Port Regulations.—On casting anchor, a visit is paid by the collector of customs, or his agent, accompanied by other officers, who take from the master his register, manifest, and muster-roll, and an officer is left on board until the cargo is discharged. The master must swear to his manifest within 24 hours after his arrival,

when the permit to discharge is granted, and within 3 days all invoices must be presented. The discharge completed, the same officers repair on board to examine the vessel, and all being found in order, the officer is withdrawn. The clearing of a vessel outward (that has entered with cargo), in ballast is then completed by paying the port charges; proof whereof being produced, the permission to sail is signed by the governor and harbor master. If the vessel take cargo on board, then the same formality, as to visiting, is pursued, as on the entry of a vessel. Goods imported are almost invariably sold upon credit; those exported are, on the other hand, always sold for ready money. The terms of credit vary from 2 to 6 months, or more. Bankruptcy is very rare.

We subjoin a statement of the principal exports from La Guayra during each of the 5 years ending the 5th October, 1847.

Years ending 5th October.	Coffee.	Cocoa.	Cotton.	Sugar.	Indigo.	Hides.
	Quintals.	Fanegras.	Quintals.	Quintals.	Quintals.	Number.
1843	147,474	28,624	510	3,268	1,074	31,684
1844	132,086	38,739	235	2,508	702	45,242
1845	122,912	29,418	767	5,153	439	44,873
1846	151,975	32,476	240	4,562	517	35,560
1847	126,812	37,376	1,128	7,040	621	49,773

Duties received at custom-house, La Guayra, 1842-43, \$831,848; 1843-44, \$722,115; 1844-45, \$795,651; 1845-46, \$891,502.

	National.	Foreign (not privileged).
Tonnage duty	\$37 50	\$150 00
Entrance fee	4 00	6 00
Anchorage	12 00	16 00
Captain of port's fee	3 00	6 00
Interpreter's fee	2 00	4 00
Permit to discharge and stamp	1 12½	1 12½
Health officer's fee	4 00	4 00
Municipal charge for water	40 00	40 00
Municipal bill of health	2 00	2 00
Permit to load and stamp	1 12½	1 12½
Certificate of sea worthiness	2 00	2 00
Total	\$108 75	\$232 25
Value in sterling money	£17 15	£38 14

A ship introducing a cargo, and sailing in ballast, would be liable to all the above charges, with the

STATEMENT OF THE EXPORTATION OF DYEWOODS FROM THE PORT OF LAGUNA DI TERMINOS DURING THE YEARS 1850, 1851, AND 1852, SPECIFYING ALSO THE VESSELS IN WHICH THEY WERE SHIPPED AND THE PORTS TO WHICH THEY BELONGED.

Ports.	1850.			1851.			1852.		
	Vessels.	Logwood.	Fustic.	Vessels.	Logwood.	Fustic.	Vessels.	Logwood.	Fustic.
Liverpool	19	Quintals. 97,723	Quintals. 1,891½	23	Quintals. 100,908	Quintals. 4,491	21	Quintals. 96,311½	Quintals. 1,000
Havre	17	99,673½	1,891½	12	73,845	520	15	85,703	1,000
Hamburg	12	42,369	1,474	9	82,389	2,897	14	47,377	3,084
Cork and market	15	70,940½	1,474	7	81,563½	2,897	7	30,010	2,012
Bordeaux	8	26,849	9½	10	24,164	650	7	17,058	12,277
New York	4	20,280	9½	2	5,014	1,929	4	21,071½	44,227
Bremen	1	4,511½	9½	5	27,482	1,177	6	44,227	50
Marseilles	11	14,029	523	8	22,638	1,177	5	81,534	40
Antwerp	1	5,197	523	2	7,384	1,201½	6	84,510	40
Stettin	9	17,718	523	9	15,102	650	4	15,608	1,114
Genoa	2	6,321	4,440	2	7,606	1,177	4	8,461½	1,114
Petersburg	3	17,059½	4,440	1	3,966½	1,177	2	1,000	1,114
Boston	9	8,835	4,440	1	2,100	1,177	2	1,000	1,114
New Orleans	1	500	4,440	8	1,591	1,177	1	2,450	1,114
Barcelona	..	..	..	..	..	..	1	8,678½	1,114
Gibraltar and market	..	..	..	..	..	..	1	..	..
Elsinour and market	..	..	..	..	..	..	1	..	..
Cadiz	1	1,500	..	1	7,481	..	1	1,678	..
Nantes	..	..	..	1	6,011	..	1	850½	..
Havana	1	1,400	..	..	..	..	1	3,972	..
Lancaster	..	..	..	1	2,281	..	6	..	..
Cette	..	..	..	..	..	..	..	..	..
In ballast to sundry ports	10	..	..	8	..	..	..	..	..
Total	101	484,611	8,888	88	371,406	12,845½	104	453,059½	19,577

Lahore, an extensive province of Hindoostan, situated between the thirtieth and thirty-fourth degrees of north latitude. It has been estimated at 340 miles in length by 200 in average breadth. It is bounded on the north by Cashmere and the course of the Indus; on the south by Delhi, Ajeamer, and Moultan; on the east by the mountains of northern Hindoostan; and on the west it is separated from Afghanistan by

exception of the last two. The charge for water is levied without regard to tonnage; viz., sloops and schooners, \$20 each, brigs, \$30, and ships, \$40. Tonnage employed in the foreign commerce of La Guayra, for six months of 1856, 30,417 tons; See VENEZUELA.

Laguna di Terminos, or Laguna di Carmen, a sea-port on the south shore of the Gulf of Mexico, State of Yucatan, lat. 18° 38' 44" N., long. 91° 51' 22" W. It derives its names from being situated about 1 mile within the south-west extremity of Carmen island, on the most westerly of the straits or entrances leading into the basin or lagoon of Terminos. Population about 3000. The port, which is secure and one of the best on the gulf, has from 12 to 14 feet water over the bar at the entrance to the lagoon. Vessels of greater draught load and unload by means of lighters, outside the bar, in from 3 to 4 fathoms, with good holding ground.

To Enter the Port.—Run in over the bar with Xicalango Point, bearing by compass S. ¼ E., till Point Sacatal bears S. E. ¼ S., and then steer for it; and when the north side of the island begins to shut in haul up for the anchorage off the town. The lead is a safe guide on the west side of the channel, but not on the east. The chief trade of the town consists in the shipping of logwood, known in foreign markets by the name of Campeachy wood, from its having been originally cut down in the vicinity of that port and shipped from it. But Campeachy has ceased to be an entrepôt for logwood. It is now principally cut down on the mainland adjoining the lagoon of Terminos; and being thence conveyed to Laguna in coasting schooners, is sent from it to all parts of the world. Vessels arriving with cargoes must bring a general manifest and invoice in triplicate, certified by the Mexican consul at the port of departure. Those arriving from a foreign port in ballast, must produce a clearance either from the Mexican consul or the authorities of the place from whence they came, showing that they bring no cargo. Pilotage \$1.75 per foot, other port charges, such as harbor-master's fees, anchorage, board of health, etc., about \$25 each vessel. Ships arriving direct from a foreign port pay \$1.50 per ton for tonnage dues. See MEXICO.

the Indus. The principal geographical and territorial subdivisions are the Punjab, comprehending other minor subdivisions, and the Kohistan of Lahore. Rice is cultivated in the narrow valleys, but the inhabitants subsist chiefly on wheat bread, and peas made into a thick soup. Pines and willow-trees grow on the surface of the mountains. The resinous part of the fir is cut into slips, and supplies the place of a

lamp. The climate is not favorable to fruits and vegetables. Fossil salt is found in many parts, and the mountain tracts are supposed to be rich in minerals.

The commerce of this country was formerly much obstructed by the heavy duties levied on all the goods as they passed through the different territories of the petty Sikhs. It was in consequence carried to Hindoostan Proper by the difficult and mountainous route of Jamboe, Nadone, and Serinagem. The Sikh chiefs, however, discovered their error, and many of these heavy and vexatious duties have been reduced; and by a more strict administration of justice, confidence has been restored to the merchants. The exports of Lahore to the countries west of the Indus are, sugar, rice, indigo, wheat, and cotton cloths. The imports from these countries are, swords, horses, fruit, lead, and spices. The exports to Cashmere are nearly the same as to Persia, the imports being shawls, a variety of cloths, saffron, and fruits. With Kohistan the mountainous district of Lahore, the inhabitants of Punjab exchange cloth, matchlocks, and horses, for iron and other small commodities. From the south are imported sulphur, indigo, salt, lead, iron, European coarse broadcloth, and spices. The exports to the south are, horses, camels, sugar, rice, white cloth, matchlocks, swords, and bows and arrows.

Lahore, the capital city of the Punjab, British India, on an affluent of the Ravee, in lat. $31^{\circ} 36' N.$, long. $74^{\circ} 18' E.$ Population estimated at from 100,000 to 120,000. It is inclosed by a double line of defenses, the outer being about 7 miles in circuit. Streets narrow, filthy, and excessively crowded; houses of brick, and lofty. It has many large and handsome mosques, and around it for many miles are extensive Mohammedan ruins, with the fine tomb of the Emperor Jehangire, and the garden of Shah Jehan. Here are also many Hindoo temples, well-supplied markets, and a citadel, containing the palace of the Sikh sovereigns. Under the Mogul emperors, the city was of much greater extent. In 1748, it fell into the hands of Ahmed Shah; in 1798 Runjeet Singh was invested governor and rajah. After the final defeat of the Sikhs, in 1849, Lahore was taken possession of by the British.

Lake, an extensive accumulation of water wholly surrounded by land, and having no direct nor immediate communication with the ocean, or with any seas, or having so only by means of rivers. Lakes are of various kinds, and have been divided into two classes, according to their situation and causes of production. Those which are formed in deep hollows between the ridges or at the bases of the mountains, and which are supplied with water by springs or torrents, are classed together, and those which are formed in low and level countries by the surplus water of rivers, or from a want of sufficient declivity in the ground to allow the waters to continue their course, constitute a second class. Sometimes a chain of lakes is connected with one another and with the ocean by a series of rivers. This is the case with the great lakes on the northern frontier of North America, where basin succeeds basin, on a lower level, like so many locks on a canal. A fourth class of lakes are those which receive streams of water and often great rivers without having apparently any outlet. These lakes are in general confined to warm climates; but the Caspian Sea, the largest of all lakes, belongs to this class. There are a great many others beside in Asia; and South America contains Lake Titicaca which has no efflux, although it receives very considerable rivers into it. Such lakes appear to belong to the interior of great continents; they are placed on elevated plains which have no sensible declivity toward the sea, and which do not allow the water opening for itself a passage through which to flow out.

It was long conjectured that by some subterranean channel lakes of this description communicated with

the sea; but the fact that the surfaces of some of the most remarkable of them, such as the Caspian and the Dead Sea, are depressed below the level of the ocean, is quite sufficient to explode this hypothesis. For were there any communication, however small, the ocean would flow into the lake till it brought it to a level with itself. The true explanation seems to be that a quantity of water equal to that which runs in is carried off by evaporation. The absorption of liquid by the contiguous land, may also materially assist in carrying off the surplus fluid.

Distinct from any of the characteristics of lakes yet alluded to, is the chemical nature of their waters. Lakes in respect to the quality of the waters are distinguished into fresh, saline, and alkaline. Those which receive and discharge considerable quantities of fresh water are almost always kept in a state of perfect freshness; but those which have no outlet are invariably saline. Thus the Dead Sea, whose waters have no efflux, and into which the river Jordan continually flows, contains about eight times as much salt as common sea-water. The waters of the Jordan are brackish, and the neighboring soil is much impregnated with salt, so that the accumulation of such a quantity of saline matter in the lake during a series of ages is by no means surprising, for none of it ever passes off by evaporation. Salt must likewise be accumulating in beds at its bottom; for as soon as water is perfectly saturated, and can hold no more salt in solution, the latter must fall to the bottom. Some of the large Asiatic lakes are dried up during summer, and their beds appear lined with an incrustation of salt. All the great American lakes consist of fresh water; those of Europe are either fresh or slightly saline; but the Caspian Sea, and various others which are situated in plains full of salt, or in tracts of country where salt springs abound, are almost invariably impregnated with that substance. Some lakes are both saline and alkaline, as is the case with the Natron Lakes in Lower Egypt. They derive their appellation from their abounding in soda which is there called trona, and natron, the nitre of the Scriptures. Some lakes produce a pitchy substance. In the island of Trinidad there is one on the surface of which an enormous quantity of bitumen, fit for naval purposes, is collected. Deposits of various kinds besides those enumerated seem to owe their origin to lakes. Bog iron ore, or hydro-phosphate of iron, is often found in such situations as to show that it has been deposited from the waters of lakes; and in some countries it is collected from the sides and bottoms of lakes once in a certain number of years. Calcareous springs are numerous, and when the waters of these collect in a hollow place so as to form a lake, quantities of calcareous sinters and tuffas are deposited, so that the lakes when emptied present extensive deposits of that mineral. The travertine employed at Rome for building, is a lake or spring calcareous deposit of sinter and tuffa.

Lakes, Great American. The following are the principal lakes forming the great chain of inland navigation, extending from the St. Lawrence River to the head of Lake Superior:

Lake Ontario, in shape, approaches to a long and narrow ellipse, being about 190 miles long and 55 wide, with a coast line of about 480 miles. Its surface is 234 feet above tide water, and 330 feet below the surface of Lake Erie. It is in many places over 600 feet deep, so that its bottom is below the level of the Atlantic. In every part it has sufficient depth for the largest vessels, and is rarely frozen, except near the shore. There are many good harbors on the lake. It receives the water of Niagara River, the outlet of the other American Lakes; also the Genesee, Oswego, and Black Rivers. It is connected with the Erie Canal by the Oswego Canal, and has by this means a direct water communication with New York city.

Lake Erie, which is situated 565 feet above the sea,

330 feet above the level of Lake Ontario, is about 265 miles in length, from 80 to 60 miles in breadth, and between 600 and 700 miles in circumference. Its mean depth is 120 feet, being the shallowest of all the great lakes, and most easily frozen. Its waters are also, on account of its shallowness, more readily agitated by storms, causing its navigation to be therefore more dangerous during stormy weather. Disasters, involving large loss of life and property, are not of unfrequent occurrence on the lake, toward the close of navigation, before the rigors of winter have put a final stop to all active lake traffic. The shores of this lake present features very similar to those of Lake Ontario; the banks of Lake Erie being generally bolder and more elevated, and composed chiefly of clay and sand. The more fertile parts are at some distance from the banks, throughout the extensive plain of table-land beyond. There are several good natural harbors along the shore, formed chiefly by the mouths of deep creeks or streams, and protected from the action of storms and current of the lake by strong projecting piers.

Among the harbors of Lake Erie may be mentioned Port Colborne, situated at the entrance to the Welland Canal, at the foot of Lake Erie, and a little above the commencement of the Niagara River. A little further up is the harbor of Port Maitland, at the mouth of the Grand River. This is a very fine and capacious stream, navigable for small vessels a considerable distance, and possessing much fertile land and pleasing scenery along its banks. The shore of the lake for some way above the mouth of the Grand River presents many delightful and fertile settlements. Among the harbors further up the lake are Ports Dover, Burwell, and Stanley. Port Stanley is perhaps the most flourishing of these harbors, being the port of one of the most populous and enterprising districts of this part of Canada, and situated near the centre of the great fertile peninsula. The banks of Lake Erie are here high, and of a sandy character; but off the immediate bank, and extending all the way through the extensive tract of country to the town of Goderich, on Lake Huron, a distance of 85 miles, the soil is of the best quality, being for the most part timbered with beech, maple, black and white walnut, oak, ash, cherry, and other trees, indicating the first qualities of soil. The whole tract is greatly undulating in its appearance, and is everywhere well watered. The upper part of Lake Erie is distinguished by many beautiful islands, the largest of which is Pelee, on which there is a light-house, and several faros. The shores along the upper part of the lake, especially toward the mouth of the Detroit River, have a smiling and luxuriant aspect. Trees of the finest growth rise from the shore, and the wild vine may be seen twining and clustering among the branches of the lesser trees and tall shrubs along the sloping banks. The shore is here covered with fine white sand.

Lake St. Clair.—In our further progress up this country, we pass the Detroit River, thence into Lake St. Clair, then the River St. Clair, which last opens into the broad expanse of Lake Huron. From the head of Lake Erie to the foot of Lake Huron, is a distance of between 80 and 90 miles, through a country of unsurpassed fertility and luxuriance, and possessing many delightful features. The Detroit River, about 27 miles in length, is interspersed with many islands, several of which, near its entrance into Lake Erie, are beautifully wooded. The towns of Amherstburg and Sandwich, and the small village of Windsor, are situated along the Canada side of this river. Opposite Windsor, toward the upper part of the river, and where the banks narrow to about three quarters of a mile, is the American city of Detroit, in the State of Michigan. Lake St. Clair, which forms the connecting link, by means of the St. Clair and Detroit Rivers, between Lakes Huron, Michigan, and Erie, is

the smallest of all the lakes, and exceedingly shallow for the larger class of vessels passing through it. It is from 20 to 30 miles in length, and about the same in breadth. Its average depth is about 20 feet, but the principal channel used by vessels passing through it is much shallower, especially in dry seasons, when the mud of its flats is stirred to the surface not unfrequently by large vessels. The chief stream which it receives from the Canadian shore is the River Thames, which is navigable for lake vessels 22 miles from its mouth, and the banks of which are exceedingly fertile, and mostly well settled. Much of the land bordering on the lake is low and marshy. In the upper part of the lake are several islands, the principal of which is Walpole Island, about 10 miles long, and from 3 to 4 miles wide. This island is inhabited by a stray portion of the remnant of Indians still existing in small and decreasing numbers in Canada. We are now at the entrance to the River St. Clair, in length about 30 miles. There are several thriving settlements along the fertile and beautiful banks of this river. Toward the lower part, amid a cluster of wooded islands, the banks, with somewhat of a flat appearance, are covered with luxuriant timber. Further up, the land rises, with finely sloping banks and cultivated farms. Near the head of the river, and pleasantly situated, is the flourishing town of Sarnia.

Lake Huron.—The River St. Clair now opens to the wide expanse of Lake Huron, of about 1000 miles in circumference. This vast sheet of inland sea is the second in point of size of the great lakes, yielding only in this respect to Lake Superior. The surface of Lake Huron is about 30 feet above the level of Lake Erie, and 595 feet above the level of the Atlantic. The length may be estimated at 250 miles, and its breadth 160 miles, inclusive of the Georgian Bay, a large wing of the lake, extending along the north-eastern shore for a distance of about 100 miles. The mean depth of Lake Huron is 900 feet, and its greatest depth 1000 feet near the west shore. This lake is said to contain the almost incredible number of 32,000 islands, principally along the northern shore and at the north-western end, varying in size from mere rocky reefs and pinnacles to large and cultivable islands. The Great Manitoulin, the longest of the islands, is upward of 75 miles in length, and varies in width from 3 to 23 miles. The waters of the lake are remarkably pure, clear, and cold; in these respects resembling the great upper Lake Superior. The surface of Lake Huron is about 32 feet lower than that of Lake Superior, and it is very nearly as deep as that lake. The nature of the banks of Lake Huron vary very much. In parts they are low and sandy, in others formed of clay; they rise to a height of about 120 feet, while again the shore of this inland sea presents a bold, rocky, iron-bound coast, having great depth of water to the base. Numerous streams descend on all sides into the lake; and among its rivers may be mentioned the Maitland, Severn, and River François. The lake, which is rather subject to storms, is deficient in good and natural harbors, the principal of which, along the eastern coast, are Goderich, at the mouth of the Maitland, Saugeen, and Penetanguishene; and on the western shore the best places of shelter in heavy weather are Thunder Bay and Saginaw Bay.

Lake Huron possesses the advantage of being remarkably centrally situated with respect to the other great lakes. With Lake Erie, as we have seen, it is connected by the Straits or Rivers St. Clair and Detroit, and the small Lake St. Clair. Lake Ontario, the lower of the lakes, is even open to it by the River Severn, Lake Simcoe, then by a short portage, a chain of lakes, and Trent River. Lake Simcoe, thus situated between Lake Huron and Lake Ontario, is a very beautiful lake, about 30 miles in length and 20 in breadth. The neck of land south of Lake Simcoe from Holland River leading to Toronto is, it will be

remembered, about 36 miles; and again, north of Lake Simcoe, from the narrows of this lake to Lake Huron, the portage is only about 14 miles. The new railway now cutting through this neck of the peninsula westward, situated between the Lakes Erie, Ontario, and Huron, will greatly facilitate the growing intercourse between the shores of Ontario, as well as all the country lower down along the banks of the St. Lawrence, and also great part of the United States, with the regions of the great upper lakes, Huron and Superior. This direct course will no doubt be much preferred to the circuitous route through Lakes Erie and St. Clair, and the connecting rivers.

Lake Huron, besides, communicates with the Ottawa, and thence with the St. Lawrence above Montreal, by means of French River, Lake Nipissing, and the River Mattawa, into the Ottawa. This is the route adopted generally by the north-west traders in proceeding to the remote parts of the country, and it is also the one by which Europeans first penetrated the West. The distance from Montreal by this route to Lake Huron is fully more than one half shorter than that by the St. Lawrence. From Montreal to the Georgian Bay, the distance is estimated at 400 miles, while by the St. Lawrence the distance is upward of 1000 miles. Again, Lake Huron communicates with the great upper Lake Superior by means of the River St. Mary, about 40 miles in length. Lastly, we have this centrally situated lake communicating by the straits of Mackinac with Lake Michigan, and thence by the Illinois River and Canal with the Mississippi and Gulf of Mexico. The shores of Lake Huron have of late revealed important mineral treasures. The Bruce copper mines promise to be of great value. These mines are situated upon the northern shore of the lake under the Cloche Mountains, a bold range of hills extending about 40 miles along the coast. Along the south-eastern shores of the lake, extending beyond the town and harbor of Goderich, on the River Maitland, are many highly prosperous settlements. The lands in this direction, and through the large and fine district inland, are believed to be the most fertile in Canada. The country is everywhere well watered, and enjoys much delightful scenery, both along the elevated banks of the lake and the beautiful rivers which diversify it. The town of Goderich, on the River Maitland, is very agreeably situated, and possesses an excellent harbor. The high banks of the Maitland are exceedingly picturesque.

Lake Superior.—We now approach the uppermost of these vast collections of water, not inappropriately named inland seas. The River or Strait of St. Mary, connecting Lake Huron with Lake Superior, is between 30 and 40 miles in length. The character of the scenery, on entering St. Mary's Channel, is the most delightful that can be imagined. The channel throughout, with the exception of several small lakes, seems to be almost packed with islands; and while perplexing the navigator by its intricacy, it is every now and then revealing new and striking beauties of wooded heights and steep banks clothed with verdure, and spots of flat, fertile meadows, and, at times, bare, rocky, fantastic crags. The sides of the ridges of table-lands that skirt the country, around the borders of Lake Superior, appear in the distance clothed with one mass of lively green. The foot of the Falls, or, more properly speaking, Rapids of St. Mary, approach within about 18 miles of Lake Superior. The region in this direction seems much less fertile; the trees along the shores of the broad strait appearing to be chiefly of the pine species, and the soil in many parts light and sandy, while the lands close upon the banks lie for the most part low and flat. We now approach the chief seat of the great copper district of America, where the barrenness of a large portion of the country is richly compensated by the value of the metals with which it abounds. The copper mines of Canada, along

the shores of Lakes Huron and Superior, are perhaps entitled to rank among the most valuable resources of this great country.

As we approach the great queen lake or inland sea, upward of 400 miles in length and 180 in breadth, dark blue masses of hills uprise, somewhat reminding the voyager of the approaches to the St. Lawrence in the forms of the headlands of Cape Rozière and others, yet being neither so high nor so bold as these. The main entrance to the lake is marked by two such rocky headlands, one upon either shore several miles apart. From the heights of the one on the other shore, named Gros Cap, composed of the rock of the old red sandstone, the sides of which are partially covered with junipers, blue bells, wild briars, and other vegetation, reminding one of the Scottish hills, we overlook a scene of the most imposing and still grandeur possible to be imagined. The dim distance into the lake is bounded by vast islands, and along both shores bold uneven banks uprise, apparently covered with dark dense foliage, and stretch themselves in irregular course, as far as the eye can reach, along the wide expanse of water that scarcely as yet presents any speck of navigation. The shores of Lake Superior, which are even now imperfectly explored, already prove to be abundant in mineral resources. Many of the enterprising inhabitants of Canada, having formed themselves into associations, are now engaged in mining the seemingly inexhaustible treasures of virgin copper which are found along the shores of this lake as well as Lake Huron. This source of wealth to the colony is likely to prove of considerable importance.

Lake Superior, which is the largest sheet of fresh water on the face of the globe, is the most remarkable of the great American Lakes, not only from its magnitude, but also from the picturesque scenery of its borders, and the interest and value attaching to its geological features. "As a mining region," continues Dr. Jackson, who, as United States' geologist, was intrusted by his government to survey the territory, "it is one of the most important to this country, and is rich in veins of metallic copper and silver, as well as in the ores of those metals. At the present moment it may be regarded as the most valuable mining district in North America, with the exception only of the gold deposits of California. The whole coast of Lake Superior is rock-bound. Mountain masses of considerable elevation in some places rear themselves from the immediate shore, while steep precipices and frightful crags oppose themselves to the surges of the mighty lake, and threaten the unfortunate mariner who may be caught in a storm upon a lee shore with almost inevitable destruction. The northern or Canadian shore of the lake is the most precipitous, and consequently most dangerous to the navigator. Good harbors for vessels of moderate capacity are comparatively few, but there are abundance of coves or boat-harbors formed by the countless indentations of the rocky coast. In remarkable contrast to Lake Huron, which is thickly studded with islands, there are very few islands in Lake Superior.

Agriculture may be truly said to have not yet commenced to tame the great and comparatively unexplored wilderness around the shores of Lake Superior. The forests of stunted spruce and fir-trees along the immediate coast of the lake are said to afford a very inadequate idea of the agricultural resources of the shores of the great queen lake. The cold air from the lake, says Dr. Jackson, affects only the vegetation near its shores, while further inland the temperature more resembles that of the settled parts of Canada. The native forest trees, and also the flowering plants, as well as the agricultural produce where clearings have been made, are believed to afford very satisfactory evidences on this point. The forests are filled with excellent timber for building purposes; the

white and yellow pines, particularly, being of large dimensions. "The tributary rivers of Lake Superior are numerous," says Mr. I. D. Andrews, in his very interesting report to the United States' Senate, "and, bringing down a large volume of water, afford superabundant water-power for manufactories the most extensive in the world, though, from the precipitous descents and numerous falls and chutes, they can never be rendered navigable for more than a few miles above their mouths, except for canoes."

Lake Michigan, one of the five great lakes of North America, lies between $41^{\circ} 38' 58''$ and 46° N. lat., and between $84^{\circ} 41'$ and $87^{\circ} 8'$ W. long. In the northern parts it communicates with Huron by the Straits of Michilimackinac or Mackinac, about four miles in width in its narrowest part, and by which and its northern part it separates the two peninsulas of Michigan. Michigan Lake is the largest lake that lies wholly within the United States, being 380 miles long, and, on an average, 60 miles broad, containing 16,981 square miles, or 10,868,000 acres. It has Green Bay, a large branch on the north-west; and on the east, Grand Traverse Bay and Little Traverse Bay. It is estimated to be on an average 900 feet deep; and is elevated about 300 feet above tide-water. It has few good harbors. On the west side are those of Chicago, Milwaukee, and Green Bay. On the east side are Michigan City, St. Joseph, at the mouth of St. Joseph River, and Grand Haven, near the mouth of Grand River. It is navigated by many large vessels and several steamboats, which ply from Buffalo to

Lake Erie and Chicago, stopping at the intermediate places. It affords great facilities for transportation. The lake has pure and clear water, and abounds with excellent fish. There are several islands on its northern part. It has 23 light-houses and 4 beacons on its islands and coasts. The Illinois and Michigan Canal connects the navigable waters of the Illinois River with Lake Michigan.

Commerce of the Lakes.—These lakes are estimated to drain an entire area of 835,515 square miles, and discharge their waters into the ocean through the River St. Lawrence, which is rendered navigable from Lake Erie downward to all vessels not exceeding 130 feet keel, 26 beam, and 10 feet draught, and the free navigation of which for American bottoms was recently acquired by the concession of reciprocity of trade to the Canadian government. The whole traffic of these great waters may be now unhesitatingly stated at \$326,000,000, employing 74,000 tons of steam, and 188,000 tons of sail, for the year 1851, of 215,000 tons burden.

The entire number of vessels and crews of the interior trade amounts to 140 bottoms, and 5,837 men, in excess of the whole ocean and coast navy, though the tonnage employed in the latter is smaller by 7,775 tons.

However remote the period of the discovery, exploration, and partial colonization of these wilds and waters, any thing like practical navigation of them for commercial purposes was unattempted until after the commencement of this century. In 1679 a French craft indeed was launched at Erie, Pennsylvania, for the expedition of the celebrated and unfortunate La Salle.

TONNAGE OF THE LAKE PORTS, 1856.

Collection districts.	Owned in districts.		Tonnage entered.						Tonnage cleared.					
	Steam tonnage.	Sail tonnage.	American.		Foreign.		Sail.	Sail.	American.		Foreign.		Sail.	Sail.
			Steam.	Sail.	Steam.	Sail.			Steam.	Sail.	Steam.	Sail.		
Vermont.....Ver.	3,240	692	56,421	17,490	9,566	10,758	58,024	17,020	9,321	7,602				
Champlain.....N. Y.	917	3,291	90,484	8,185	3,899	20,759	90,486	8,185	3,899	20,759				
Oswegatchie....."	1,995	576	206,684	47,124	90,962	6,657	215,069	45,205	89,956	6,657				
Cape Vincent....."		2,496	427,457		12,473		427,457		12,473					
Sackett's Harbor...."	343	6,763	163,616	201	1,060	1,934	161,375	1,885	1,060	1,934				
Oswego....."	4,932	21,941	228,842	345,681	7,259	661	227,594	827,172	7,259	83,768				
Genesee....."	429	257	160,000	1,620	27,900	3,714	160,000	1,620	27,900	3,714				
Niagara....."	100	506	75,072	964	145,773	1,344	75,072	964	145,773	1,344				
Buffalo....."	22,498	23,620	18,498	11,705	48,456	23,755	18,774	48,672	22,563					
Presquo Isle.....Penn.	5,961	2,249	680	1,039		781		3,205		721				
Cuyahoga.....Ohio	11,855	24,716	4,543	24,269		873	10,592	15,690	926	9,619				
Sandusky....."	73	4,785	1,494	4,760		280	746	1,396	336	1,300				
Miami....."	1,153	2,083												
Detroit.....Mich.	21,944	15,475	838	1,544	49,081	7,300	2,036	1,668	51,727	6,546				
Mackinac....."	1,747	1,409												
Milwaukee.....Wis.	287	2,659												
Chicago.....Ill.	707	22,396	652	290		428	2,138	1,628		428				
Total.....	77,061	138,914	1,434,779	464,822	397,537	174,619	1,432,548	438,562	393,702	166,010				

Lake Trade.—The great chain of river, lake, and canal navigation, which extends westward to Fond du Lac and Chicago, a distance of about 1400 miles, embracing the largest extent of inland water communication in the world, the following table exhibits in a condensed form:

	Length.	Breadth.	Depth.	Elevation over sea.	Area.
	Miles.	Miles.	Feet.	Feet.	Sq. miles.
Lake Superior.....	420	190	600	600	81,100
" Michigan.....	320	70	1,000	573	21,900
" Huron.....	270	145	350	573	18,750
" St. Clair.....	25	18	20	570	300
" Erie.....	250	45	70	564	2,300
" Ontario.....	190	40	500	234	7,300
River St. Lawrence.	700	...	...	...	...

CANALS.

Canals.	Length.	Depth.	Size of Locks.	Lockage.	Locks.
	Miles.	Feet.	Feet.		No.
Lachine.....	8½	10	200×45	44½	5
Beauharnois.....	11½	10	200×45	82½	9
Cornwall.....	11½	10	200×45	48	7
Farrand's Point	9½	10	200×45	4	1
Rapid Plat.....		10	200×45	11½	9
Point Iroquois.....		10	200×45	5	1
Galops.....		10	200×45	8	2
Welland.....	28	10	150×26½	330	27

The great lakes are about 1-25th of the area of the

Atlantic Ocean; but in proportion afford much greater facilities for commerce, in consequence of the advantage of great length with less width, and of greater proportion of shore line. The country forming the shores of the lakes can not be surpassed in general productiveness by any section of the Union, either in variety of important commodities, or in quantity produced per square mile. The extent of the commerce of the lakes may be estimated by the commerce of the lake ports. During the past 15 years the value of the trade of the lakes has swelled from \$65,000,000, in 1841, to \$608,310,320, in 1856; and the whole of this grand aggregate, with the exception of \$42,260,060, set down for Sackett's Harbor, Cape Vincent, Oswegatchie, Genesee, and Niagara, came through the following ports:

Buffalo.....	\$303,023,000	Milwaukee...	\$85,000,000
Chicago.....	228,598,000	Maumee.....	94,107,000
Cleveland.....	162,185,000	Sandusky.....	59,966,000
Detroit.....	140,000,000	Oswego.....	146,235,000

With the exception of Buffalo and Oswego, these are all ports of the north-west, whose trade has been the result of its development during a very brief period; and the great bulk of the trade of Buffalo and Oswego is derived from the same cause.

The tonnage employed on the great lakes is shown

in the following table, and does not include any ocean or river tonnage:

	Tons.		Tons.
Illinois.....	1,742	Ohio (Lake tonnage)	11,856
Wisconsin.....	1,451	New York.....	22,534
Michigan.....	7,848	Total.....	45,426

This is 1-12th of the total tonnage owned by the United States, and about 1-5th of the total amount employed in the coasting trade. The first steamer launched on Lake Ontario was in 1816, while on Lake Erie steam navigation commenced in 1814. In 1851 the proportion of steam craft to sailing craft was as 74,000 to 183,000 tons. The number of Canadian

steamers and schooners now trading on Lake Ontario is 294, of which 48 are steamers, 17 propellers, and 169 schooners, the tonnage of which amounts to about 42,000 tons, and their value is about £378,000. The whole tonnage owned on the lakes in 1820 amounted to but 5,500 tons, in 1840 to 70,000 tons, in 1850 to 215,787 tons, and in 1855 to 845,000 tons. But even this rapid increase hardly conveys an idea of the vast commerce of which these great inland seas are destined to become the scene even before the close of the current century. The liberal provisions of existing treaties with England and her American colonies, will rapidly develop the resources of Canada and the N. States.

VALUE OF EXPORTS FROM THE LAKE PORTS, 1856.

Collection districts.	Coasting trade.		Canadian and foreign trade.		Aggregate value of coasting trade.	Aggregate value of foreign trade.
	Exports.	Imports.	Exports.	Imports.		
Vermont.....Ver.			\$167,592	\$266,417	\$24,313,622	\$1,088,989
Champlain.....N. Y.	\$20,858,426	\$3,455,196	749,002	294,234		
Oswegatchie....."	918,587	2,424,145	618,648	214,520	3,242,732	833,168
Cape Vincent....."			32,988	51,358		93,747
Sackett's Harbor....."	308,258	497,809	21,980	56,119	801,067	78,099
Oswego....."	11,471,071	6,083,086	3,207,811	1,784,412	17,554,107	4,992,223
Genesee....."			918,654	49,040		962,694
Niagara....."	438,634	236,634	585,784	103,985	670,318	689,709
Buffalo....."	50,674,975	37,472,103	618,948	507,506	88,147,033	1,121,454
Presque Isle.....Penn.	1,601,857	2,207,582	15,415	3,455	8,809,439	18,570
Cuyahoga.....Ohio	12,026,497	22,804,159	234,936	360,634	35,830,656	645,570
Sandusky....."	6,459,659	15,985,357	99,088	75,623	22,445,016	174,716
Miami....."	7,847,808	22,937,772	66,304	26,470	30,835,580	92,774
Detroit.....Mich.	6,961,480	20,416,357	115,014	98,541	27,377,507	213,555
Mackinac....."	2,000,000	3,000,000		3,967	5,000,000	3,967
Milwaukee.....Wis.	4,564,797	19,560,713			24,125,510	
Chicago.....Ill.	5,859,471	25,325,052	116,185	5,811	81,184,523	121,996
Total.....	\$132,017,470	\$182,455,938	\$3,207,750	\$3,912,147	\$314,473,458	\$19,719,877
Total coasting & for. trade.						\$326,593,335

Marine Losses on the Lakes for the Year 1856.—The Report to the Board of Lake Underwriters is annually published, showing the disasters and losses on the lakes. The losses during 1856 are shown in the following summary:

LOSS OF PROPERTY.

May.....steam and sail,.....	\$142,600
June....."....."	118,550
July....."....."	266,180
August....."....."	67,750
September....."....."	342,860
October....."....."	852,050
November....."....."	1,069,394
December....."....."	159,550

Total loss, steam and sail, in 1856. \$3,038,874

" " " " " 1855. 2,797,839

Increased loss in 1856.....\$241,035

Losses in 1854.....	\$2,187,825
" " 1853.....	854,850
" " 1852.....	991,015
" " 1851.....	740,515
" " 1850.....	644,440

Loss on steam hulls.....\$732,800

" cargoes by steam.....645,800

Total loss by steam in 1856.....\$1,378,100

" " " " " 1855.....1,692,700

Decrease in 1856.....\$314,800

Loss on sail hulls.....\$363,615

" cargoes by sail.....697,099

Total loss by sail in 1856.....\$1,560,774

" " " " " 1855.....1,109,139

Increased loss in 1856.....\$555,635

LOSS OF LIFE.

Loss of life.....	1854.	1855.	1856.
	119	118	407

This shows an increase in the loss of life during the past year over that of 1855 of 289.

The increased facilities for saving wrecked property has lessened the actual amount of loss on property in distress at least 25 per cent. during the past severe season; as the proportion of total losses to the whole number of disasters will show when compared with 1855.

SYNOPSIS OF THE MARINE REGISTER OF THE BOARD OF LAKE UNDERWRITERS OF VESSELS IN COMMISSION ON THE LAKES IN THE FALL OF 1856.

Vessels.	No.	Tonnage.	Cash Value.
Steamers.....	107	62,863	\$3,820,400
Propellers.....	135	54,675	2,741,200
Barks.....	55	21,773	693,800
Brigs.....	103	27,045	701,850
Schooners.....	850	175,380	5,487,100
Total.....	1,266	389,736	\$12,944,350

For Commerce of the Lakes, see *South. Quar.*, xix., 420; *South. Lit. Misc.*, ii. (MAURY); DE BOW'S *Rev.*, vii., 279; *Chris. Exam.*, lxi.; SILLIMAN'S *Jour.*, x., 83 (AGASSIZ); HUNT'S *Mag.*, viii.; *Am. Whig Rev.*, vi., 466; ANDREWS' *Report on Colonial and Lake Trade.*

Lamar, formerly COBIJA, a sea-port of the republic of Bolivia, the ci-devant Upper Peru, on the west coast of South America, lat. 22° 39' 30" S., long. 70° 12' W. Population 5000. In 1833 Lamar was declared a free port, and in it centres almost the whole foreign trade of the republic. Its situation is, however, very unfavorable. It labors under a great want of fresh water; and is obliged to import all its provisions by sea, either from Valparaiso on the one hand, or from Arica on the other. The Desert of Atacama lies between it and the internal and populous part of the country, where the towns of Potosi, Cochabamba, Charcas, etc., are situated. The produce imported at Lamar is conveyed across the desert on the backs of mules to the interior; the gold and silver of the mines being brought in the same way to the port to be shipped. These, with copper, saltpetre, chinchilla-skins, and wool, form the principal articles of export. Saltpetre is found in large quantities in the desert; the copper is found near the coast, and, owing to the scarcity of fuel, most part of it is exported in the shape of ore. Peru possesses a long narrow strip of land, stretching along the coast of the Pacific from Arequipa to the Bay of Pica, which ought naturally to belong to Bolivia, being, in fact, the *littoral* of the latter. The Bolivian government has set on foot various negotiations to obtain the cession of this tract, which, besides greatly improving the frontier of the republic, would, at the same time, render her mistress of Arica, which is in all respects much better fitted than Lamar for

becoming the entrepôt of trade. Hitherto, however, these negotiations have proved abortive, so that, as already stated, Lamar at present engrosses most part of the foreign trade of the State. We subjoin the decree constituting Lamar a free port:

1. From and after the 1st of July of this present year, 1833, Port Lamar shall be absolutely free and open. 2. Vessels of every nation may enter this port, and remain as long as they please, without being subjected to any tax whatever, either on entrance, or during their stay, or on their departure. 3. They shall be free from all duties of anchorage, tonnage, shifting, unloading, or reloading of cargo, deposit, storage, or any other of whatever denomination. 4. Goods may be deposited in private warehouses, without any intervention on the part of the government. 5. The custom-house of Port Lamar is suppressed. In its stead will be a commissioner's office, for the purpose of distributing permits for the transportation of goods into the interior. 6. Whenever goods are to be sent into the interior, they must first be submitted to the commissioner, together with the invoice corresponding. 7. The commissioner will register them in a book, together with their valuation, made by two merchants of the place, and the name of their owners, of the person to whom, and the place where they are to be sent. This is to be signed by the person entering the goods, who, at the same time, binds himself to have them transported direct to the custom-house for which they are destined, without opening any of the cases, bags, or other envelops, each of which shall be sealed, marked, and numbered before departure. These points are to be expressed in the permit. 8. The commissioner shall by the earliest post send a notice to the collector of the custom-house for which any merchandise is destined, specifying the numbers, characters, quantities, and qualities of the several articles. 9. The goods must not be carried by any unaccustomed roads, but only through Calama and the public thoroughfares; and whenever they pass through any place at which a guard or commissioner is stationed, the permits must be exhibited, in order that their arrival with their seals unbroken may be ascertained. 10. Merchants, either in person or by a representative, must produce to the commissioner of the port a certificate of the delivery of the goods at the custom-house for which they are destined within six months from the day of their entry; in case they do not, they must at the end of that period pay the whole of the duties on them. 11. From and after the 1st of July, 1833, all goods entered at Port Lamar shall pay a duty of only 5 per cent. over and above that of half per cent. to the consular. 12. The duty of 5 per cent. shall be paid thus: at the port, 2 per cent. on the valuation made as aforesaid; and the other 3 at the custom-house in the interior for which the goods are destined. In each case, one half at the end of 3, the other half at the end of 5 months. 13. All goods carried from Port Lamar by land to any of the adjacent republics shall only pay a transit duty of 2 per cent. 14. A duty of 2 per cent. shall be paid on three fourths of all gold and silver money entered at any of the custom-houses in the interior for exportation through Port Lamar. 15. It is absolutely prohibited to export gold or silver in bullion or plate, except in small quantities for the use of the person carrying it out. It will be seized wherever it is found on this side the districts of San Antonio, San Vincente, Atoca, Agua, de Castilla, Leguapate, or the line of the canal. 16. All hardware for agriculture and mining machinery, instruments of science or the arts, iron, steel, quick-silver, and moral books, may be introduced free of duty into the republic, and productions of Bolivia may be exported likewise free. 17. A premium of 2 per cent. on their value shall be allowed on the exportation through Port Lamar, of cascarilla, wool, tin, cocoa, and coffee, in the shape of remission from duties to the amount on goods carried into the interior from the same port. The remaining articles of the Decree are of a purely local nature. See BOLIVIA and PERU.

Lamb-skins (Ger. *Lammshelle*; Fr. *Peaux d'agneaux*; It. *Pelli agnelline*; Sp. *Pielles de carderos*). The value of lamb-skins varies according to the fineness, brilliancy and color of the wool. Black lamb-skins are more generally esteemed than those of any other color. English lamb-skins are seldom to be met with perfectly black; but since the introduction of Merino sheep into this country, many of the white fleeces have, in point of quality, arrived at a pitch of perfection which justly entitles them to be ranked with some of the best fleeces in Spain. The importation of lamb-skins is immense. Eight tenths of the whole quantity are supplied by Italy. They are mostly used in the glove manufacture.

Lamp (Ger. *Lamps*; Fr. *Lampe*; It. *Lucerna*; Sp. *Lampara*; Rus. *Lampadu*), an instrument used for the combustion of liquid inflammable bodies, for the purpose of producing artificial light. Lamps are mentioned in all the early ages: they were in use in Egypt, Greece, and Rome. The earthen lamp which Epictetus the philosopher had in his study sold after his death for 3000 drachmas, A. D. 161. Lamps with horn sides were the invention of Alfred. Lamps were in general use through the streets of London up to the close of the 18th century, as were flambeaux, which were carried by link-boys. London streets were first lighted by oil-lamps in 1681, and with gas-lamps in 1814. The domestic lamp is now of elegant manufacture; of this kind is the Argand lamp, brought into general use in England in 1785.—*Haydn*.

It is unnecessary to give any description of instruments that are so well known. We may, however, remark that the discovery of Sir H. Davy, who, by covering the flame with wire gauze, succeeded in producing a lamp that may be securely used in coal mines charged with inflammable gas, is one of the most ingenious and valuable that has ever been made. The following extracts from a communication of the late Mr. Buddle, an able and well-informed coal engineer, evince the great importance of Sir Humphrey Davy's invention: "Besides the facilities afforded by this invention to the working of coal mines abounding in fire-damp, it has enabled the directors and superintendent to ascertain, with the utmost precision and expedition both the presence, the quantity, and correct situation of the gas. Instead of creeping inch by inch with a candle, as is usual, along the galleries of the mine suspected to contain fire-damp, in order to ascertain its presence, we walk firmly on with the safe lamps, and, with the utmost confidence, prove the actual state of the mine. By observing attentively the several appearances upon the flame of the lamp, in an examination of this kind, the cause of accidents which happened to the most experienced and cautious miners is completely developed; and this has hitherto been in a great measure matter of mere conjecture. It is not necessary that I should enlarge upon the natural advantages which must necessarily result from an invention calculated to prolong our supply of mineral coal, because I think them obvious to every reflecting mind; but I can not conclude without expressing my highest sentiments of admiration for those talents which have developed the properties and controlled the power of one of the most dangerous elements which human enterprise has hitherto had to encounter."

The lamps now used for light-houses are highly ingenious, and beautiful. In the first place, it is necessary to distinguish between two systems—the *catoptric* and the *dioptric*—the former depending on the reflection of light from a mirror, and the latter on the transmission of light through a lens. If a large lamp were placed on the top of a light-house, with glass roof and windows all around it, the light would shine in every direction, losing its intensity by being so much diffused; but by the use either of mirrors or of lenses, all the light is concentrated to one definite direction; its energy is increased by being circumscribed in range. In the catoptric system, numerous concave reflectors are placed at definite angles round a central lamp: they are of silvered copper, and are kept exquisitely bright; and they all contrive to reflect the rays out seaward, without allowing any to waste their power landward. The dioptric system involves the use of powerful convex lenses, through which the rays are focalized in a definite direction. If very large, these lenses would be difficult to make and costly to purchase; but it has been shown by Brewster and Fresnel, that a compound lens may be built up of a number of pieces, provided the curvatures are well adjusted. Around thousands of miles of coast,

where the annual wrecks are from 700 to 800, and the property lost amounts to millions sterling, the light-houses have passed through many stages of efficiency. First there was the large coal fire used on the summits of open buildings, then the old-fashioned oil lamps, or sometimes wax candles, with a looking-glass reflector behind; then the more brightly-burning Argand lamp, with concave metallic reflectors behind; then the convex lens, to focalize the rays by transmission; and then the lens built up piecemeal, so that the light may appear almost as one vast luminous pillar. See **LIGHT-HOUSES**.

Lamp-black (Ger. *Kienruss*; Fr. *Noir de fumée*, *Nero di fumo*, *Negro-fume*, *Negro de humo*). The finest lamp-black is produced by collecting the smoke from a lamp with a long wick, which supplies more oil than can be perfectly consumed, or by suffering the flame to play against a metalline cover, which impedes the combustion, not only by conducting off parts of the heat, but by obstructing the current of air. Lamp-black, however, is prepared in a much cheaper way for the demands of trade. The dregs which remain after the eliquation of pitch, or else small pieces of fir-wood, are burned in furnaces of a peculiar construction, the smoke of which is made to pass through a long horizontal flue, terminating in a close boarded chamber. The roof of this chamber is made of coarse cloth, through which the current of air escapes, while the soot remains.—*URE's Dictionary*.

Land, in sea language, makes part of several compound terms; thus, *laying the land*, denotes that motion of a ship which increases its distance from the coast, so as to make it appear lower or smaller on account of the intermediate convexity of the sea. *Raising the land*, is produced by the motion of the vessel toward it. *Land is shut in*, signifies that another part of the land hinders the sight of that the ship came from. *Land to*, or so far from shore that it can only be just discerned. *Land turn*, a wind that in almost all hot countries blows at certain times from the shore in the night. *To set the land*; that is, to see by the compass how it bears. *Land-breeze*, a current of air, which in many parts within the tropics, particularly in the West Indies, regularly sets from the land toward the sea during the night, and this even on opposite points of the coast. *Land-locked*, is said of a harbor which is environed by land on all sides, so as to exclude the prospect of the sea, unless over some intervening land. If a ship is at anchor in such a place, she is said to ride land-locked, and is therefore considered to be safe from the violence of winds and tides. *To make the land*, is to discover it after having been out of sight of it for some time. *Land-mark*; any mountain, rock, steeple, or the like, near the sea-side, which serves to direct ships passing by how to steer so as to avoid certain dangerous rocks, shoals, whirlpools, etc.

Land, Public. Grants of public land to certain States for railroads, made at the last session of the 34th Congress, 1855-'6.—*To Iowa*, a grant of the alternate sections designated by odd numbers, for six miles in width on each side of certain railroads named in the act; and, in case any of such sections shall have been sold, or become subject to pre-emption, then the limit of selection is extended to *fifteen miles* on each side, to make up the deficiency so caused. The alternate sections remaining to the United States within *six miles* on each side not to be sold for less than double the minimum price of other public lands—\$1 25 per acre. Troops and other property of the United States to be transported free upon the railroads—mails to be carried at such rates as Congress may prescribe, and, until so fixed, at such rates as the Postmaster-General may allow.

At the second session of the same Congress, 1856-'7, a like grant was made to Minnesota and to Alabama. The quantity of land granted in each case is over 3000 acres per mile of railway.

In the first grant made to Alabama, there does not seem to be any increase of the price of the sections retained by the United States, that provision of the law not being fairly construable as one of the terms or conditions of the grant. In all these grants, it will be observed, the States are authorized to make their selections as far as *fifteen miles* on each side of every railroad, while the increase in the minimum government price of the retained lands is confined to the *six mile* limit. The public lands, in all the above-named States, particularly in Iowa, Alabama, Mississippi, Louisiana, Wisconsin, and Michigan, having been sold or pre-empted to a great extent, it is manifest that the selections for all the named railroads will range, more or less, to the maximum limit of 15 miles on each side of them. The increase in the minimum price, therefore, does not apply in a width of *nine miles* on each side. This seems to give up the argument that the only consideration which moved Congress to make these grants was such as would actuate any large holder of unoccupied land to give away part to enhance the value of the residue; for if the land is not improved in value for the full extent of the 15 miles, what right have Congress to make such a grant for such a reason?

The immense donations of public land made of late years by Congress to corporations within the new States, have awakened the attention of the people of the old States to the subject, and of Virginia, especially, where the burden of taxation for internal improvements has been greatly increased. It strikes us, therefore, that a brief recurrence to the history and conditions of the tenure of the public domain may be of general interest at this time.

At the commencement of the Revolutionary War, there belonged to some of the States large tracts of wild and unappropriated lands, while in others none such existed; the States possessing no such lands, claimed that as the war was waged with united means and equal sacrifices, the waste lands which might be conquered from the enemy should become common property, and, under the recommendations of Congress, 10th October, 1780, "that the unappropriated lands which might be ceded to the United States, by any particular State, pursuant to the recommendation of Congress of the 5th of September last, shall be disposed of for the common benefit of the United States."

Virginia promptly made a cession of her vast domain north of the River Ohio, out of which six States have since been formed. The condition of her cession (adopted substantially by other States) was, that all the lands conveyed "shall be considered as a *common fund* for the use and benefit of such of the United States as have become or shall become members of the confederacy or federal alliance of the said States, Virginia inclusive, according to their usual respective proportions in the general charge and expenditure, and shall be faithfully and *bona fide* disposed of for that purpose, and for no other use or purpose whatever." Thus were the lands ceded, accepted, and held in trust. How they have since been disposed of, in total disregard of the conditions of the trust, the history of the country tells in the annals of Congressional legislation.

In disregard of the plain obligations of the trust, President Jackson, in the early days of his administration, proposed to cede the lands thus acquired, and all subsequently purchased, to the States in which they lie, gratuitously, or for a nominal price.

To counteract this movement, which at that time met with no favor in Congress, but which has since been substantially adopted in the system of partial grants, Mr. Clay introduced his well-known distribution bill, which was passed by Congress on the 2d day of March, 1833, by a vote of 24 to 20 in the Senate, and 96 to 40 in the House of Representatives. This bill President Jackson refused to approve, and it did

not become a law, the popular will, as indicated by the vote of the House, to the contrary notwithstanding. Some of the western members did not hesitate to avow the purpose of eventually appropriating to the States in which they lie all the public lands, and one of the most eminent of them declared that, after the census of 1820, the power to do so would be irresistible. The fulfillment of this menace is almost complete, and after the census of 1860 the old States will be utterly powerless unless they unite cordially for their common protection.

The whole amount of money which would have gone into the Treasury of Virginia, under the provisions of Mr. Clay's land bill from 1832 to 1839, a period of seven years, would have been \$4,369,169, or for each year, \$728,194.

On September 4, 1841, an act was passed to appropriate the proceeds of the sales of the public lands among the several States. The first section provided that from and after the 31st of December, 1841, there should "be allowed and paid to each of the States of Ohio, Indiana, Illinois, Alabama, Missouri, Mississippi, Louisiana, Arkansas, and Michigan, over and above what each of the said States is entitled to by the terms of the compacts entered into between them and the United States, upon their admission into the Union, the sum of ten per centum upon the nett proceeds of the sales of the public lands, which, subsequent to the day aforesaid, shall be made within the limits of each of said States respectively." We give below a statement, showing the quantities of public land disposed of, and also the quantities vacant.

STATEMENT OF THE AREAS OF THE SEVERAL PUBLIC LAND STATES AND TERRITORIES OF THE U. S., THE QUANTITY OF LAND DISPOSED OF, AND THE QUANTITY REMAINING VACANT, ON THE 30TH OF JUNE, 1856.

States and Territories.	Areas.			Unsurveyed.	Offered for Sale.	Sold.	RESERVATIONS FOR—		
	Sq. miles.	Acres.	Acres.				Salines.	Indians.	Companies, individuals, & corporations.
Ohio.....	39,964	*25,378,960	16,770,984	....	16,770,984	12,820,890-95	24,216	16,830-73	8,805,976-00
Indiana.....	33,809	*21,637,760	21,487,760	....	24,487,760	16,090,850-87	28,040	126,220-71	149,102-00
Illinois.....	55,410	35,462,400	35,462,400	....	25,454,262	19,060,390-59	121,629	48,959-69	....
Missouri.....	65,037	41,603,680	41,590,893	24,782	41,186,654	16,891,837-07	43,080	22,587-61	....
Alabama.....	*50,943	*32,027,520	31,993,813	33,707	31,903,288	15,688,223-94	23,040	2,542,378-82	....
Mississippi.....	137,327	*23,895,680	23,895,680	....	23,892,577	11,847,267-81	....	277,612-04	....
Louisiana.....	41,946	26,461,440	24,022,272	2,489,168	19,231,161	4,823,198-80	....	....	....
Michigan.....	56,451	36,128,640	36,163,640	....	34,115,710	11,117,714-55	46,080	109,300-83	....
Arkansas.....	52,198	33,406,720	33,279,003	127,712	32,618,409	4,436,521-85	46,080	....	....
Florida.....	59,268	37,981,520	25,292,062	12,639,458	18,876,615	1,582,296-66	....	227-49	805-75
Iowa.....	56,080	35,891,200	33,815,480	1,820,720	23,560,514	10,905,507-45	46,080	119,183-84	10,880-00
Wisconsin.....	53,924	34,511,360	27,334,891	7,176,969	24,131,412	9,066,912-26	46,080	137,894-27	....
California.....	183,980	120,947,340	10,921,401	110,026,439	....	....	....	....	....
Minnesota.....	141,889	90,776,960	10,675,183	80,101,827	2,508,710	1,582,637-67	....	....	....
Oregon.....	186,920	119,638,800	8,937,679	115,691,121	....	23,494-69	....	....	....
Washington.....	126,547	80,990,080	617,720	80,372,360	....	495-75	....	....	....
New Mexico.....	246,934	158,037,760	....	153,037,760	....	....	....	....	....
Utah.....	187,923	120,270,720	220,877	120,050,943	....	....	....	....	....
Nebraska.....	342,435	219,160,320	179,139	218,931,181	....	....	....	....	....
Kansas.....	126,288	80,824,120	1,572,690	79,243,430	....	....	....	....	....
Indian.....	67,020	42,892,800	....	42,892,800	....	....	....	....	....
Total.....	2,215,752	1,418,081,280	....	....	....	134,300,130-81	422,325	3,400,725-53	8,966,268-75

STATEMENT OF THE AREAS OF THE SEVERAL PUBLIC LAND STATES AND TERRITORIES, THE QUANTITY OF LAND DISPOSED OF, AND THE QUANTITY REMAINING VACANT, ON THE 30TH OF JUNE, 1856.—Continued.

States and Territories.	DONATIONS AND GRANTS FOR—						Confirmed private claims.	Swamp lands.	Vacant public lands.
	Schools and universities.	Deaf and dumb Asylums.	Internal improvements.	Railroads.	Individuals and Companies.	State Gov. and public buildings.	Military Services.		
Ohio.....	727,528	....	1,243,001-77	....	32,141-24	....	1,824,423-96	26,460	132,428
Indiana.....	673,357	....	1,609,861-61	....	843-44	2,560	1,281,886-61	329,881	1,315,199
Illinois.....	1,001,795	....	500,000-00	2,595,053	954-64	2,560	9,597,050-63	188,902	1,838,418
Missouri.....	1,222,179	....	500,000-00	1,815,184	....	2,560	3,041,773-20	1,362,455	8,353,458
Alabama.....	925,804	21,949-46	500,000-00	2,354,248	1,981-53	1,620	1,014,244-95	213,887	12,596
Mississippi.....	880,624	....	500,000-00	1,664,540	15,965-81	1,280	244,053-21	688,038	2,758,524
Louisiana.....	832,124	....	500,000-00	1,091,640	8,412-98	....	588,190-30	2,092,914	10,580,676
Michigan.....	1,113,478	....	1,250,000-00	1,269,520	4,080-00	18,200	1,922,053-59	126,711	7,178,725
Arkansas.....	932,540	2,097-43	500,000-00	1,631,911	139,366-25	10,600	1,744,693-15	118,451	8,401,580
Florida.....	954,582	20,924-22	500,000-00	1,323,280	52,114-00	6,240	4,029,839-51	3,789,789	10,790,737
Iowa.....	951,224	....	1,366,793-22	2,748,560	18,276-86	3,840	10,929,683-90	....	1,499,716
Wisconsin.....	1,004,714	....	1,091,871-99	1,201,920	5,705-82	6,400	3,942,037-17	36,881	2,350,000
California.....	6,765,404	....	500,000-00	....	....	....	....	....	113,682,436
Minnesota.....	5,089,244	....	\$ 340,000-00	....	....	....	1,313,020-00	....	82,592,608
Oregon.....	6,692,124	....	....	....	....	....	....	....	112,918,241
Washington.....	4,545,529	....	....	....	....	....	....	....	76,444,055
New Mexico.....	8,826,956	....	....	....	....	....	....	....	149,210,804
Utah.....	6,681,777	....	....	....	....	....	....	....	113,589,013
Nebraska.....	12,175,568	....	....	....	....	....	....	....	206,984,747
Kansas.....	4,460,062	....	....	....	....	....	....	....	76,861,058
Indian.....	....	....	....	....	....	....	....	....	42,892,800
Total.....	66,435,572	44,971-11	10,878,983-59	18,190,806	279,792-07	50,390	87,825,099-83	3,028,903	49,787,356

* Includes reserves under deeds of cession.

† Includes the quantity of 541,625 acres of the Des Moines River Grant above the Raccoon Fork.

‡ Is the estimate of the Des Moines River Grant, within this Territory.

§ Reported by the State's authorities.

¶ Estimated.

Land-waiter, an officer of the English custom-house, whose duty it is, upon landing any merchandise, to taste, weigh, measure, or otherwise examine the various articles, etc., and to take an account of the same. They are likewise styled searchers, and are to attend, and join with, the patent searchers, in execution of all caskets for the shipping of goods to be exported to foreign parts; and, in cases where drawbacks or bounties are to be paid to the merchant on

the exportation of any goods, they, as well as the patent searchers, are to certify the shipping thereof on the debentures.

Laniard, or **Lanyard** (from *Lanier*, Fr.), a short piece of cord or line fastened to several machines in a ship, and serving to secure them in a particular place, or to manage them more conveniently. Such are the lanyards of the gun-port, the lanyard of the buoy, the lanyard of the cat-hook, and others. The principal

lanyards used in a ship, however, are those employed to extend the shrouds and stays of the masts by their communication with the dead eyes, so as to form a sort of mechanical power resembling that of a tackle. These lanyards are fixed in the dead-eyes as follows: one end of the lanyards is thrust through one of the holes of the upper dead-eye, and then knotted to prevent it from drawing out; the other is then passed through one of the holes in the lower dead-eye, whence returning upward, it is inserted through the second hole in the upper dead-eye, and next through the second hole in the lower dead-eye, and finally through the third hole of both dead-eyes. The end of the lanyard being then directed upward from the lowest dead-eye, is stretched as stiff as possible by the application of tackles; and that the several parts of it may slide with more facility through the holes of the dead-eyes, it is well smeared with hog's-lard or tallow, so that the strain is immediately communicated to all the turns at once.

La Perouse, a celebrated French navigator. His first voyage was commenced in 1785, when Perouse sailed from France for the Pacific with the *Boussole* and *Astrolabe* under his command. The last direct intelligence received from him was from Botany Bay, in March, 1788. Several expeditions were subsequently dispatched in search of Perouse, but no certain information was had until Captain Dillon, of the East India ship *Research*, ascertained that the French ships had been cast away on two different islands of the New Hebrides—a fate authenticated by various articles of the wreck of these vessels, which Captain Dillon brought with him to Calcutta, April 9, 1828, 40 years afterward.

Lapidary, a name given to the artist or artisan whose business it is to cut, grind, and polish gems, small stones, etc., for the purposes of jewelry, and also for mineralogical specimens. The name, derived from *lapidarius*, pertaining to stones (from *lapis*, a stone), would seem to include the various modes of working or finishing stones in general; the technical use of the word, however, is limited as above noticed.

Lapis Lazuli. See ULTRAMARINE.

Lapland, the most northerly country of Europe, is bounded north by the Arctic Ocean, south by Sweden, east by the White Sea, and west by Norway and the Atlantic Ocean. Its limits are not very accurately laid down by geographers; but it seems to be divided from the rest of Scandinavia by a line nearly corresponding with the polar circle, in latitude $66^{\circ} 32'$, and is consequently almost entirely an arctic region. North Cape, its most northerly point, is situated in N. lat. $71^{\circ} 10' 15''$, consequently its length from north to south, is about 380 miles, and not 500, as is usually stated. From Cape Orlov, on the White Sea, to the Atlantic on the west, it extends about 700 miles; but besides this continental territory, there are a vast number of islands, which are included in the general name of Lapland. The whole country is divided into three parts, called Russian, Swedish, and Norwegian Lapland or Finmark, and is recognized by the Swedes and Norwegians by the name of Lapmark, *mark* signifying, both in Swedish and Norse, land or tract of country. The very early writers, however, do not notice any country under the name of Lapmark, while Finmark is alluded to, though not with such clearness as would admit of our defining the exact extent of country which went by that appellation. It has been conjectured that, in former ages, the parts of the north now known by the names of Swedish and Russian Lapland were distinguished as Russian and Swedish Finmark previously to the period when the Finns obtained the name of Lapper, or Laplanders.

Finmark, which forms the most northern part of this wild and extensive territory, constitutes one extremity of the kingdom of Norway, to which it now belongs, though doubtless in ancient times it was a separate kingdom, governed by its own sovereigns.

Its present boundary on the west is Loppen, the first island in Finmark, and which forms a line between it and the Nordlands, a part of Norway sometimes erroneously confounded with Lapland. On the north-west and north-east it is washed by the Polar Ocean, while to the east it is bordered by Russian Lapland, which also, with Nordland, bounds it to the south—the boundary line between the two countries being the River Tana. Its extent from north to south—that is, from the borders of Russian Lapland to the North Cape—is nearly three degrees of latitude; its greatest breadth being from west to east, namely, from the western side of Faroe to the coast above Waranger, near the borders of Russian Lapland. At the eastern extremity of Finmark there is a considerable tract, to which both Norway and Russia lay claim. It lies between the acknowledged boundaries of each of these powers, and being now considered as neutral ground, is free to the Laplander of both countries to hunt and fish in. This district extends a little to the westward of Bugefiord, stretching nearly south to the Enara Lake, where it bends to the east, and afterward to the N.E., where it joins the coast. Russian Lapland lies to the south and east of the debatable ground above mentioned. The river Muonio, which for a considerable portion of its early course receives the name of the Kõngärnäel, constitutes the boundary between Sweden and Russia. The circle of Kola, and the northern part of eastern Kemi, constituted at one time Russian Lapland; but, by subsequent treaties, two extensive districts, all the Lapmark of western Kemi, and the greater part of the Lapmark of Torneo, have been ceded to Russia. Thus nearly two thirds of the regions inhabited by the Laplanders are included in the dominions of the Emperor of Russia. Swedish Lapland, the most southerly division, occupies the interior part of the country to the west of the River Torneo—the maritime district of Nordland, a portion of Norway, being situated between it and the North Sea. How much of the northern part of Sweden is entitled to be called Swedish Lapland, it is impossible to say. If the arctic circle be taken as the boundary line, only that portion of Sweden called North Bothnia can be considered as belonging to Lapland; but Pitea Lapmark and Umea Lapmark are sometimes mentioned as forming part of the latter country, and these are situated in West Bothnia. The cause of error may be traced to the circumstance of these nomadic tribes frequently inhabiting, at least for a portion of the year, districts of country far down in the interior of Sweden and Norway. Thus, in the latter country, the Rorars Mountains, situated between Christiania and Dronheim, are inhabited, during summer at least, by a family of Laplanders, with the never-failing herd of reindeer. But the exact boundary line is not very material, as it has reference only to different portions of a tract of country which is under one government.

There are numerous lakes and rivers in Lapland. Of the latter, several take their rise in the Koelin Mountains, and flow in various directions into the Atlantic Ocean or the Gulf of Bothnia. The principal rivers of the country are the Tana or Tarna, which takes a north-eastern course through Finmark, and empties itself into a bay or sound of the same name; the Alten or Alata, which is very rapid, forcing its way through the mountains of Finmark in a north-westerly direction, empties itself into a bay of the same name; the Torneo, which issues from a lake so named, and, after being enlarged by a number of streams uniting in one channel and running nearly due south through a long course, falls into the northern extremity of the Bothnian Gulf at Torneo; and the Muonio, which rises from the Killpis Jaure, at the foot of the alpine chain of Norway, is a considerable stream, and constitutes the boundary line between Sweden and Russia, till it unites with the River Torneo, when the latter marks the

limits of either country in this quarter. There are also other rivers which take their rise in Lapland, and fall into the Gulf of Bothnia, such as the Lulea, Pitea, Kalix, and others. In Russian Lapland there are several considerable streams, but these have not been so well defined, nor has this part of Lapland been so fully described as the others. The Kemi takes its rise among the Kemi Mountains, situated near the centre of the country, and flows into the Gulf of Bothnia. It has many imposing cataracts, of which the *Taival Koski*, or the fall of the heavens, is the only one which the adventurous boatmen never attempt to cross. The *Passa*, or holy stream, is the outlet of the great lake Enara, flowing thence to the Arctic Ocean. The eastern declivities of Russian Lapland are watered by the Panol, which discharges itself into the White Sea. The Tuloma falls from a great height, enters the Lake Kola, which name it afterward takes, and falls into Kola Bay, on the Arctic Ocean. Beside these, there are numerous other rivers which traverse the country in various directions, and either give rise to lakes, or issue from them.

Fishery.—The coast Laplanders support themselves entirely by the fishery; which is astonishingly productive, 2000 pounds' weight of cod-fish being caught in a day by means of lines alone. From the great number of small Russian vessels which frequent the coast at certain seasons, they find a ready sale for the fruits of their industry, receiving in exchange chiefly meal, brandy, tobacco, and the like. Whales are abundant, particularly what is called the fin whale, which is long, active, swimming with great strength and speed, and consequently difficult to capture.

Manufactures.—In their manual arts and manufactures, that is, making the various utensils which their mode of life requires, the Laps display some ingenuity. Their sledges and canoes are very strongly and closely put together, so as to be entirely impervious to water. They tan hides with the first inner bark of the birch, make strong cordage and thread of the sinews of the reindeer, weave coverings for their tents, knit gloves, fashion wooden utensils for domestic purposes; and the women prepare the skins of foxes, fawns, otters, and other animals for sale, by stripping off the membranaceous parts, and curing them with fish-oil.

Russian Lapland begins at the Waranger Fiord, under N. lat. 70, and extends as far as the White Sea. Admiral Litke, in surveying its northern coast, in the years 1822-3, has noted down many interesting particulars, from which we derive the following notes:

It may appear surprising, but it is nevertheless true, that this coast, navigated for three centuries by the first maritime nations, was, before Admiral Litke's survey, less known to us than many of the most distant and uninhabited parts of the globe. Vessels trading to Archangel had, for a long time, only the *Zeefakel* of the Dutch for a guide. Litke, June, 1822, began his survey of the Lapland coast at Cape Orlov, in about N. lat. 67°. This, the eastern extremity of Russian Lapland, consists of high, steep, and bare rocks. Near Sviatoi Nos (in N. lat. 68°) the coast has an inviting appearance; the south side of the islands, or indentations, being covered with beautiful turf, wild leek, and a number of strawberries, but there were no bushes. On the main shore, however, were seen low dwarf birch and juniper bushes, and numerous tracks of reindeer. During summer, as Admiral Litke was here informed, there is no land route through Lapland; and all who are then necessitated to travel—as, for example, clergymen, the judges, or officers of judicial courts, etc.—pass by *shnabes* along the shore, by stations, from Kola, round the whole peninsula, as far as Kandalaksha, in the extreme north-eastern point of the White Sea. Between Kandalaksha, however, and Kola, they manage to travel in the usual manner. A little to the west of Sviatoi Nos is the mouth of the Yukanka River, which is navigable

for three to four sea miles up, when rapids commence, and prevent navigation, even for small boats. On the left bank of this river lies a Lopar village, called the Yukanka Lodge: for all places of the Lopares, both for summer and winter residence, are called by the Russians *pagosti* (lodges).

About 30 miles north-west from Yukanka is Cherni Nos, or Black Cape; and near it, Noknev Island—in earlier charts, called Nagel, or Nagol. Here Admiral Litke found that the needle showed no variation. On the main shore, near Noknev Island, the principal fishes caught are salmon, bib, *paltus*, and *piksha*. The *peschanka* (sand-eel) is caught in a remarkable manner. Some time before ebb, the Lopares set about digging up the wet sand close above the strand line; with almost every step they dig out such a fish, to which, however, they must not allow a second's time, as otherwise it would be sure to dig itself in again, and escape. As soon as they perceive it, therefore, they seize it with a handful of sand, and throw it violently on the ground. The fish, thus stunned, are collected in baskets or casks. It is strange that this fish is found only at ebb during the day, and never at night. The people of this place had also some sheep, which had abundant food in the adjoining pastures.

The chief island on the coast of Russian Lapland is Kildin—not Kilduin, as the Dutch call it—and lies 11 miles east from the mouth of the Kola Bay. It is 9 miles long, and $1\frac{1}{2}$ to $3\frac{1}{2}$ miles broad. Its shores are high and precipitous on the north side, and terminate abruptly in a perpendicular rock on the west, while on the south-east side it slopes down gently to the sea. The appearance of the south coast is most peculiar, rising as it does in four most regular terraces, forming an amphitheatre of 500 feet in height, with a flat, table-like top. This coast is everywhere clothed with the richest verdure, forming a most striking contrast with the bare granite crags on the main shore. The island consists of primary slate, and thus differs from both the islands and the main shore to the south-eastward, which show only granite.

Kola, the capital of Russian Lapland, is situated at the confluence of the Rivers Kola and Tuloma, about 30 miles from the sea. As determined by Mr. Rasumowski, who, in the last century, observed in this place the transit of Venus over the sun, the latitude of the city is $68^{\circ} 52'$, the longitude $33^{\circ} 1'$ east from Greenwich. It appears that Kola was founded long before 1553, as English and other mariners traded already about the middle of the 16th century to Kola as to a well-known place. It was at first only a *wolash* (capital of a district), became under Peter the Great an *ostrog* (fortified place), and since the foundation of the stadtholdership, the capital of a government. The place extends 530 fathoms along the River Kola, and 175 fathoms along the River Tuloma. Except a church built of stone, all the houses are of wood. The streets are paved with planks. On the bank of the Kola, near the centre of the town, lies a wooden fort, being a square with five towers: since the rupture with England, in the year 1800, the cannon of this fort were removed to the priory of Solowez, in order to put the latter in a state of defense; and since then, the walls of the fort serve only as a fence for the cathedral, and the towers are transformed into storehouses. The number of inhabitants of both sexes was estimated by Litke, in 1822, at about 800, but recent official data show that it was, in 1849, only 642. The officials and merchants of Kola live in a style varying little from that of the capital. In external appearance, Kola is that of a clean town; and the houses, consisting frequently of two floors, are neat. The view of the town from the north-east is most charming; it stands on a high and abrupt bank, from which a wide plain extends, bordered on three sides by high hills. The principal trade of Kola is in fish, particularly in bib (*treshka*) and *paltus*. The Ko-

laers are not themselves engaged in fishing, but obtain the fish by barter, mostly from the Russian fishers trading on the Lapland coast, partly from the Norway ports of Wadsö, Wardhuus, Hammerfest, and even from Tromsö, to which ports the Kolaers are permitted to export about 2000 *tchetwert* of rye flour every year.

Kola *lodji* go to Archangel to barter their cargo of fish for the various merchandise they require, and some of them venture to set out from the latter place on their return home as late as October. While the men of Kola are thus occupied, their wives and daughters do not remain idle. They cross in little boats to the islands to gather *maroshka*, the berries of *Rubus chamamorus*. A boat contains usually but one young and able man, and from 12 to 20 women. Among the islands near the Bay of Kola, the Koreline Islands are considered to give the best produce of *maroshka*; they lie five miles west from the mouth of the bay. The Kola women, however, will go still further, to Motov Bay, and even to the Ainova Isles, at least 100 miles from Kola, in a boat. The *maroshka* from these isles are said to surpass in size and flavor all others, and are mostly destined for the imperial court. The Bay of Kola, near the town, is so shallow that even the smallest vessels can approach it only at high water. The River Kola ceases altogether to be navigable at the town; but the Tuloma is navigable for about 40 miles, namely, to its origin from the lake. Its banks are densely wooded with splendid fir. There is a small and bare island in the middle of the Bay of Kola, called Solnoi Ostrov (Tallow Island), from the immense number of seals which formerly used to come ashore here, but which entirely disappeared about the end of the last century.

The Lap hut is formed interiorly of wood, by means of curved ribs, which unite near the centre in a ring, which is open, and allows free escape for the smoke, the fire being lighted in the centre of the floor. The exterior is covered with turf. The door is wood on one side. The inmates recline on skins on the floor, with their feet toward the fire; and behind them, on a row of stones near the wall of the hut, are their various utensils. Their clothing—chiefly of tanned skins and woolen stuffs—looked very dirty. Their whole wealth consists in reindeer. The two families who frequent this valley possess about 700 deer. We saw, perhaps, about one fourth of that number. A few of them were driven, for our inspection, into a circular inclosure of wooden paling, where they are habitually milked. One of the men dexterously caught them by the horns with a *lasso*, or noose. The deer are small; but some of them carry immense branching horns, the weight of which they seem almost unable to support. At this season their long winter coat of hair came off by handfuls. They make a low grunting noise, almost like a pig. The milk is very small in quantity, and excessively rich.

The whole population of Finmark does not exceed 45,000. The degrading superstition in which they were formerly sunk has now in a great measure disappeared, along with those numerous deities which they worshipped: the wild creations of unenlightened nature have been superseded by Christianity, and a knowledge of the true God. Regular clergymen are established in the country by the different governments, and the Laps exhibit much reverence and devotional feeling during divine service, although its purport is only known to them through an interpreter. Finmark, in regard to ecclesiastical regulations, is under the jurisdiction of the Bishop of Norland and Finmark, both of which form one diocese. Swedish Lapland has a population of only about 12,000.—E. B.

La Plata. The Argentine Republic, or "La Confederacion Argentina," comprises the provinces which, with Paraguay and Uruguay, now independent States, constituted, under Spanish rule, the vice-royalty of Buenos Ayres. Its area is the largest of the South Amer-

ican republics, and its population to the square mile the smallest. It consists of 13 provinces, comprising an area estimated at 786,000 square miles, and contains a population of about 764,000 souls. Other estimates reduce this number to 596,000, while the "Almanach de Gotha" for 1855 gives a total number of about 2,000,000, of whom 1,200,000 are creoles, Spaniards, and mestizos, 200,000 subjugated Indians, and 25,000 negroes. Within a few years, Buenos Ayres has withdrawn from the confederacy. With the exception of a portion of the extensive plains, called *pampas*, watered by the rivers Rio Negro, Colorado, and Desaguadero, nearly all the country belongs to the basin of the La Plata, the great estuary of which is between the State of Buenos Ayres and the Uruguayan port of Montevideo. The most important product of the republic is cattle. Immense droves of oxen roam at large over the *pampas*, and vast herds are scattered throughout the extensive breeding estates of private individuals. Horses and mules constitute a prominent article of commerce with the Peruvian and other traders; and sheep and hogs, and the small quadrupeds which furnish the nutria and chinchilla-skins, are among the valuable native animals. Cotton, tobacco, rice, cocoa, sugar-cane, indigo, maize, wheat, and other grains, constitute leading productions; but the staples of export are hides, skins, horns, bones, horse-hair, wool, tallow, ostrich feathers, salted meats, crude saltpetre, and cocoa. The export trade reaches, annually, a value of about \$10,000,000.

Commercial relations between the United States and the Argentine Republic are regulated by treaties of July 10th and 27th, 1853. The former treaty relates chiefly to the navigation of the rivers Parana and Uruguay: that of July 27th was designed to acknowledge and confirm the relations subsisting between the two governments by the signing of a treaty of friendship, commerce, and navigation, as well for the good security as for the encouragement of the commercial intercourse already subsisting between them. This latter treaty stipulates that perpetual amity shall exist between the two countries and their respective citizens; that there shall be reciprocal freedom of commerce; that the citizens, ships, etc., of each shall be protected in the territories of the other, to which other foreigners, or the ships or cargoes of any other foreign nation or state are or may be, permitted to come; that the respective ships of war, and post-office or passenger packets of the two countries shall have liberty freely and securely to come to all harbors, rivers, and places to which other foreign ships of war and packets are, or may be, permitted to come; to enter into the same; to anchor and remain there, and refit, subject always to the laws and usages of the two countries respectively; that any favor, exemption, privilege, or immunity whatever, in matters of commerce or navigation, which either of the two nations has actually granted, or may hereafter grant, to the citizens or subjects of any other government, nation, or state, shall extend, in like cases and circumstances, to the citizens of the other; that no high or discriminating duties shall be imposed, in the territories of either of the contracting parties, on any article of the growth, produce, or manufacture of the territories of the other, than are, or shall be, payable on the like article of any other foreign country; that export duties on all articles exported from the territories of either party to those of the other, shall be the same as when the exportation is made to any other foreign country; and that all prohibitions as to imports and exports, into or from either country, shall be such as extend to the like articles of any other foreign country. The treaty further provides that no other or higher duties or charges, on account of tonnage, light or harbor dues, pilotage, salvage in case of average or shipwreck, or any other local charges, shall be imposed in the ports of either of the two contracting parties, on the vessels of the

other, than those payable in the same ports on its own vessels; that the vessels of each shall enjoy entire equality with national vessels in the ports of the other, both as respects imports and exports; that a regular passport, or sea-letter, furnished by competent authority, shall be sufficient evidence of the nationality of the vessel; that the merchants, commanders of ships, and all other citizens of either of the contracting parties, shall enjoy, in the management of their affairs in the territories of the other, the same privileges and rights, in all respects, that belong to its own citizens under the laws and established customs of the country; that, in case of the death, without will or testament, of any citizen of either of the contracting parties, in the territories of the other, the consul-general or consul of the nation to which the deceased belonged, or the representative of such consul-general or consul in his absence, shall have the right to intervene in the possession, administration, and judicial liquidation of the estate of the deceased, conformably with the laws of the country, for the benefit of creditors and legal heirs. The treaty concludes with placing the diplomatic agents and consuls of the United States on the same footing as similar representatives of the most favored nation, and makes ample provision respecting religious privileges, rites of burial, etc. This treaty contains no limitation as to its duration, but provides that the amity which it establishes between the citizens of the two republics shall be perpetual. The foreign trade of the Argentine Republic was formerly monopolized by Buenos Ayres; but, in 1852, new channels of commerce were opened, the Parana and Uruguay Rivers being declared free to the commercial traffic and navigation of all nations by a decree officially promulgated October 30, of which a translation is subjoined:

Article 1. The navigation of the Rivers Parana and Uruguay is allowed to every description of merchant vessels, whatever may be their nation, place of departure, or tonnage. Art. 2. All merchant vessels may enter the ports established on the Rivers Parana and Uruguay. Art. 3. The established ports are: 1. In the province of Entre Rios, that of the city of Parana, the capital of said province, and those of Diamanti, Victori, Gualaguai, and La Paz, on the River Parana; and those of Gualaguachu, Concepcion del Uruguay, Concordia, and Federacion, on the River Uruguay. 2. In the province of Santa Fé, that of the capital of the province and that of Rosario. 3. In Corrientes, the capital of the same, Bella Vista, and Gorga. Art. 4. All those ports designated in the foregoing article shall have custom-houses for foreign trade; and those established in the provinces of Jujui, Salta, San Juan, and Mendoza shall have custom-houses for inland trade. Art. 5. Until the national tariffs be fully arranged, the custom-houses for foreign trade on the river shall continue to collect duties, according to existing regulations. Art. 6. Seven per cent. upon the valuation of the articles imported for consumption into the litoral provinces shall be collected as the sole national tax. Art. 7. In the custom-houses for inland trade, six per cent. upon the valuation shall be collected on all articles introduced, as a national tax. Art. 8. All the custom-houses for foreign trade, as well on the rivers as in the interior, shall permit the transit of foreign merchandise for the provinces of the confederation; but the custom-house dispatching them shall collect and retain five per cent. upon the valuation of the goods, as the whole of the national tax. Art. 9. All goods and merchandise of foreign production, or shipped from foreign places, and all the productions of the manufactures or industry of Buenos Ayres, which are introduced by land into any of the provinces of the interior, shall pay, for the present, the same duties as are collected in the custom-house of Rosario. Art. 10. In the same custom-house, the same duties on exporta-

tion as on importation shall be paid on whatever articles interior provinces may introduce into the province of Buenos Ayres. Art. 11. In all the custom-houses in which deposit is allowed, the same shall be continued subject to the existing regulations. Art. 12. Within the territories of the 13 confederated provinces, the passage of their own product or manufacture shall be free of all duties of transit or on consumption. Art. 13. The present decree shall have effect only until the national congress shall establish permanent regulations on the subject it embraces.

The above decree, published by the provisional director of the republic, was followed by the publication, on the 18th of the same month, of the following resolution of the representatives of the province of Buenos Ayres:—"The province of Buenos Ayres, recognizing as a principle of general convenience the opening of the River Parana to the traffic and navigation of all nations, from this present date declares and authorizes the same on its part."

Buenos Ayres must always be a point of great commercial importance, as it is the principal outlet through which the produce and industry of the immense regions lying behind can have an egress to a foreign market; and it is only through this port and Montevideo that those countries can receive, by the La Plata and its tributaries, unless in the direct trade, their supplies of foreign merchandise. Indeed, these two ports form the only channels through which the productions of the countries lying between the Cordilleras and the La Plata will find their way to foreign markets. By late advices to the State Department, notice is received of a law which passed both houses of the Argentine legislature, and was approved by the President July 19, 1856, establishing differential duties on all foreign merchandise introduced into the ports of the confederation, in the indirect trade from Buenos Ayres. These duties are almost equivalent to prohibition, and will divert from the port of Buenos Ayres that portion of the foreign trade destined for the fluvial provinces. The chief reason assigned for the adoption of this measure, as announced during the debate which it elicited in both branches of the legislature, was, that it would be the most effective means that could be adopted to force Buenos Ayres from its secession movements, and thus restore tranquillity to the republic. Already the government budget of Buenos Ayres shows a deficiency of \$9,000,000. This act of the confederation, in driving from its ports the foreign trade of the other provinces—hitherto a source of immense profit to its treasury—may lead to a commercial, perhaps a political, crisis.

The navigation of the La Plata and its tributaries is represented to be at this time active, employing a heavy tonnage both of steamers and sailing vessels. The trade between Buenos Ayres and Montevideo consists in the transhipment, to and from either port, of articles the growth or manufacture of Europe and the United States, and the conveyance of passengers. From Buenos Ayres to the interior, the trade consists in the interchange of foreign merchandise for the various productions of the La Plata provinces. South of Buenos Ayres, and from Patagonia, in exchange for dry goods, spirits, wines, and sundries, are imported hides, skins, tallow, hair, and, occasionally, wheat and salt, especially from Patagonia. The principal ports in the provinces open to this trade are San Fernando, San Pedro, and San Nicolas, in the province of Buenos Ayres; Rosario and Santa Fé, in Santa Fé; Gualaguachu, Parana, and Concordia, in Entre Rios; Gorga, Bella Vista, and Corrientes, in the province of Corrientes. From all these ports, as from those in Paraguay and Uruguay, the imports consist chiefly of yerba maté (Paraguay tea), and tobacco, hides, lumber, nutria, wool, candles, soap, ashes, peanuts, and various manufactures of wood.

The steam-vessels, exclusive of those of the British

Royal Mail Steam-packet Company, regularly employed, at a late date, in the navigation of the Plata, are: five steamers, under the Oriental flag—one of them constructed in the United States—and one under the Buenos Ayres flag, also of United States' origin. According to the navigation returns of the Argentine Republic for 1852, the steamers engaged in the regular trade between Buenos Ayres and Montevideo, with the

number of round trips made by each, were as follows: 1 American, 44 round trips; 1 British, 17; 2 Oriental, 38; and 2 Brazilian, 14. The sailing-vessels engaged in the same trade, were 2 schooners, under the Oriental flag, which made 42 round trips; and 2 schooners and 2 brigantines, under the flag of Buenos Ayres, which made 40 round trips. The following table shows the exports of Buenos Ayres for six years, ending 1854.

COMPARATIVE STATEMENT EXHIBITING THE EXPORTATION OF STAPLE PRODUCTS OF THE STATE OF BUENOS AYRES TO ALL COUNTRIES, FROM 1849 TO 1854, BOTH INCLUSIVE. [MADE UP FROM "REGISTRO ESTADISTICO DEL ESTADO DE BUENOS AIRES."]

Exported to	In the years	Dry hides.		Salted hides.		Wool.		Hair.		Tallow and horse grease.	
		Ox and cow.	Horse.	Ox and cow.	Horse.	Bales.	Ser. & bags.	Bales.	Ser. & bags.	Pipes.	Brs. & cks.
Great Britain.....	1849	33,494	9,982	517,886	195,045	4,898	1,070	1,839	425	17,180	37,050
	1850	25,848	3,660	357,988	102,855	1,921	826	960	678	11,055	17,387
	1851	45,686	4,564	547,840	57,208	999	270	1,171	354	19,265	4,095
	1852	11,509	1,220	368,114	53,005	3,966	372	897	209	23,950	7,609
	1853	83,209	6,927	285,577	106,656	5,894	1,196	914	738	16,978	8,044
	1854	2,290	727	233,281	139,294	5,120	235	1,122	290	20,951	3,929
France.....	1849	244,808	7,927	79,758	114	3,387	7	696	96	812	6,449
	1850	237,732	8,191	85,208	7,254	2,085	63	298	257	894	2,745
	1851	189,360	9,325	90,844	10,416	871	...	897	279	380	755
	1852	126,192	1,869	87,892	8,718	3,689	...	451	150	268	319
	1853	62,972	1,461	44,868	2,497	4,638	58	287	503	503	646
	1854	90,455	1,060	48,279	21,768	3,829	2	329	62	144	1,608
Continent.....	1849	613,416	750	81,678	...	1,119	164	341	77	182	962
	1850	535,353	941	67,195	224	1,495	143	341	25	395	975
	1851	529,689	2,051	85,545	107	760	8	479	6	105	...
	1852	374,394	8,041	96,552	580	2,874	427	366	19	380	40
	1853	243,440	690	34,078	1,554	3,176	...	102	...	162	334
	1854	295,026	3,090	52,541	4,298	3,011	2	132	10	263	4
United States.....	1849	784,701	8,009	122,734	...	13,008	1,955	8,004	529	...	...
	1850	608,929	13,474	137,184	7,575	12,549	2,666	909	1,217	199	...
	1851	572,109	14,037	124,471	20,363	15,794	2,499	726	336	...	...
	1852	393,438	255	106,640	25,107	7,347	677	1,020	1,303	1,061	371
	1853	259,164	1,265	25,230	7,196	8,016	124	763	550	1,435	69
	1854	312,265	6,072	55,645	44,419	9,606	862	1,101	1,174	46	...
Italy.....	1849	11,252	...	4,940	...	...	23	...	...	...	34
	1850	131,123	13,380	66,643	16,638	349	158	145	192	37	1,994
	1851	135,280	2,630	59,024	80	626	304	41	263	2	249
	1852	175,274	13,787	74,417	...	638	74	11	221	44	678
	1853	82,357	...	23,113	791	535	11	42	426	152	573
	1854	76,605	1,600	13,768	1,245	480	...	25	28	137	1,850
Spain.....	1849	262,463	9,311	9,389	2,462	...	...	...	...	...	175
	1850	158,363	10,577	5,317	2,327	1	...	6	36	...	402
	1851	208,416	14,338	5,911	5,508	...	...	42	11	...	229
	1852	168,828	1,043	9,002	1,212	4	...	...	...	23	883
	1853	98,883	3,856	2,831	447	...	...	...	...	30	54
	1854	211,215	15,785	5,891	5,276	235	...	...	23	...	29
Brazil.....	1849	32,798	*	...	...	...	...	...	...	457	402
	1850	7,746	*	...	...	...	...	...	...	7	150
	1851	1,506	*	...	...	...	...	...	...	28	233
	1852	2,752	*	...	...	...	...	...	...	479	260
	1853	2,176	*	...	...	...	...	...	...	998	...
	1854	1,818	*	...	...	...	...	...	...	1,797	449
Havana.....	1849	6,634	...	...	...	...	...	...	...	...	1,881
	1850	3,522	...	...	...	...	...	...	...	...	1,767
	1851	4,069	...	...	...	...	...	...	...	20	2,163
	1852	2,069	...	...	...	...	...	...	...	...	2,101
	1853	1,623	...	...	...	...	...	...	...	...	642
	1854	1,928	...	...	...	...	...	...	...	87	911
Grand totals.....	1849	2,111,038	40,863	850,259	197,651	23,329	8,879	3,235	1,217	18,624	54,824
	1850	1,704,211	50,223	720,040	136,884	17,744	3,856	2,659	2,400	12,090	25,360
	1851	1,689,005	47,005	912,313	93,672	10,050	2,914	3,856	1,267	19,346	18,534
	1852	1,256,580	21,430	737,616	84,617	19,018	1,554	2,745	1,902	26,222	19,350
	1853	783,510	14,529	416,742	119,141	22,249	1,890	2,058	2,216	20,563	9,497
	1854	989,928	29,978	409,430	216,300	22,442	601	2,709	1,601	23,379	15,589

* These are embraced under ox and cow.

STATEMENT EXHIBITING THE QUANTITIES OF DOMESTIC PRODUCE EXPORTED FROM THE PORT OF BUENOS AYRES, FROM 1849 TO 1853, DISTINGUISHING THOSE EXPORTED TO THE UNITED STATES.

Articles.	1849.		1850.		1851.		1852.		1853.	
	All countries.	United States.	All countries.	United States.	All countries.	United States.	All countries.	United States.	All countries.	United States.
Bones.....No.	...	...	3,100,730	800,000	3,110,780	...	3,520,072	620,000	1,983,267	90,000
Hair.....Bales, etc.	1,563	201	5,059	2,126	4,082	1,809	3,765	3,519	2,053	763
Hides, ox and cow, salted.....No.	327,092	15,236	720,040	137,184	912,135	124,471	416,742	106,640	2,216	550
" " dry....."	774,091	115,853	1,704,211	603,929	1,689,005	572,109	1,256,580	397,433	788,510	239,164
" horse, dry....."	22,969	8,545	13,474	47,005	14,085	14,085	14,529	255	14,529	1,265
" salted....."	39,814	...	186,384	7,576	98,672	20,363	119,411	25,107	7,196	8,477
Sheep-skins.....Bales	1,884	469	3,568	2,020	4,320	1,871	3,477	635	189	198
" " Dozens....."	...	...	...	...	...	...	...	...	281	...
Wool.....Bales	13,405	850	17,744	12,549	19,000	15,794	22,249	7,947	22,249	8,016
" " Seroons....."	...	...	3,356	2,660	2,914	2,499	1,890	677	1,890	124
Horns, ox and cow.....No.	204,398	30,000	1,917,150	1,165,012	2,365,210	1,168,648	1,369,276	376,904	1,369,276	280,545

STATEMENT OF FOREIGN MERCHANT VESSELS WHICH ARRIVED AT THE PORT OF BUENOS AYRES, FROM 1821 TO 1854, DISTINGUISHING THOSE UNDER THE UNITED STATES' FLAG.

Years.	From all nations.	From United States	Years.	From all nations.	From United States
1821	202	42	1836	200	37
1822	252	75	1837	228	40
1823	240	80	1842	406	62
1824	312	143	1843	575	75
1825	275	102	1844	513	88
1830	257	88	1849	526	86
1831	207	77	1850	440	87
1832	213	55	1851	471	80
1833	294	91	1852	439	87
1834	261	67	1853	844	Unknown.
1835	213	51	1854	334	28

The aggregate value of cargoes from the United States imported into the port of Buenos Ayres during the year 1851, was \$600,181; 1852, \$659,915; 1853, \$497,836. The aggregate value of exports from the port of Buenos Ayres to all countries in 1854, is stated by French authorities, as follows:

	Francs.		Francs.
Great Britain.....	10,060,558	Hanover.....	204,382
United States.....	9,163,799	Holland.....	1,329,547
Spain.....	11,255,839	Portugal.....	125,599
Hanse Towns.....	5,186,907	Argentine Repub.	366,061
France.....	5,356,352	Uruguay.....	212,038
Sardinia.....	8,796,605	Prussia.....	49,853
Brazil.....	1,785,272	Two Sicilies.....	30,738
Belgium.....	883,183		
Denmark.....	947,340	Total francs....	51,287,072
Sweden.....	927,604		
Norway.....	95,450	Total dollars... \$	9,744,543

From statements published by the minister of finance of the State of Buenos Ayres to the legislative chambers, on the revenues of the customs, it appears that there was imported in 1854, of merchandise of every description, in value, as follows:

	Paper piastres.
Sundry articles, paying 5 per cent. duty.....	16,677,540
Sundry articles, paying 10 per cent. duty.....	1,437,987
Silks, paying 12 per cent. duty.....	5,811,241
Sundry articles, paying 15 per cent. duty.....	134,494,533
Articles made up, and provisions, paying 20 per cent. duty.....	44,800,830
Liquors, paying 25 per cent. duty.....	39,424,824
Articles free of duty, or entered in contraband....	57,358,245
Total.....	300,000,000
Value in U. S. currency.....	\$15,000,000
Total exports of Buenos Ayres in 1854.....	\$9,744,543
Total imports of Buenos Ayres in 1854.....	15,000,000

The large balance of trade, however, which appears against this port (as is the case also with the port of Montevideo), is accounted for by the fact that the wants of the interior provinces of Paraguay, and even of many places in Bolivia, are supplied from these two points.

Wool constitutes upward of 25 per cent. in value of all the imports into the United States from the Argentine Republic. This is shown by the following tabular statement made up from annual reports of the Treasury Department on commerce and navigation for the years named, exhibiting the total values of imports into the United States from the Argentine Republic, from 1851 to 1855, together with the values of wool imported from the same country during the same period:

Years.	Total values of imports.	Values of wool.
1851.....	\$3,265,833	\$1,323,337
1852.....	2,091,097	704,064
1853.....	2,186,641	538,653
1854.....	2,144,971	854,232
1855.....	2,545,037	627,718

Of the total quantity of wool imported into the United States from all countries, about one third, or nearly so, is received from the Argentine Republic. This is shown by the following tabular statement, derived from the same sources as the former, exhibiting the quantities of wool imported into the United States from all countries, from 1851 to 1855, together with

the quantities imported from the Argentine Republic during the same period:

Years.	All countries.	Argentine Republic.
1851.....	32,543,491	12,106,636
1852.....	18,841,298	7,084,742
1853.....	21,595,079	5,745,857
1854.....	20,200,110	6,255,698
1855.....	18,534,415	5,966,969

The preceding table exhibits an aggregate of 111,-219,393 pounds of wool imported from all countries, and of 37,159,802 pounds from the Argentine Republic, or an annual average of 22,243,878 of the former, and of 7,431,960 of the latter; being a fraction over one third of the whole.

Regulations of the Port of Buenos Ayres.—Article 1.

—All vessels at anchor in the port, whether national or foreign, shall render every assistance in case of a vessel breaking adrift, or of any other accident; or, in default, shall suffer the penalties established by law, and in proportion to the gravity of the case. 2. All vessels at anchor in the roads must have their anchors buoyed, on account of the shallow water; or pay all damages which may occur to any vessel or boat, from this precaution having been neglected. 3. Any vessel losing a buoy from her anchors shall report it immediately to the captain of the port, who will send off a pilot to replace it. No anchor can be weighed without permission of the captain of the port. 4. Pilots on bringing vessels up in the roads are to inform the captain what articles are necessary for their perfect safety, and in case of there being any wanting, report it to the captain of the port. Pilots neglecting to do so will be punished with the rigor of the law. 5. If, in a gale, the anchor of any vessel should happen to drag, or the cable part, either on account of said cable not corresponding with the size of the vessel or the anchor, or from rottenness, said vessel will be responsible for all the damages occasioned thereby. 6. Any vessel from sea, that may anchor in this port without applying to a pilot, will be liable to pay all damages that may occur, and can not claim redress if she, in any way, sustains damage. 7. Any vessel at anchor with her boats astern, and not hauling them alongside upon seeing another under sail, so as to give a free passage, can not claim for the damages she may suffer, and shall be obliged to pay for those occasioned. 8. No vessel at anchor in the roads can heave ballast, or any thing that does not float, overboard; and if such be proved to have been done, the act will be punished according to law. 9. No vessel, excepting on her arrival, can salute in the inner roads without obtaining permission of the captain of the port. Those which do so will suffer the penalties the government may determine on. 10. All boats, belonging to merchant vessels at anchor in either roads, shall put off from shore one hour after sunset. 11. All boats that may be found on the beach, from the time of firing the evening gun until daybreak, will be seized, and the crew punished according to the gravity of the case.

PILOT DUES OF THE PORT OF BUENOS AYRES.

Vessels drawing	Silver dollars.	Vessels drawing	Silver dollars.
10 feet, pay.....	40	17 feet pay.....	150
11 ".....	50	19 ".....	210
13 ".....	70	20 ".....	240
14 ".....	90	21 ".....	260
15 ".....	110		

All vessels, excepting packets, requiring a pilot to enter the inner roads, pay \$200 currency (equal to \$10 United States' coin—the currency dollar being, at present, equal to 5 cents, United States). When leaving port, whether taking a pilot or not, they pay \$200 currency (\$10 United States). Any vessel that may enter the inner roads without a pilot, wishing to be moored or to change anchorage, pays \$100 currency (\$5 United States).

Port Charges.—Tonnage dues per ton, entering (currency), $\$1\frac{1}{2}$ = \$0 07½ cents, United States; visit and regulation, \$7 = \$0 35; stamps for opening register,

etc., \$169 = \$8 45. Tonnage dues, clearing, \$1½ = \$0 7½; crew list, \$12 = \$0 60; bill of health, \$6 = \$0 30.

By the following law, passed by the Senate and Chamber of Representatives of Buenos Ayres, and officially announced under date of September 6, 1854, it will be seen that vessels of friendly nations enjoy the same privileges, and are subject to the same restrictions, as national vessels:—"From the date of the present law, there will not be charged in the

ports of the State of Buenos Ayres, to the vessels, of friendly nations of more than 120 tons, for tonnage dues, port dues, pilotage, salvage in case of damage or shipwreck, more than will be charged to Argentine vessels."

This law places the vessels of the United States on an equality with those of Buenos Ayres; while, under an old law, the ship's register is taken as evidence of her measurement. For a more extended account of the commerce of La Plata, see article BUENOS AYRES.

COMPARATIVE STATEMENT OF THE COMMERCE OF THE UNITED STATES WITH THE ARGENTINE REPUBLIC, EXHIBITING THE VALUE OF EXPORTS TO AND IMPORTS FROM EACH COUNTRY, AND THE TONNAGE OF AMERICAN AND FOREIGN VESSELS ARRIVING FROM AND DEPARTING TO EACH COUNTRY, DURING THE YEARS DESIGNATED.

YEARS.	COMMERCE.			NAVIGATION.				
	VALUE OF EXPORTS.			VALUE OF IMPORTS.	AMERICAN TONNAGE.		FOREIGN TONNAGE.	
	Domestic produce.	Foreign produce.	Total.		Entered the United States.	Cleared from the U. States.	Entered the United States.	Cleared from the U. States.
1845.	\$242,575	\$160,431	\$503,006	\$1,750,698	11,653	10,667	1,889	843
1846.	147,307	38,113	185,420	799,213	5,988	4,134	987	....
1847.	123,954	52,185	176,039	241,209	698	2,237	....	....
1848.	208,708	95,225	293,923	1,026,097	695	586	714	1,450
1849.	595,518	172,076	767,594	1,709,327	11,929	9,397	7,282	5,492
1850.	713,331	346,311	1,064,642	2,653,877	13,930	16,107	13,051	9,260
1851.	659,852	414,916	1,074,768	3,285,882	13,382	11,661	11,005	5,135
1852.	519,097	281,110	799,117	2,091,097	13,453	13,711	4,872	4,881
1853.	618,855	282,611	881,466	2,136,641	11,337	10,749	4,741	4,639
1854.	658,720	103,005	761,725	2,144,971	11,245	8,526	1,669	1,830
1855.	810,756	158,671	969,427	2,545,037	12,593	18,534	707	2,315

By a recent treaty with Brazil, the free navigation of the Parana and Paraguay is secured. The tariff of import duties adopted by the Argentine Republic is based on the per cent. ad valorem principle, breadstuffs excepted; while export duties are chiefly specific.—*Com. Relations, U. S.*

Larboard, among seamen, the left hand side of the ship when you stand with your face toward the head.

Larch. In the catalogue of soft timber used in ship-building, the *larch* or *hacmatack* is not the least useful—the latter name is the aboriginal. It sometimes attains an altitude of 70 feet, but is usually found from 40 to 50 feet. It is generally of straight growth, but quite tapering. It grows rapidly, and is of great strength; and its durability exceeds that of the oak. It is distinguished for the closeness of its grain, is very compact, and of reddish color; and for knees and top-timbers of vessels, particularly steam-vessels, is unequalled. This fact should, however, be retained, that its strength is quite out of proportion to its density; hence, we say, that it should always be fastened with square iron; under such circumstances it is superior to oak. This timber is extensively cultivated in Europe, and is not a rare specimen of vegetation in the New England States.—*GRIFFITH'S Ship-builders' Manual, N. Y., 1856.*

Lascars, native Indian sailors, many of whom are in the service of the East India Company.

Last, an uncertain quantity, varying in different countries, and with respect to different articles. Generally, however, a last is estimated at 4000 pounds; but there are great discrepancies.

The following quantities of different articles make a last, viz.:—14 barrels of pitch, tar, or ashes; 12 dozen of hides or skins; 12 barrels of codfish, potash, or meal; 20 cades, each of 1000 herrings, every 1000, 10 hundred, and every 100 five score; 10½ quarters of cole-seed; 10 quarters of coan or rape-seed. In some parts of England, 21 quarters of corn go to a last; 12 sacks of wool; 20 dickers (every dicker 12 skins) of leather; 18 barrels of unpacked herrings; 10,000 pilchards; 24 barrels (each barrel containing 100 lbs.) of gunpowder; 1700 lbs. of feathers or flax. *Last* is sometimes used to signify the burden of a ship.

Lateen Sail, a long triangular sail, extended by a lateen yard, and frequently used in *Xebecs, Polacres, Setaes*, and other vessels which navigate in the Mediterranean Sea.

Lath, Laths (Fr. *Lattes*; Ger. *Latten*; It. *Correnti*; Rus. *Slegû*), long, thin, and narrow slips of

wood, nailed to the rafters of a roof or ceiling in order to sustain the covering. Laths are distinguished into various sorts, according to the different kinds of wood of which they are made, and the different purposes to which they are to be applied. They are also distinguished, according to their length, into five, four, and three feet laths. Their ordinary breadth is about an inch, and their thickness a quarter of an inch. Laths are sold by the bundle, which is generally called a hundred; but seven score, or 140, are computed in the hundred for three feet laths; six score, or 120, in such as are four feet; and for those which are denominated five feet the common hundred, or five score.

Latitude. First determined by Hipparchus of Nice, about 170 B. C. It is the extent of the earth or of the heavens, reckoned from the equator to either pole. Maupertuis, in latitude 66°20' measured 1° of latitude, and made it 69°49'; he measured it in 1737. Swanberg, in 1603, made it 69°29'. At the equator, in 1744, four astronomers made it 68°73'; and Lampton, in latitude 12°, made it 68°743'. Mudge, in England, made it 69°148'. Cassini, in France, in 1718 and 1740, made it 69°12', and Biot 68°769'; while a recent measurer in Spain makes it but 68°63', less than at the equator; and contradicts all the others, proving the earth to be a prolate spheroid, which was the opinion of Cassini, Euler, and others, while it has more generally been regarded as an oblate spheroid. See **LONGITUDE**.

Latten, a name sometimes given to tin plates; that is, to thin plates of iron, tinned over. See **TIN**.

Launch, in sea language, signifies to put out; as, launch the ship; that is, put her out of dock. Launch aft or forward, speaking of things that are stowed in the hold, is, put them more forward. Launch, ho! is a term used when a yard is hoisted high enough, and signifies, hoist no more.

Laurel-tree. The *Kalmia latifolia*, or laurel, is a large evergreen shrub or low tree, growing to a height of 15 or 20 feet, in favorable situations, with a stem three or four inches in diameter; but ordinarily it does not attain more than one half of these dimensions. Its leaves are of a coriaceous texture, oval-acute, entire, and about three inches long. The flowers, which put forth from May to July, are sometimes of a pure white, tinted with pale pink, delicately spotted; but, in general, they are a beautiful rose-color, and are destitute of odor. They are disposed in corymbs at the extremity of the branches; and, as they are always numerous, their brilliant effect is heightened by the richness of the surrounding foliage.

The seeds are very minute, and are contained in small, globular capsules.

The *Kalmia latifolia* is indigenous to North America, from Canada to Carolina. It rarely occurs, however, north of the 42d or 43d degrees of north latitude, and is but sparingly produced in Kentucky and western Tennessee, and disappears entirely in the southern States wherever the rivers enter the low country, or where the pine-barrens begin. Although it is comparatively abundant along the rivers of the middle and southern States, it is nowhere seen more profusely multiplied, nor of a greater height, and of more luxuriant vegetation, than in North Carolina, on the loftiest parts of the Alleghanies. It there occupies large tracts, and forms thickets upon their summits, and for a third of their distance down their sides, which are rendered almost impenetrable by the crooked and unyielding trunks, crossed and locked with each other. As the shrubs which compose these copses are nearly of the same height, and richly laden with evergreen foliage, they present, at a distance, the appearance of verdant meadows, surrounded by tall trees.

The wood of the *Kalmia latifolia*, particularly that of the roots, is very compact, fine-grained, and marked with red lines. When green, it is of a soft texture, and is easily wrought; but, when well seasoned, it is very hard, and more nearly resembles the European box (*Buxus sempervirens*), than any other American wood. Consequently it is worthy of the attention of mathematical instrument-makers, and of engravers on wood. It is sometimes employed in the United States for the handles of light tools, for screws, boxes, etc.; and it is said, also, to make good clarionets. It is used by the American Indians for making small dishes, spoons, and other domestic utensils. The whole plant is regarded as poisonous to young cattle, and sheep, but not to goats and deer. A decoction of the leaves of this tree was formerly taken by those miserable natives who had determined on self-destruction. But modern enterprise has successfully enlisted it in the service of medicine, and it is applied, in a pulverized form, internally, in fevers, or topically, for the relief of cutaneous affections. A few drops of the tincture poured upon the body of a large and vigorous rattlesnake, killed the reptile in a short time. The powder which covers the leaves is popularly employed in some parts of the country where it grows, for snuff. The honey collected from the flowers by bees, is accounted deleterious, which, with other noxious qualities of this elegant shrub, lessens that esteem which its beauty claims.

The *Laurus nobilis* is a native of the south of Europe, and northern Africa; and, according to St. Pierre, remarkably fine trees of it were found on the banks of the river Peneus, in Thessaly, which, probably, might have given rise to the fable of the nymph Daphne (supposing the Greek *daphnē* to be this tree), the daughter of that river. The exact date of the introduction of this species into Britain is unknown, but it must have been previous to 1562, as it is mentioned by Turner, in his "Herbal," published in that year; and we find that, in the reign of Elizabeth, the floors of the houses of distinguished persons were strewn with its leaves. The largest recorded tree of this species in Britain, is at Margram, in Glamorganshire, at the seat of C. P. Talbot, M. P., about 12 miles from Swansea. It is upward of 60 feet in height, with a magnificent bell-shaped summit, about 60 feet in diameter. At Cypress Grove, near Dublin, in Ireland, there is a laurel 50 feet in height, with a trunk two feet in diameter, and an ambitus or spread of branches of 25 feet. Throughout Germany, the *Laurus nobilis* is a greenhouse plant. In Russia, in the Crimea, it requires protection during winter. In Italy and Spain it attains a larger size than in any other part of Europe, forming immense bushes, from 50 to 70 feet in height. In the northern parts of the United States it is only

cultivated as a greenhouse plant; but in the southern sections of the Union, where the climate is more mild, it grows in great perfection in the open air. The wood of this tree, from its inferior size, is not much used in construction, nor in the arts. The young branches are sometimes employed for the hoops of small casks. Both the leaves and berries were formerly considered medicinal, being highly aromatic and stomachic; they are also astringent and carminative. An infusion of them was not only considered beneficial, when taken internally, but it was used in fomentations, etc. From the berries there is extracted a particular principle, called *laurine*. The kernels of the fruit yield an emollient and resolutive oil, called *oil of laurel*, which is employed as an embrocation in materia medica, and in the veterinary art. The essential oil is used in perfumery, and for scrubbing wainscots in chambers, in order to drive away flies. The leaves impart a yellow color to wool. The principal use of this tree, however, is for hedges, and other purposes of ornament, though the leaves are much employed for flavoring custards, blanc-mange, etc. The flowers afford the best kind of honey, and are numerously frequented by bees.

The *Laurus carolinensis* is indigenous to the lower part of Virginia, and is found more or less abundantly throughout the maritime districts of the Carolinas, Georgia, Florida, and of Louisiana. It occurs in the broad swamps which intersect the pine-barrens, and is there associated with the tupelo (*Nyssa biflora*), red maple (*Acer rubrum*), and the water oak (*Quercus aquatica*). A cool and humid soil appears to be essential to its growth; and it is remarked, that the further south it grows, the more vigorous and beautiful is its vegetation. The wood of the *Laurus carolinensis* is very strong, and of a beautiful rose-color, with a fine, compact grain, and is susceptible of a brilliant polish, having the appearance of watered satin. Before mahogany became in general use in cabinet-making, in the United States, the wood of this tree was much employed in the regions where it abounds, in the manufacture of articles of furniture of the highest degree of beauty. It might also be employed in ship-building, and for other purposes of construction, as it unites the properties of strength and durability; but its trunks are rarely found, of late, of sufficient dimensions to render it available for these purposes. When bruised, the leaves diffuse a strong odor, resembling that of the sweet bay (*Laurus nobilis*), and may, like them, be employed in cookery.—*Browne's Trees of America*.

Law, John. Law's Bubble was the most ruinous speculation of modern times. The projector, John Law, of Edinburgh, raised himself to the dignity of comptroller-general of the finances of Europe, upon the strength of a scheme for establishing a bank, an East India and a Mississippi Company, by the profits of which the national debt of France was to be paid off. He first offered his plan to Victor Amadeus, King of Sardinia, who told him he was not powerful enough to ruin himself. The French ministry accepted of it in 1710; and in 1716 he opened a bank in his own name, under the protection of the Duke of Orleans, regent of France; and most of the people of property of every rank in that kingdom, seduced by the prospects of immense gains, subscribed both in the bank and the companies. In 1718, Law's was declared a royal bank, and the shares rose to upward of twenty-fold the original value, so that in 1719 they were worth more than 80 times the amount of all the current specie in France. But the following year this great fabric of false credit fell to the ground, and almost overthrew the French government, ruining tens of thousand of families. It is remarkable that the same desperate game was played by the South Sea directors in England in the same fatal year, 1720.—*Hist. of France, Nouv. Dict.*

Law was the eldest son of William Law, and was

born at Edinburg in the month of April, 1671. His father followed the profession of goldsmith or banker, with so much success, that he was enabled to purchase the lands of Lauriston and Randleston, which afterward descended to his son. The latter was educated at Edinburg, where he is said to have made some progress in literature; but the bent of his genius having led him to study arithmetic and geometry, he attained such proficiency in these branches as to be able to solve with facility the most intricate problems; and he likewise made himself master of algebra. Law resided for several years abroad; first at Paris where he acquired great dexterity in all games of chance, and afterward at Genoa and Venice. One cause assigned for his leaving Paris, was his eloping with Lady Catharine, third daughter of Nicholas, Lord Banbury, and wife of Mr. Senor, or Semour. His success in play was so great, that he is said to have acquired £20,000. The favorite maxim inculcated by Law, and upon which his whole fabric of the Mississippi system was reared; namely, that the power and prosperity of a nation increase in proportion to the quantity of money circulating therein, and that, as the richest nations have not specie sufficient to afford full employment to their inhabitants, this defect may be supplied by paper credit; involves a dangerous fallacy, even in the most restricted view that can be taken of its application, inasmuch as it implies that paper money may be issued with advantage to an almost unlimited extent, upon general security; and that its credit, or, in other words, its value, may thus be maintained without its being rendered convertible at pleasure into cash. But all experience has proved that this is absolutely impossible. There is much truth in an observation of Mr. Burke, in his *Reflections on the French Revolution*. "It is not true," says he, "that Law built solely on a speculation concerning the Mississippi; he added the East India trade, he added the African trade, he added the farms of all the farmed revenue of France; all these unquestionably could not support the structure which the public enthusiasm, not he, chose to build on these bases. He laid the best foundation that he could, perhaps the best which, in the circumstances, it was possible to lay; but the nation went suddenly mad, an event which he could scarcely have foreseen; the Company was hurried onward by the general frenzy; and when the delirium had reached its height, the regent was advised to issue the fatal edict, which leveled the whole fabric to the dust." (See E. B., 1856.) *Œuvres de Law*, passim; *Histoire du Système des Finances*, tom. i.; Pollnitz, *Mémoires*; Massillon, *Mémoires de la Minorité de Louis XV.*; *Mémoires de la Régence de M. le Duc d'Orléans*, tom. i.; Richelieu, *Mémoires*, tom. iii.; Voltaire, *Siècle de Louis XV.*; Chalmers's *Biog. Dict.*, art. "Law."

Lawn (Ger. and Fr. *Linon*; It. *Linone*, *Rensa*; Sp. *Cambray clarin*), a sort of clear or open-worked cambric, which, till of late years, was exclusively manufactured in France and Flanders. At present, the lawn manufacture is established in Scotland and in the north of Ireland, where articles of this kind are brought to such a degree of perfection as nearly to rival the productions of the French and Flemish manufactories. In the manufacture of lawns, finer flaxen thread is used than in that of cambric.

Lawrence, a manufacturing town of the United States of North America, Essex county, Massachusetts, is situated on the left bank of the Merrimac, 26 miles north of Boston, and forms the centre of a network of railroads communicating with Lowell, Newburyport, Boston, and other places of importance. Although founded but recently, Lawrence has become one of the chief manufacturing towns in New England, in consequence of the great water-power it derives from the Merrimac. In 1845, the Essex Commercial Company constructed a dam of masonry across the stream, by which a

fall of 28 feet was obtained for the whole river. From this dam a canal, from 60 to 100 feet broad, 12 feet deep, and more than a mile long, conducts the water to the various factories situate between it and the Merrimac. The town proper, which is laid out between the latter and a small tributary called the Spicket, has in its centre an open common of 17½ acres in extent, and contains a town-house, jail, several churches and schools, and a literary institute. The inhabitants are almost all employed in the various factories in the town, some of which are of great size, and one, the Pacific, is said to be the largest in the world. The building has seven stories, and its flooring covers 16 acres, while the consumption of cotton within its walls amounts to 1,500,000 lbs. yearly, and of wool to the third of that amount. It gives employment to about 2000 persons. The manufactures of the town comprise woolen, linen, and cotton goods of various kinds. Incorporated 1847. Population in 1848, 6000; in 1850, 8283; in 1855, about 14,000.

Lawrence, St., an important river of North America, forming part of the north boundary of the United States, and watering the finest portion of British America, rises, under the name of the St. Louis, in lat. 47° 45' N., long. 93° W., flows east, and enters the south-west extremity of Lake Superior. Passing through the chain of great lakes, it quits Lake Ontario at Kingston. Here it takes the name of the Iroquois, and flowing north-east forms the wide expanses called Lakes St. Francis, St. Louis, and St. Peter. It is first called St. Lawrence after passing Montreal. Below Quebec it forms a broad estuary; and it enters the Gulf of St. Lawrence at Gaspé Point by a mouth 100 miles wide. Length, from Lake Ontario to the Gulf, 650 miles; entire length, 1800 miles. The basin of the St. Lawrence is estimated to contain 297,000 square miles, of which 94,000 are covered with the waters of the great lakes. The river receives many important tributaries from the north, but none of any size from the south. The tides rise to the district of Three Rivers. Ships of the line ascend to Quebec, and vessels of 600 tons to Montreal. The navigation is continued hence by canals to Kingston and Lake Ontario. See CANADA LAKES, COMMERCE OF.

Lawrence, St. Gulf, an inlet of the Atlantic Ocean, British North America, having Newfoundland on the east, Labrador, Lower Canada, and New Brunswick on the north and west, and Nova Scotia and Cape Breton on the south; extending from N. lat. 46° to 51° 30', and W. long. 58° to 65°. It communicates with the ocean by three channels, the principal of which is between Cape Breton and Newfoundland, 48 miles in width at its narrowest part. The other two channels are much narrower; the Straits of Belle Isle, between the north extremity of Newfoundland and Labrador, being 10 miles, and the Gut of Canso, betwixt Cape Breton and the main land, being only about half a mile in width at the narrowest part. The Gulf is about 300 miles in length, from north to south, by 240 miles in breadth, and incloses numerous islands, the chief of which are—Anticosti, in the north, the Magdalen group in the centre, and Prince Edward's Island in the south. The estuary of the St. Lawrence River debouches into the Gulf at the western extremity of Anticosti; although, properly speaking, this firth is an inlet of the Gulf as far up as the River Saguenay. Navigation is suspended here during winter and early spring, from the prevalence of ice, which is especially dangerous in the entrance to the Gulf. Fogs also are very frequent during the prevalence of the east winds in spring. In summer, however, the west and south-west winds render navigation comparatively safe. The fisheries, which are very valuable, are prosecuted with assiduity by the colonies as well as by United States' companies. Herring, cod, and mackerel abound. See CANADA and LAKES.

Laws of Commerce. The following article contains a condensed summary of the present state of commercial law in those countries with which the United States have commercial intercourse. For this valuable sketch, we are indebted to "*The Commercial Laws of the World*," by LEONE LEVI, London, 1854, 2 vols., 4to.

1. *Anhalt-Bernbourg, Anhalt-Coethen, Anhalt-Dessau, Duchies of.*—The Duchies of Anhalt-Bernbourg, Anhalt-Coethen, and Anhalt-Dessau, each forming an independent State, are under laws peculiar to themselves. One may easily perceive, however, that in provinces of so limited extent, and where commercial relations are very partially developed, legislation must have remained imperfect. Thus, in their tribunals, they have to refer either to laws which are rather civil than commercial, to foreign legislation, or to the common law of Germany. Two ordinances of 31st August, 1802 and 1832, on bills of exchange, were replaced by the law recently enacted for all Germany. There exists in the Duchy of Anhalt-Dessau an ordinance in regard to brokers, of the 19th April, 1803, and a law relating to bankruptcy, of the 12th July, 1818; but these contain only a small number of unimportant arrangements, which it is unnecessary to specify; with only one exception, namely, that in the law regarding brokers, every contract concluded by such persons is null if not drawn up in writing, and is complete only when the deed has appended to it the signatures of the parties interested. There is no special jurisdiction in the three Duchies for the determination of commercial suits. They are decided by the ordinary tribunals. It would be difficult to enter into the detail of the organization of these courts, the powers of which are of a very complicated character, and whose competency varies according to the persons or matters brought before them. It is sufficient to remark that the princes of the three Duchies of Anhalt joined with the princes of Schwartzburg in establishing, 14th October, 1807, a supreme court of appeal, before which all affairs, civil and criminal, of their respective States, are, or may be, finally carried.

2. *Austrian Empire.*—The commercial legislation of Austria, at present in force, is traced to the time of Maria Theresa, who, in 1756, published an ordinance of considerable length on matters connected with commerce. She at the same time caused a revision of the former law of exchange of 1717, and by letters patent of 1st October, 1763, declared the same to be imperative in almost all the provinces of the Austrian monarchy. This, consisting of 54 articles, contains directions relative to bills of exchange and to other points of commercial law. Various modifications, however, of later date, have passed on it. The law of bankruptcy is equally due to the care of Maria Theresa, although not promulgated before the reign of Joseph II. This law, not less important on account of the wisdom of its provisions than from its general extension throughout all the Austrian States, was to have come in force on the 1st of January, 1782, but in consequence of some accompanying difficulties, was not acted upon till the 1st of May following. It repeals all the pre-existing statutes in relation to bankruptcy. It presents at the same time certain undetermined points afterward provided for by later statutes, mostly inserted in the judiciary ordinances of Galicia. As all the provisions of this law were repeated in a new edition of the Lombardo-Venetian code, the most important points will be exhibited in that division under the title "Bankruptcy." The maritime legislation of Austria is the work of the same empress. It dates 25th April, 1774. She published the ordinance known under the title, "*Editto Politico di Navigazione Mercantile Austriaca*," attended thereafter by some other ordinances. The whole, however, is far from being a perfect system of commercial legislation. The "*Editto Politico*," which embraces the most extensive and the wisest

provisions in regard to captains and seamen, contains nothing on the subject of freight-contracts, of bottomry-bond, and insurances. In the absence, therefore, of legislative decision, reference is at present made, on the shores of the Adriatic, to the French "*Ordonnance de la Marine*" of 1682. These different laws are already of somewhat ancient date, and are by no means adequate to the new wants of commerce. We are led to this conclusion by the fact that of late there were being prepared in Austria two projects of law, the object of which was to embrace in the one the interests of inland commerce on which a great part of the new code of Hungary has been based; in the other, all the maritime legislation. Neither the one nor the other has received the legislative sanction.

3. *Baden, Grand Duchy of.*—From the 1st July, 1809, the French code has been in force within the Grand Duchy of Baden. Though the text of this has not been altered, and the same order of articles has been maintained as far as article 206, numerous additions, under the form of articles supplementary, have been introduced, particularly in what relates to commission, carrying-trade, and bills of exchange. We have inserted only these additional regulations. The civil code of the Grand Duchy of Baden, under the head of "Property," contains important provisions in regard to literary property. The second book on maritime commerce was necessarily retrenched. The fourth, on commercial jurisdiction, also has not been reproduced.

4. *Bavaria.*—Bavaria has no commercial code, nor even a commercial legislation, applicable to the whole extent of its territory. In the provinces where the Code Napoleon has been maintained, that is, in Rhenish Bavaria, the Code de Commerce is equally in force. In a similar manner, the districts which formerly belonged to Prussia, such as the principalities of Anspach and Bairenth, incorporated into Bavaria in 1803, have preserved the Prussian legislation. There are, therefore, none but the ancient provinces of Bavaria which are governed by special laws. This legislation, in what concerns commercial right, is extremely imperfect. In most cases, it is true, the defect is supplied by the common law of Germany and by the civil law, but the documents most important and complete, are three statutes: the first known under the name of the statute for Bavaria of 24th November, 1785, extending to all the provinces of the kingdom by the laws of 11th of September, 1825. The two others, that of 1778, for the city of Augsburg, and that of the 16th February, 1722, for the city of Nuremberg. We find in these three enactments regulations not only in regard to bills of exchange, but respecting merchants, brokers, partnership, and factorage.

5. *Belgium, Kingdom of.*—The commercial code of France, without any modification, has continued to regulate affairs of commerce in Belgium ever since the year 1814, the period at which a political separation between the two countries took place. The same judiciary organization has been in like manner continued. The single exception is, that a law has been enacted in Belgium (25th March, 1841) ordering that the tribunals of commerce shall give final judgment in causes that may come before them to the amount of 2000 francs, whereas in France the law of the 25th May, 1838, fixes the competency of the tribunals in the first instance at 1500 francs. Royal edicts have named commissions charged to prepare projects of law for the revision of the legislation in regard to bankruptcy, suspension of payment, partnership, civil or commercial insurances, writs of captem, mortgage seizure of real estate, accounts of law, expenses, marriage contract, possession and division of property. A law has been in progress on the proper interpretation of article 442 of the Code of Commerce. It was discussed in the Chamber of Representatives in the session of 1842, but was rejected by the Senate.

6. *Brazil, Empire of.*—A commercial code to which that of Spain has served as a basis, has lately been issued, but not being yet in our possession, we refer our readers to article BRAZIL.

7. *Bremen.*—Though the city of Bremen was one of the first in the ancient Hanseatic League, and is still among the most important sea-ports in Germany, its commercial legislation is extremely defective and incomplete. Statutes and legislative enactments bearing a very remote date, have fallen entirely into desuetude, and causes are determined either by the common law of Germany or by that of neighboring legislations, Hamburg, etc. Commercial disputes are determined by the tribunal of commerce, as in Hamburg. Bremen names two deputies to the Supreme Court established at Lubec for the four Hanseatic Towns.

8. *Brunswick, Duchy of.*—The city of Brunswick had formerly celebrated fairs. She obtained at an early period a special *ordonnance* in regard to exchange, which, renewed on 1st August, 1715, and afterward extended to the Duchies of Brunswick and Brandenburg, was still the law of the State until the law for bills of exchange for all Germany came into force. Another ordinance relating to bankruptcy, of date 26th March, 1823, is almost the only document of a commercial character to be found in the duchy; for with the exception of some recent decisions in the Court of Appeal of Wolfenbüttel in regard to mercantile accounts and factorage, and whose simple object was to give the force of law to usages already established, other enactments have been of a description so purely of detail, without bearing directly on commercial legislation, properly so called, that it has been thought unnecessary to do more than refer to them. In the Duchy of Brunswick commercial causes are determined by the ordinary tribunals.

9. *Cracow.*—The commercial code of France, of which an almost literal translation was made for the use of Warsaw, has not been officially repealed in the new kingdom of Poland. It appears unlikely, however, that legislation of French origin will be permanent in this country. In the city of Cracow the code just mentioned still maintains its authority. It is also in force throughout the Grand Duchy of Warsaw, having been introduced in 1808; Cracow at that time forming a part of the duchy. Only one alteration has been made in the code, namely, that which authorizes the notaries and the judges of the court to affix their seals to the property real or movable of a bankrupt, and to determine the dividend payable to the respective creditors. Commercial affairs have no special tribunal. They are carried before the ordinary courts as well in first instance as in cases of appeal. Three laws, the one of 15th October, 1819, relative to the public exchange (*la Bourse*), and the corporation of merchants, and the other two of the 1st March, 1821, and 19th May, 1833, on the freedom of commercial transactions, and on the restrictions to which in certain cases they may be liable, are not of sufficiently general interest to have a place given them here. There are certain articles of produce subjected by the Senate to a tariff, in which trading is not considered as a part of commerce, and only legal process of a civil character is allowed.

10. *Denmark.*—The enactments relating to commercial jurisprudence in Denmark are not at all numerous. In matters of exchange the ancient *ordonnance* of 1768, has been replaced by a later act of legislature of 18th May, 1825, which repeals all preceding deeds with the exception of that of 26th June, 1824, relative to some particular branches of the law on bills of exchange, the rescript of 22d March, 1769, and the proclamation of 8th November, 1799, in which are found regulations for bills upon the West Indies. The maritime law of Denmark contained in the code of Christian V., 1683, continues still in force. We

should have confined ourselves to an analysis of those regulations which possess only a historical interest; but we have felt the propriety of joining with them an analytic view of all the later enactments and laws which have served to complete, at this day, this ancient monument of maritime jurisprudence, and which we are enabled to present by the assistance of the excellent abstract of M. Poehls. As to bankruptcy, there exists no law which gives precise and fixed rules. *Ordonnances* of very ancient date, the meaning of which long custom has determined, constitute, on this subject, the legislation of the country. It would have been a matter of great difficulty to give a copy of these had not a valuable document, due to the labors of M. Orstedt, Attorney-General in the High Court of Copenhagen, and generally intended for the use of the French Conseil d'Etat at the time of the discussions on the projet de loi on bankruptcy (published 28th May, 1838), enabled us to present an abstract which will be found as exact as it is substantial and well arranged.

11. *France.*—France had, under the administration of Colbert, united, or rather codified, her commercial legislation, and collected in the two ordinances of commerce and navigation of 1673 and 1681, their principles, usages, and customs. Yet the want of a general code of laws was seriously felt until, with the entire reconstruction of her political institutions, Napoleon ordered the compilation of codes which, within a short period, were presented and adopted. With some unimportant modifications, they are still the basis of French jurisprudence. With regard to the administration of commercial law, the following is a summary of the report of the Minister of Justice for the year 1846, which deserves attentive consideration:—*Tribunals of Commerce.*—Commercial affairs are adjudicated by 220 special tribunals of commerce, established in the most commercial departments, and by 170 civil tribunals, which are charged to take cognizance of the same in the other departments. In 1846 there were introduced 207,279 new cases before these 390 tribunals; 177,446 have been brought before the 220 special tribunals, and 29,833 only before the civil tribunals, judging commercially. In 1845 only 191,687 cases were enrolled in the 390 tribunals; since 1845 the number has increased 38 per cent. On 31st December, 1845, there remained 7,932 cases to be adjudicated; 3,864 cases which were considered as terminated by compromise or abandonment, were brought before the court in 1846. These, united to the 207,279 new cases, form a total of 219,039 cases to be adjudicated. Of this number 59,323 have been adjudicated contradictorily, and 115,908 by non-appearance; 4029 have been submitted by the tribunals to arbitration, and 32,705 have been erased from the register as terminated by compromise or abandonment; 7678 only were left unsettled on the 31st December, 1846, or hardly 3½ per cent., while the civil tribunals left unsettled at the same epoch 26 per cent. of the civil cases brought before them. Of the 174,641 adjudications rendered in 1846 by the tribunals of commerce 84,569 only, hardly one fifth, were susceptible of appeal. The special tribunals of commerce have 1 court and 1 president only; the number of judges varies from 1 to 10, and that of the surrogates from 2 to 16. The tribunals of Paris and Lyons have each 10 judges, and of surrogates the first 16, the second 6; 8 tribunals have 6 judges and 4 to 6 surrogates; 1 only has 5 judges and 8 surrogates; 96 have 4 judges and 2 to 4 surrogates; 106 have 3 judges and 2 to 4 surrogates; lastly, 7 have 2 judges and 2 surrogates. In 1840 the tribunals of commerce of Paris had dispatched 56,276 cases, or more than one fourth of the total number. The tribunals of commerce which have dispatched most cases after that of Paris, are those of Lyons, 9841; Rouen, 4914; Marseilles, 4296; Bordeaux, 4137; Toulouse, 3723; that of Limoges,

2307; 21 other tribunals have adjudicated upon 1000 to 2000 cases; 11 tribunals composed of 3 to 4 judges have dispatched each 50 per year, and 16 others have terminated from 50 to 100 only. There were rendered, in 1846, 290 sentences by arbitration in disputes between partners, 169 of which with the assistance of a third. The greffiers of the tribunals of commerce have received the deposit of 2724 partnership deeds, of which 1989 in collective names, 459 in commandite, 235 by shares to nominated persons, and 41 by shares to the bearer, 39 anonymous partnerships, have been besides authorized by regulations of public administration; in all, 2747 partnerships of every kind. The greffier of the tribunal of the Seine alone has received 869 partnership deeds, almost the third of the total number. On 31st December, 1845, there remained 5964 bankruptcies to be liquidated. In 1846, 3795 new ones were opened; 3606 only have been terminated, and 6153, or almost two thirds of them were left unsettled at the end of the year; 1612 bankruptcies have been terminated by compromise; 1031 by liquidations; 829 have been closed by insufficiency of capital; lastly, there have been declared 134 judgments of bankruptcies. The tribunal of commerce of the Seine has terminated 896 bankruptcies in 1846, that of Rouen 193, of Lyons 131, of Bordeaux 60, of Marseilles 51. The passive debt of 356 bankruptcies which terminated in 1846, by agreement or liquidation, did not exceed 5000 francs; it varied from 5000 to 10,000 in 441 bankruptcies; from 10,000 to 50,000 in 1269; from 50,000 to 100,000 francs in 270; lastly, it exceeded 100,000 francs in 307. The amount of the active debt of 2943 bankruptcies liquidated was 51,819,891 francs; namely, in estates, 19,855,111 francs; and movables, 31,964,280 francs. The total amount of the passive debt was 143,544,671 francs; mortgaged debt, 19,257,540; privileged, 3,901,637; and ordinary, 120,385,494 francs. The loss borne by the ordinary creditors was, on an average, 76 per cent. The dividend obtained has been more than 75 per cent.; in 84 bankruptcies 51 to 75 per cent.; in 62 from 26 to 50 per cent.; in 594 10 to 25 in 1228; and 1 per cent. in 412. In 185 bankruptcies the ordinary creditors have received nothing; the assets having been absorbed by mortgaged and privileged creditors. Lastly, the dividends of 78 bankruptcies terminated by compromise have not been indicated, as the assets could not be realized immediately. *Court of Appeal.*—In commercial matters the number of judgments susceptible of appeal have been in 1846, 34,569. 2511 appeals were made, namely, 7 appeals for 100 judgments less than in civil matters; 1777 appeals only were adjudicated upon. 1212 judgments (68 per cent.) have been confirmed; 1565 (32 per cent.) modified in whole or in part; 602 appeals have been negatived. *Council of Prudhommes.*—68 councils existed, 4 of which did not sit in 1846. The 64 councils have had on hand 21,254 cases. The parties have withdrawn 3153 cases before they were settled; 16,140 have been conciliated; 1762 remitted to the bureaux-general, and 196 to the judge of peace.

12. *Frankfort.*—The ancient ordinance of Frankfort (26 May, 1739) relative to various points of commercial law, such as partnership, commission, and brokerage, has always continued in force. The Senate had in 1811 prepared a project similar in great part of its provisions to the French code, but which, from national feeling, was not adopted in 1814. In 1827, a new project of a code of commercial law was published, for the purpose of being submitted to jurists and to merchants. This project, however, has not hitherto received any legislative sanction; so that the ordinance of 1739 still remains as law. There exists in Frankfort no special jurisdiction for commercial matters: they are brought before the ordinary tribunals. There is a court of appeal, a municipal court, and a municipal or territorial bailiwick. The supreme

court of appeal sits at Lubec. Its jurisdiction extends to all the free cities of Germany.

13. *Great Britain.*—The mercantile law of England is almost entirely founded on what has been experienced to be most conducive to the welfare of society. Its origin is derived from many sources, while ancient commercial enactments were the basis of our maritime law. With the increase of commerce and general advancement of the nation, mercantile law grew in importance. Promissory-notes and the banking system were placed in their present state during the reign of William and Anne. Numbers of judges followed, whose commanding intelligence formed an epoch in the annals of jurisprudence. The names of Justice Hale, Lord Mansfield, and Lord Stowell, are rendered familiar from their being constantly referred to in the adjudication of the most subtle arguments on commercial law. Most of the commercial law of Great Britain is included in the common law; yet lately various enactments have passed consolidating the bankruptcy law, joint-stock companies, etc. The law of Scotland differs materially from that of England in contracts and bankruptcy. The mercantile law of this country is entirely included in the civil law, of which Erskine, Stair, etc., are the leading writers.

14. *Greece.*—Since the erection of Greece into a sovereign and independent State, its government has been engaged in fixing its laws and digesting the various codes. The civil law is still determined by the manual of Hermunapol, the latest compilation of the Byzantine emperors. The commercial code, which is but a textual repetition of that of France, with a few unimportant alterations, has been in force since 1st May, 1835. These alterations consist only in the suppression of Articles 615 to 630, relating to the organization of tribunals of commerce, in place of which there is the law of 1834. To complete the documents relative to the commercial code, we shall say that the law of 14th May, 1835, re-established the regulations of Arts. 631 and 641 of the French code, which at first had been suppressed. It is interesting to remark that the adoption of the French code was anterior to the Greek revolution; inasmuch as in 1821 it had been twice translated, and the merchants of Greece had unanimously adopted it. It was for the purpose of confirming this voluntary preference that his majesty Otho, by a royal declaration of May, 1835, gave the force of law to a translation executed by his command, and now acknowledged as the sole official authority. As to the judicial organization, it is similar to that of France. There is an innovation, however, which is of some practical utility; this is the being obliged to choose a jurist as president of the tribunal of commerce. All the articles of the commercial code are the same as the regulations of that of France, with the exceptions of the modifications duly noticed.

15. *Hamburg.*—Though the commercial laws of Hamburg are now of old date, and have frequently, particularly in later years, been sought to be submitted to revision, yet going back, as they do, to the statutes of 1603, and supplied, when defective, by enactments of greatly more recent date, they demand our notice; and the more so that they regulate matters not only in Hamburg but in the neighboring cities, such as Bremen and Lubec, where, properly speaking, there exist no commercial laws whatever. The enactments most recently made in regard to points embraced in the commercial code of France are the following: an enactment on the subject of brokerage, of 15th December, 1824, and another on partnership, of 28th December, 1835, the latter, however, having only for its object the deposit and publication of partnership deeds. The statutes of 1603, relative to mercantile books, have not been repealed by any later enactment. The law on bills of exchange is now similar to that of Prussia. The regulations in regard to maritime commerce

are still chiefly borrowed from the statutes of 1603. As they have been modified, however, by several more recent enactments, we have availed ourselves of the work of M. Poehls upon this subject. These will be found also in the proper place—the regulation in regard to maritime insurance of 10th September, 1731—of great importance to one wishing information, and remarkable for the completeness of its details. Bankruptcies, before the tribunals of commerce (a procedure which does not exist generally in Germany, where in cases of failure the process for a settlement between the parties is carried to the civil courts), have been regulated by an ordinance of 31st August, 1752. The commercial jurisdiction and competency of tribunals of commerce had been fixed by the law of 15th December, 1815, which appointed a tribunal of commerce at Hamburg for all commercial affairs. Prior to 1815 these were carried before the administrative authority, or before the Court of Admiralty when the affair was of a maritime character.

16. *Hanover*.—There existed, accurately speaking, no commercial legislation in Hanover till the period of the Prussian occupation in 1801. Immediately after this the Prussian code was introduced into the bailiages of Hildesheim, Verden, Haya, Diepholtz, Osnabruch, and Lenja. A royal ordinance of George IV., dated 23d July, 1822, confirmed it. It is still the existing law. In the other parts of the kingdom there exists, with the exception of the regulation in bills of exchange, of the same date (23d July, 1822), no law whatever, bearing on commerce. Actions are determined by usage and common law. The new penal code adopted in Hanover, 1840, fixes the penalties established in cases of bankruptcy. All commercial differences are brought before the ordinary tribunals. In most instances, however, they are terminated amicably by arbitrament, or they are decided by the municipal court which ordains according to common law, or, otherwise, acts in the capacity of a court of equity.

17. *Hayti, Republic of*.—The republic of Hayti has had, since 1828, its codes in uniformity with those of France. The commercial code is throughout the same as that of France. It was published on 28th March, 1826, and has been acted upon since 1st July, 1827. The other codes, those relating to civil and commercial procedure, penal and rural, form together, with the civil and commercial codes, one body of law, dated the 25th year of Independence, and produced by the labors of M. Blanchet, a distinguished member of the Parisian bar.

18. *Hesse, Grand Duchy of*.—The French code has been maintained where it had been introduced at the time of the French occupation in the Rhenish provinces. With regard to the other provinces such as Starkenburg and Hesse-Superieure, commercial legislation is regulated as much as possible in conformity with the French law, with the exception of the town of Offenbach, which had a special ordinance on the exchange, of date 4th March, 1829, the same as that of Frankfort. There are no tribunals of commerce in the Grand Duchy; commercial disputes are submitted, as in most parts of Germany, to ordinary tribunals.

19. *Hesse Electorate*.—Three ordinances only, and of very old date, exist in this State on commercial matters; the first, of 16th May, 1747, on bankruptcies; the second, of 21st November, 1788, on partnerships; the third, of 14th December, 1796, concerning commercial books. Although these three ordinances serve only to establish principles already recognized, and contain only a very limited number of provisions, yet we have thought it necessary to reproduce them. Independently of these ordinances, which are far from forming a sufficient body of commercial law, they generally refer either to the French code which has been in force for some time in this country, or to the common law of Germany.

20. *Holland*.—The code of Holland came into oper-

ation the 1st October, 1838. It passed under a severe ordeal, and it was delayed through the revolution which caused her separation from Belgium.

21. *Hohenzollern-Hechingen*.—(Principalities of Siegmaringer and Lichtenstein.) These States have no general procedure for commercial matters; the disputes arising on them are adjudicated by the ordinary tribunals. The principality of Lichtenstein is governed, for commercial matters especially, by the laws and ordinances of Austria.

22. *Ionian Islands*.—The French code of commerce, with a small number of modifications, most of which have been borrowed from the code of commerce of Two Sicilies, has recently been introduced in the United States of the seven Ionian Islands, which form an aristocratic representative republic under the perpetual protectorate of England. A decree of 16th March (26th February), 1841, abrogated all the laws, statutes, regulations, general or local customs, the requirements of which are contrary to the present code which came in force on the 1st May, 1841. At the same epoch of 1st May, 1841, the other codes of civil and criminal procedure, and the penal codes, had been promulgated; they are drawn up almost in the same spirit and system as the French codes.

23. *Lombardo-Venetian Kingdom*.—The French code of commerce has been almost entirely preserved in the Lombardo-Venetian Kingdom; only with regard to bankruptcies they refer to the Austrian legislation; namely, to the ordinance of 1st January, 1782, and to the more recent ordinances inserted mostly in the ordinance for Western Galicia, and later on in the judicial ordinance, for the Italian States of the Austrian monarchy. A translation in Italian of the French code of commerce has been recently published at Milan, where those provisions which have remained in vigor, and have the force of law have been reproduced; these provisions have replaced the French code, especially on bankruptcies. We have made use of this work as the most authentic compilation we could adopt; and have simply indicated the direct correspondence between them and the ancient ordinances or law of 1782, and the ordinance of Galicia, deeming this sufficient to show the various changes which have been made. Trieste follows entirely the Austrian legislation, namely, the ordinance of 1760 on bills of exchange; that on bankruptcies of 1782 modified by more recent laws, such as that of Galicia and others, and the political proclamation of Maria Theresa of 1673, on maritime commerce.

24. *Lubec (Free Town of)*.—Lubec, although a truly commercial city, does not, properly speaking, possess any body of commercial law. She borrows provisions relative to this matter either from the common law of Germany from foreign legislation, or from ancient statutes. The *Stadtrecht*, which is the foundation of the law of Lubec, is not sufficient for the wants of commerce. Yet, with all the imperfections of the law, attempts to improve it have proved abortive. The political constitution of Lubec, which goes as far back as the middle ages, demands, for the compilation or revision of the law, such minute and complicated formalities that even the most indispensable improvements are infinitely long delayed. Every project, in fact, after having been elaborated by a commission, and subjected to the examination of the Senate, must be successively discussed and approved by the eleven colleges of the *Burgess*. This mode of deliberating, isolated and multiplied, carries with it lengthened and incalculable difficulties. Practice very imperfectly supplies defects of the written law; because no regular jurisprudence can be established in a country where the inhabitants terminate their differences chiefly by arbitration. This is so true that in 1840 the supreme court established at Lubec, for the 4 free towns of Germany, had to adjudicate only upon 4 appeals made by the citizens of Lubec. Nev-

ertheless, M. Herbert, the French consul there, in 1841, transmitted to the Minister of Foreign Affairs in France, a remarkable work on such legislation as that of Lubec, that we think proper to give some extracts from it. Through his care and enlightened zeal, we are furnished with some valuable documents on merchants, also, on commercial books, brokers, on whom there exists a regulation of the 26th June, 1822, and on commercial jurisdiction. With reference to maritime commerce we have followed the treatise of Poehls, so methodic and complete. The *Stadtrecht* is silent on bills of exchange. The three ordinances of 14th November, 1669, of 5th March, 1738, and of 20th August, 1823, contain only provisions of simple procedure. The first prescribes some measure for prompt execution in matters of exchange; the second declares the right of appeal, but not its suspension powers; and the third leaves to the tribunals the faculty to examine whether a permission may be given to the natives of taking proceedings in matters of exchange. The reproduction of these texts did not appear to us necessary. Title IX. of the Third Book of the *Stadtrecht* is devoted to commercial partnerships; but their provisions are not in conformity with the developments that have taken place which ancient law could neither foresee nor regulate. Thus while expecting the enactment of a law on bankruptcy, and bearing on this subject, they are guided by the regulation of Hamburg. As for bankruptcies, the subject is so obscure and uncertain that it is now fifty years since merchants demanded some regulations; but difficulties, apparently insurmountable, have hitherto prevented any improvement. Still there exists a project prepared in the name of a commission by the Syndic Buchholz, a distinguished jurist. This project is to be submitted to the Senate. It seems that it is composed of more than 150 Arts. and that it approaches the French code in its spirit and as a whole. The title I. of the Third Book of the *Stadtrecht* contains some provisions still in force (the rights of creditors privileged, creditors drestant, etc., etc.), but which have reference more to individuals in general than to merchants. The "Bourse" of Lubec is regulated entirely by that of Hamburg, for the course of exchange, money and public funds. With respect to jurisdiction, commercial affairs are submitted to the civil tribunals of three different degrees, of which we will give some details.

25. *Lucca, Duchy of*.—An ordinance of 6th May, 1840, declares that the French code of commerce shall continue in force in the Duchy of Lucca.

26. *Luxemburg, Grand Duchy of*.—The French code of commerce has not ceased in the Grand Duchy of Luxemburg. Simply a decree of King William, of 3d April, 1817, modifies the articles 615, 640, and 641. It suppresses the tribunals of commerce, and it orders that commercial disputes shall be adjudicated by the ordinary tribunals.

27. *Malta*.—Much confusion exists in Malta, in the application of the laws in regard to commerce; a want of *facility*, which gives occasion to constant complaints. Their only guides are the "*Ordonnance of French Marine*," of 1681, and other old authorities, such as the Code, or "*Pragmatique*," of the Grand Master Manoel (which is only subsidiarily in force), or the code of 1784, of the Grand Master de Rohan, which bears the name of "*Municipal Law*," and is at present a very general authority. Subsequently to the date last given, proclamations emanating from the different governments which have succeeded each other in Malta, and in particular that of Britain, since 1800, have introduced or remodeled certain rules of jurisprudence in regard to various points of commercial equity. The result has been a sort of common law, generally adopted in practice, and acted upon by the tribunals. To promote this object, a collection of all commercial usages in the form of a manual, has been published by gentlemen of the legal profession; it

bears the title of "*Compendio di Diritto Commerciale Maltese (Malta, 1841)*."—Compendium of the Commercial Law of Malta. This collection presents an abridged view of the principles of Maltese legislation and jurisprudence, in the absence of any thing like a regular system of commercial law. It is a subject of regret that the English government has not followed up its plan in giving a code to the Ionian Republic by promulgating a similar one in Malta. (We understand that the civil code for Malta is already prepared and printed.) On the subject of bills of exchange, the want of legal arrangements has been peculiarly felt. In the mean time, the regulations in regard to maritime commerce, borrowed chiefly from the French shipping law, enter much into the necessary details, and form the principal part of the commercial law of the island. In the matter of bankruptcy, the ordinances of 1815 have established certain principles which, in the form of procedure especially, have been only imperceptibly modified by later enactments. These regulations treat bankruptcy as in England.—Chap. XVII.—in which it is stated, that should any difficulties occur in regard to procedure, reference should be had to the law of England. The judiciary organization, which dates from 1679, was terminated by the constitution of 1814. The maritime consularship was then reformed, and the name of tribunal of commerce imposed. Regulations were at the same time enacted for its suitable efficiency. The commercial code so many years under consideration, was revised by the council in 1847, on the recommendation contained in the able Report of Andrew Jameson, Esq., Advocate, Sheriff-depute of the county of Edinburgh. A commission was also named to revise the code of civil procedure, intended to remove many obstructions and delays in the administration of justice.—*Parliamentary Report, 1849.*

28. *Mecklenburg-Schwerin, and Mecklenburg-Strelitz, Duchies of*.—There exists in these Duchies no peculiar law relating to commerce. The only authority throughout their respective provinces is the common law of Germany. Rostock, however, has a municipal law peculiar to itself. A decree of this city was passed, 19th December, 1827, relative to bills of exchange.

29. *Modena, Duchy of*.—The duchy of Modena has no code of commerce. Reference is made to the opinions of the most celebrated writers, such as Casaregi and Ansaldo, and still more to Azuni, Baldasseroni, and Cassiani. In the absence of legislative enactment, in regard to commerce, the civil code is also most frequently appealed to, which in commercial differences alone permits to act by executory process.

30. *Nassau, Duchy of*.—Till the present period there existed in the Duchy no law relating to commercial rights, and the ordinance of Frankfurt on bills of exchange was the sole authority. The government has, however, recently promulgated the project of a commercial code, extending to every subject that might be contemplated by it. This project, which has been aided by the valuable co-operation of Messrs. Volpracht and Bertram, is in a great measure a repetition (as to the text almost always so) of the regulations of the code of Wurtemberg, of those of the *ordonnance* of Saxe-Weimar (20th April, 1819) on bills of exchange. Though the above *projet* has not yet been discussed at an assembly of the States, there is every probability of its being adopted in its present form, at least without any material alteration. We have accordingly inserted it in due order.

31. *Norway*.—Civil and commercial legislation remain in this country the same as in Denmark. Its union with Sweden, in 1814, produced no alteration. Two laws only were carried in the last *Storting* (Parliament) in 1842. The first, of date 4th August, on bills of exchange, given in its proper place, the second, of 29th June, and which has received the royal assent. This law, however, being merely a regulation on the right of engaging in commerce, which it limits, with

very few exceptions, to the citizens of commercial towns, we regard as not coming within the legal department we had assigned ourselves; we therefore omit it. There was recently in force a regulation in regard to exchange of Copenhagen, 16th April, 1681, as presented by M. Nonguier. This regulation has been replaced in Denmark by the law of 28th May, 1825. In Norway it has hitherto undergone no alteration except those of the recent law of 4th August, 1842.

The maritime law of Norway is the same with that of Denmark. The code of Christian, promulgated in 1683 in Denmark, and in 1657 in Norway, is still in force.

32. *Parma, Placentia, and Guastalla, Duchies of.*—The commercial code of France, which had been introduced into these duchies, still continues in force. Only the civil code of Parma contains regulations in regard to bills of exchange. These remain the sole distinguishing documents of commercial character.

33. *Portugal.*—On the 18th September, 1833, an ordinance of the King Don Pedro sanctioned a code drawn out by a jurist alone, and which, derived in great part from the Spanish and Dutch codes, has taken from them the most enlightened provisions, and added others, especially on the institution of the jury, for commercial matters.

34. *Roman States.*—The commercial code of France, suppressed in 1814, when the French ceased to occupy the Roman territory, has, notwithstanding, still continued in force in some of its provinces, and in 1821 was formally re-established throughout all the Papal States, by an edict of Pius VII., under the title of Provisional Law of Commerce. Certain modifications, however, of minor importance, and which were to remain only until the completion of a new code, were introduced. This code has not yet appeared. The edict of 1st June, 1821, contains, moreover, several enactments which have for their object the better organization of tribunals of commerce. In regard to this point, however, the legislative and judiciary regulations of 10th November, 1834, contains, in sections three and four, new provisions. The decisions of the tribunals of commerce may be carried before the ordinary courts of appeals. The new law, however, has not revoked a papal statute of date 27th February, 1830, re-establishing a court of appeal at Ancona, and of which we have also given a translation. The edict of 1st June, 1821, contains, besides, different judiciary enactments, several of which have been borrowed from the English code of civil procedure. Into the examination of these we felt it unnecessary to enter, the greater part being presented in the new legislative and judiciary law.

35. *Russia.*—As early as in 1700, Peter the Great conceived the idea of collecting all the ukases published since the code of 1649, but co-operation was wanting to carry it into practice. Nicholas completed this important undertaking. The *svod* was published with the ukase of 31st January, 1826. It is a complete digest where the old laws are inserted, yet conforming them to the progress of legislation and European civilization. The commercial part, forming the 11th volume, occupies an important place; it includes more than 2000 articles, and it contains very remarkable provisions, such as demonstrate the customs and usages of the inhabitants of this vast empire.

36. *Sardinia.*—After the events of 1814, which placed upon the throne the present family, the ancient laws published in 1723, an impression of which, with numerous additional provisions, had been published by King Charles Emmanuel III., the 7th April, 1770, were re-established in Sardinia, Savoy, and Piedmont. They remained in force as to commercial matters until the promulgation of the new code of commerce, which came into operation the 1st July, 1848. The city of Genoa alone has continued to be regulated by the French code since the Restoration, the exigencies of

this commercial port requiring the application of a more modern legislation, and one which would be in harmony with the laws and customs of other nations. The same motive has urged the enlightened governments of Sardinia to endow their country with new and more uniform provisions by publishing a code of commerce. The new code of 1843 follows entirely the French code, taking into careful consideration the laws voted for its amelioration by the French Chambers in 1817, 1833, 1838, and 1841. It has done more; it has almost always resolved any difficulties that have arisen in the practice according to the sense and judgment of the Court of Cassation, and often made reforms which experience had proved to be necessary. Among the various innovations introduced, it is necessary to mention that minors and females whom the civil Sardinian code—the same as the Macedonian and Velleine status consultus—considered as incapacitated to act for themselves, are, as regards the exercise of commercial profession, independent; which modification was certainly indispensable; adding also to the No. 6 of the French law in conformity with their jurisprudence, a presumption of the consent of the husband when the married female is engaged in trade. The code intrusts to the tribunals of commerce the inspection of books of commerce; it prescribes precautions already specified in the projects of law presented by the Garde-des-sceaux, before the Chamber of Deputies, the 15th February, 1838, with a view to put an end to the scandalous speculations of partnerships in commandite; it relieves partners from forced arbitration, and makes it optional, as in several modern codes; it dedicates a fourth book to this important matter, under a special title, in conformity with the provisions of our code of procedure; and it replaces the entire section of the French code which treats of disputes between partners, with most valuable provisions in the functions of the liquidators of partnerships. The exchange agents are, as the notaries in France, responsible for the signatures to bills which they negotiate when signed in their presence; their books, and those of brokers, form evidence of agreements among parties. With reference to bills of exchange, those drawn by the States of the king in a foreign country, may be signed by any person who may be subjected to imprisonment for non-payment, without distinction of rank, but, for inland bills, merchants alone may be prosecuted commercially; and it is further necessary that the bill shall not be drawn by order and on account of a third, in which case they are only deemed as simple promises. The endorsement, after the bill becomes due, and the security given by a person not engaged in trade, do not constitute procuration. It is worthy of remark that Sardinia has adopted the same metrical system for distances and measurement as in France. The second book relative to maritime commerce contains only regulations analogous to the French code, with the exception in reference to the sale of ships, which must be made by public act, under penalty of nullity; it prescribes also to the captain, express duty of ascertaining the good state of the ship before going to sea; it enjoins on him to watch with great care over the interests of seamen. Lastly, by the Art. 843, § 1, the negotiation of a bottomry-bond between persons not engaged in trade, produces the same effect as bills to order, and by the Art. 360, any convention which should have for its object to discharge the lender on bottomry-bond from the contribution to the common averages, is null. The regulations of the third book on bankruptcies are the same as those of the French law of 20th May, 1838. Simply they have suppressed the Art. 448 of the French code which declares null the inscriptions of mortgages taken within 10 days preceding the suspension of payment; and, also, they order the exposition of the names of all persons who fail at the hall of the tribunal of commerce during the whole of their lives unless they obtained a license.

The treasury advances the preliminary expenses of the procedure. With reference to the license, it can only be given by the Senate (court of appeal) after the accomplishment of many formalities. The tribunals have the same organization as in France; but the judges elected by the merchants are nominated by the king. An important modification has been introduced in Sardinia, as in Mexico, and in Spain; a lawyer (*consulente quidiziale*) is appointed to each tribunal as a counselor, but without a deliberative vote. This institution has doubtless great advantages, yet it is subject to great inconveniences, as if, for example, the *consulore*, through the influence of his acquaintances, should predominate in all the deliberations, and overrule the judges. Another innovation consists in the creation of a judge, delegated every week by the tribunals, who decides by himself all disputes below 300 francs, and judges without appeal all those which do not exceed 100 francs. The appeal is admissible only in disputes above 1200 francs, as before the enactment of the French law of 11th April, 1838. An article on imprisonment for debt has been added to the code; it fixes its duration in proportion to the sums due, and submits to it persons not engaged in trade for bills of exchange, drawn from or on foreign countries, when it results from maritime operations; and in consequence of frauds, or presumption of flight, and insolvency. There is not yet any regulation on the procedure before the tribunals of commerce. The publication of the code of procedure is shortly expected, the ministry having been occupied with it for several years past. A diplomatic treaty of 24th March, 1760, seems to place Sardinia, with respect to France, in a very exceptional position relative to the execution of judgments rendered by the Sardinian tribunals, and the payment of the security *judicatum solvi*.

37. *Saxe-Attenburg, Saxe-Coburg Gotha, and Saxe-Meiningen*.—In these duchies there exists, in regard to commerce, only a very small number of regulations. Commercial differences are decided before the ordinary tribunals, and, in general, by a reference to common law and usage much more than to particular statutes. Thus, for example, the practice of Leipsic is the principal guide to that of the two duchies of Saxe-Attenburg and Saxe-Meiningen.

38. *Saxe-Holdburghausen, Duchy of*.—The ordinance of Leipsic, which was introduced into this duchy in virtue of a rescript of 11th June, 1714, still continues in force.

39. *Saxe-Weimar*.—A number of laws, entering into considerable detail, on the subject of mortgages, and the proper distribution and precedence of creditors in cases of bankruptcy, were promulgated by the government in 1839 and 1841. Their object, however, is only to establish, in regard to the latter subject, a uniformity of rule, such as is required in any other civil arrangement. For books of merchants, partnership, brokerage, failures, there exist no other special regulations. The Prussian code is followed, or, as in other parts of Germany, actions are decided by usage and common law. There is no special tribunal of commerce in the Grand Duchy. It is proper, however, to remark, that, during the continuance of the wool-fair, which is annually held in Weimar, in the month of June, a commission is named by the burgomaster, composed of two members of the municipality and several merchants, for the purpose of deciding upon differences that may occasionally arise. There being no commercial town in the Grand Duchy, no Bourse (place of exchange) has been regularly established. Each city has its particular regulations in regard to fairs held in it.

40. *Saxony, Kingdom of*.—The government of Saxony are at present occupied in the revision of the ancient legislation, and in completing it by new laws. As yet, however, there exists no commercial code, not even in the form of a "*projet*." The tribunals are

guided by ancient statutes and ordinances, which, where no enactments exist, are considered as possessing uniform authority. Various regulations have passed in regard to brokerage. Their respective dates are 7th March, 1818, 21st September, 1833, and 14th April, 1832. In regard to payments and bankruptcy, the only legal authority is the ordinance of 20th December, 1766, promulgated in Lusatia in 1783; this answers, however, very insufficiently for the present requirements of commerce, and government are preparing to replace it by new enactments. The ancient tribunal of commerce established at Leipsic, by an ordinance of date 21st December, 1682, still exists, but simply as a local court, and without any effort being made to establish other tribunals upon a common principle of judiciary organization. Such is the present state of commercial law in Saxony, to which the government are now endeavoring to apply a remedy. In addition to other means for this purpose, M. Einert, one of the most distinguished jurisconsults of the country, has lately received an order to review the recent laws, so as to bring them still more into unison with the increasing demands of commerce and industry.

41. *Schwartzburg, Rudolstadt and Schwartzburg-Sondershausen, Principalities of*.—As in the greater number of the minor States of Germany, so in the above principalities, commercial differences are brought before the ordinary tribunals, and are decided upon according to common law usage, or even the laws of the neighboring States, Saxony, etc. The former ordinance of 1st September, 1787, respecting failures, has been replaced by another of 1st December, 1835, on the same subject.

42. *Sicilies, Kingdom of the Two*.—The French commercial code was introduced into Naples the 28th May, 1808, when the throne was occupied by King Joseph Napoleon Bonaparte. The laws, having undergone a general revision at the time of the Restoration, a new code of commerce for the Two Sicilies was made public 26th March, 1819. It forms one of the parts of a body of general law, arranged under the five heads of civil, penal, and commercial law, and civil and criminal procedure. This code of commerce contains nearly the same regulations as that of France, on the basis of which it has obviously been founded, and which long practice besides has sanctioned.

43. *Spain*.—In 1827 King Ferdinand VII. nominated a commission charged to frame a code of commerce; and on the 30th May, 1829, a royal ordinance sanctioned the new code, which was to come into force the 1st January, 1830.

44. *Sweden*.—For bills of exchange in Sweden there are two ordinances, of 1st February, 1748, and 12th June, 1816. The text of them has been given by M. Nonquier in his treatise. It appears, however, that these ordinances have been insufficient for the wants of commerce. Accordingly, on 20th May, 1835, there appeared a new law regulating inland bills. This law, which is perfect in itself, and may be considered as the common law of exchange in Sweden, forms, with the ordinances already mentioned, an extremely remarkable body of laws. In relation to maritime law, a complete account of it, as it formerly stood, may be found in the collection of M. Pardessus. He has given there the ordinance of 1667, being an abstract of the Hanseatic *Reces* Maritime Consulate, etc. Numerous changes, however, have since been made in this ordinance, certain articles having been retained, while others have been suppressed or modified. On the present state of the maritime law of the north, the work of M. Poehls may be regarded as of the highest authority. A law, very minute in detail, was issued in regard to failures, in 1818. This has been more recently replaced by a new law of date 12th March, 1830, having regard to some modifications made in it in 1835. In regard to judiciary organiza-

tions, it is sufficient to note that, generally, the settlement of commercial disputes devolves on the civil tribunals. The only exceptions are proceedings relative to bills, or arising from disputes which may have arisen between ship-owners and the proprietors of the cargo, or the captains, or between captains and their seamen. Actions in regard to these are within the competency of the municipal courts. The same tribunals take cognizance of ordinary failures. If the bankrupt is a noble, the case is brought before the courts of justice. To these also an appeal lies from the decisions of the municipal tribunals. When there is room for appeal from an inferior district court, it may be carried in the second instance before a superior one; and in the third (finally) before one of the three high courts of the realm.

45. *Switzerland*.—Each of the twenty-two Swiss cantons is sovereign and independent, ruled by its own laws. There exists, however, in the greater part of them, no commercial law whatever. Matters of commerce are treated as other affairs of civil life, with all the restrictions and impediments which have been the fruit of municipal legislation. In the Canton of Geneva, the French code, introduced provisionally after the events of 1814, seems now to possess the authority of definitive law. No change has been made in it, except in what regards the mode of legal procedure, delineated in the "*Code de Procedure*," arranged by M. Bellot, and promulgated 1st January, 1821. A law of 12th May, 1817, giving a new sanction to the French code of commerce, established those changes already adopted in France, and introduced into the art. 160 a provision having special reference to Geneva, namely: "The loss of right mentioned in the art. 160, shall take place against the bearer of a bill of exchange, at one or more days after sight, or months or usances after sight, drawn from the Canton of Geneva, payable in foreign countries, who shall not exact the payment or acceptance within the time prescribed by each of the prefixed dates." In the other French Cantons of Switzerland, the same French code, though not expressly enacted, is frequently, in the absence of other legislative authority, the guide, or is at least appealed to as a rule of equity. The Canton of Vaud has published a law on bills of exchange, the 4th June, 1819, which is chiefly extracted from the French code, and which has been also adopted in the Canton of Friburg. In 1818, the Council d'Etat of the Canton of Vaud had prepared a report of a code of commerce to be submitted to discussion, but it was rejected in 1841, by the Grand Council. The Canton of Friburg, in 1840, presented the *projet* of the first book of the "*Code de Commerce*;" it has not yet, however, undergone discussion. Lastly, Neuchâtel has recently published some commercial laws. The legislation in the German Cantons is extremely imperfect. The least defective system of mercantile law is that of Basle, in which, in addition to an ordinance on exchange, of 14th December, 1808, there are to be found various regulations in regard to mercantile books, brokerage (26th Dec., 1822; April, 1805 and 1817) as well as some old regulations (1719) relative to the ranking of creditors in a case of bankruptcy. The latter also still retain some degree of authority, and are therefore not without importance. Recently, in the Canton of Berne, the discussion as to the propriety of maintaining the codes of France in the French portion of the Canton, seems to have led the way to important reforms, having for their object the revision, not only of these codes in certain articles, but of the entire legislation of the country. This legislation is composed of very ancient laws, which could not be included in this work. The law on bankruptcy, of 22d December, 1820, contains some very remarkable provisions. The new civil code of Lucerne embraces various regulations on commercial matters. Zurich possesses an ordinance on

bills of exchange, of date 16th May, 1805. St. Gall, an ordinance on the same of 18th July, 1784, and a law of 11th October, 1832, on commercial accounts. Lucerne follows the ordinance on bills of exchange of St. Gall; Soleure, that of Basle; and Friburg has the same law as Vaud on bills of exchange, of date 24th June, 1829. In the German Cantons the defects of commercial law are supplied partly from the civil law, but chiefly by usage. Commercial disputes are determined before the ordinary tribunals. A law on bankruptcy, of 18th May, 1818, for the Canton of Zug, contains some curious regulations in regard to religious establishments, in favor of the bankrupt himself, who preserves the right of redemption over the sale of his real estate, and against his family in certain cases. There still exists at Schoffenhausen a committee of commerce which traces its origin to the year 1703; similar ones were to be found in several cities in Switzerland. Its members were elected from the mercantile body, and were appointed to watch over every thing that concerned the commerce of the city. In 1805 it was erected into a tribunal of commerce for the decision of all mercantile differences. It is much to be wished that Switzerland, especially in regard to commercial affairs, were possessed of a common legislation applicable throughout the whole extent of the confederations. It is possible that the late reforms in the civil and the criminal codes of the Cantons individually, may lead eventually to this result. In certain cases, indeed, the Cantons have already felt it necessary, amid the multiplicity of statutes and usages, to adopt certain measures of a general character, by federal conventions or *concordats*. Thus, in a case of bankruptcy, by the concordat of 15th June, 1804, confirmed 8th July, 1818, every Swiss throughout all the Cantons, enjoys, on ranking as creditor, the same rights with the inhabitant of the Canton in whose jurisdiction the bankruptcy has been declared, both in regard to preferable and to ordinary claims. No seizure can take place of the movable property of the bankrupt, except for the common interest. Three Cantons only—Schwyz, Glaris, and Appenzell—refused their adherence to this federal agreement: their particular legislation seems to oppose it. By another concordat, 7th June, 1810, confirmed 8th July, 1818, the Cantons have mutually decreed that all the effects of the bankrupt, wherever found, must go into the general mass, without prejudice, meanwhile, to the claims of the present holder. In the case, however, of the body of the creditors contesting either the *property* of deposits, or a mortgage or ownership security situated in a different Canton from that in which the bankrupt was domiciled, the claim must be carried before the competent judge in that Canton, where the said effects, mortgage, or security, were found. By virtue of art. 14 of the treaty of alliance between France and Switzerland, Frenchmen and Swiss are respectively exempted, in pleading before the courts of each other's country, from the obligation to furnish a "*judicatum solvi*." The Court of Cassation, 9th April, 1807, and the Court of Colmar, 28th March, 1810, have specially determined to this effect; and the law may be considered as fixed.

46. *Tunis*.—There is no commercial law in Tunis. Usage and particular articles of agreement direct the decision in those cases of dispute that may occur between native traders. Every trader keeps a book in which he registers his purchases and his sales. The native Mussulmen and Jews know no higher form of mercantile book-keeping. There are few countries, however, where commercial probity is found more prevalent. And though cases may occur, in which the confidence of the creditor or the equity of the judge are attempted to be worked upon, yet such are proportionally rare, when compared with similar instances among nations where the written laws of commerce are of a more definite and extended character.

47. *Turkey*.—The geographical position of Turkey was destined to form this rich country into an essentially commercial power. But the natural indolence of its inhabitants has prevented it from reaping the advantages which nature had lavished on it. Their foreign trade is almost exclusively carried on by strangers, who enjoy, by virtue of diplomatic treaties, the privilege of paying dues of customs of smaller amount than those which are exacted from the Mussulmen and Rayas, and possess the right, in cases of differences with other foreigners, of appealing to their own international laws. The Koran is the common law according to which causes among natives are almost always decided. It is no matter of surprise, therefore, that there exists no special law applicable to matters of commerce. Those enactments which seem to bear the nearest resemblance to such, are scattered throughout the general code—a collection of all sorts of laws; to which, moreover, the idea of religious sanctity is attached, and which have been brought together by various doctors for the purpose of regulating religious services and public administrations. The collection of highest authority is that which was compiled by order of Solymán II., from 1520 to 1566, entitled *Multeka Ehbar*. This code has been translated by Chevalier Mourudja di Hossen, a native of Constantinople, of honorable Armenian family, and dragoman (interpreter) to the embassy of the King of Sweden. The work appeared in France, the first two volumes in 1798, and the third in 1824, under the title of “*Tableau General de l’Empire Ottoman*,” and presents an accurate exhibition of the laws which govern that vast empire. This code contains a book on commercial matters, but the laws embraced in it refer rather to principles bearing upon civil contracts, and adapted to Mussulman manners, than to commercial right, properly so called. Under the administration of Ahmed-Fetich-Pacha, in 1839, a project of a commercial code was prepared on the model of that of France. The fall of that minister, however, has indefinitely deferred its publication. As to commercial jurisdiction not falling under the rule of common law, actions in regard to it were determined at Constantinople and in the principal sea-ports of the Levant, by the chief officer of the custom-house (*chef de la douane*), aided by several assessors chosen from the leading merchants of the place, Mussulmen, Rayas, and freemen. This court, however, had been suppressed in the capital, and the Ministers of Commerce, similarly aided by assessors from the same class of merchants, have for some time taken cognizance of all commercial affairs. It was the wish of the Porte that disputes between Ottoman subjects and Europeans, should be carried by petition before this tribunal without the presence of any European assessor, and subject only to the interposition of the interpreter of the ambassador of the respective country. The entire diplomatic body were opposed to this, and the ministry of commerce has been abolished. The former order of things has now been re-established, and the Grand Douanier (the officer already mentioned) presides as formerly in the tribunals. Its decisions are final. “A cause,” says the religious code, “legally examined, discussed, and determined, can not again be brought into court, the law having pronounced against all appeal.” The judgments which it pronounces are not founded on any well-defined usages. The code of France is generally the rule to which, in their private transactions, the Rayas, who hold a seat in the tribunal, are accustomed to defer. The tribunal of commerce is not the only tribunal existing in Constantinople. There are other three, namely: 1. The *Arz Odassez*, a supreme tribunal where formerly the Grand Vizir presided, now the Cheik-ul-islam (*mufit*), before whom, without appeal, differences of every kind are determined, save on commercial and maritime subjects. 2. The tribunal of the *Cadis*; the *Mehkeim*, a

sort of court of peace or conciliation. 3. The court of the *commandant du port* (governor of the harbor), *Leiman-Odassy*, who, assisted by several captains, judges of all maritime questions, insurances, shipwrecks, jettisons, etc. Commercial differences between the subjects of the Grand Seigneur and those of foreign powers who are residents in the Ottoman empire, are determined summarily in presence of an interpreter of the legation, or of the consul of the nation to which the foreign subject belongs, sometimes by the decision of the custom-house authority, sometimes by that of the Pacha. In consequence of foreign treaties, every process involving a subject exceeding 4000 aspres (about 8 francs each) may be forced before the *divan* in Constantinople. This privilege, however, is seldom made use of. In cases of dispute between the subjects of foreign powers, a decision is given by the consuls of the respective parties, assisted by merchants of both nations. The Turkish tribunals decide on actions brought before them by the commentaries of the Koran, of which there are four in number, namely, as follows: the *Hanafi*, the *Maleki*, the *Chafiy*, and the *Hambuli*. These have never been translated from the original language. The *Hanafi* is followed at Constantinople and throughout European and Asiatic Turkey; the *Maleki*, in Barbary; the *Chafiy*, in Egypt; the *Hambuli* is no longer used; the collection entitled *Multeka Ehbar* is known over the whole empire.

48. *Tuscany*.—The “*Code de Commerce*” has always, since it was introduced into the Grand Duchy, held its position as law; and with the exception of the suppression of the tribunals of commerce, which, notwithstanding, have been continued in Florence itself, it has undergone no alteration of any importance. The article 117, however, of the judiciary reform of 1838, has annulled the regulations of article 51 of the French code, relative to obligatory arbitration in matters of copartnery. An ordinance of 5th September, 1814, with a view to prevent the facility with which persons not engaged in trade sign bills of exchange, authorizes only bankers, merchants, and traders, to draw bills of exchange. In cases when on such bills there should be the signatures of others than merchants, the ordinance grants only a recourse against them through the civil procedure. Another ordinance of 23d November, 1818, prescribes certain measures proper to shorten the procedure in matters of bills of exchange. Lastly, a third ordinance, of 20th December, 1824, declares that the words *value exchanged*, in bills of exchange, shall be considered as a true cause. We may also announce an important resolution of the jurisprudence of the court of Tuscany, by which a failure does not destroy the provision of funds for a bill of exchange; a question much disputed in France, and which the Court of Cassation has adjudicated upon in a manner contrary to the judiciary decisions of the tribunals of Florence, by decrees of 7th February, 1816, 30th July, 1832, and 20th March, 1841. We may add that the article 130, of the new Sardinian code of commerce, contains a regulation in conformity to the jurisprudence of Tuscany. An ordinance of 6th August, 1827, has made alterations in regard to insolvency and bankruptcy. It confers on the Advocate Fiscal (public prosecutor), or his substitute, the same powers with those of the public minister of France. The same ordinance proceeds thereafter to abrogate the enactments of article 587, of the French code of 1807, relative to those cases in which proceedings might be taken against a simple bankrupt. The court above mentioned in Florence consists of two merchants who are judges, two surrogates, one judge, a professional lawyer, and a “*greffier*.” The judges-consular are chosen by the principal merchants; the list of nominals is laid before the Grand Duke for approval. The judgments awarded by this tribunal may be carried by appeal before the tribunal “*de la vote*,” and finally before the council of justice. All maritime cases are

under the jurisdiction of the "bureau de la Marine," at Leghorn. In the other provinces of Tuscany the tribunals of commerce have been suppressed, and the cognizance of commercial affairs transferred to the civil judges, whose jurisdiction is unlimited.

49. *United States*.—The commercial law of the United States is, in general, the same with that of England. The principles connected with it are almost always traceable to the latter source; modified, however, by the legislation of individual States, as well as by the decisions of the federal court of the Union, and other inferior tribunals. English laws are not valid as such. They must be sanctioned by legislative enactment, or introduced by a court, as an exposition of principles common to the two nations. Each State has a separate commercial legislation. This is founded either on express statute, or on decisions of court. But as the decrees of the different courts have a sort of authority of themselves, and as, in addition to this, questions in relation to commerce emanate from general principles, or consist only in determining the proper interpretation of the contracts, commercial law may be said to be the same, or, at least, to vary very inconsiderably throughout the Union. Numerous questions on commercial affairs are decided by the federal courts of the Union (district and circuit courts), held for the purpose of taking cognizance of civil disputes between inhabitants of different States, and of all cases of admiralty and maritime jurisdiction. The final revision of the decisions of these courts is generally competent to the Supreme Court of the United States, which, differing from the Court of Cassation in France, judges both in regard to fact and law; and the decrees of which, while not considered as determining the principles of legislation or jurisprudence, have, indirectly, great influence in giving uniformity to the decisions of inferior courts in the several States of the republic. Though each State is in itself independent, yet laws of a general and uniform character may be enacted by Congress. For example, article 1st of section 8 and section 4 of the Constitution of 1787, provides, that Congress shall have the power, in the matter of bankruptcy—a subject of so grave interest in America, and affecting so deeply public credit—to enact laws that shall be obligatory on all the States, and take place of local enactments, whatever these may be. Under a general view, the tribunals must form their decisions on the basis of four sufficiently defined elements: 1st. The common or imperfectly written law. 2d. The statutes of the particular States. 3d. The legislative acts of Congress; and 4th. The decisions of English courts and treatises on English jurisprudence to which lawyers are permitted to appeal, as *raison écrit*, professional decision reduced to writing. There are no tribunals of commerce in the United States. Commercial or maritime questions are determined in the first instance by the ordinary courts appointed in each State. There are many exceptions, however, viz.: 1st. Of maritime civil causes such as seamen's wages, mortgages, salvage, engagements of vessels, etc., in general, of every real action against the vessel, or even in certain cases against the cargo. 2d. In the case of seizure of the ship or cargo. 3d. In regard to patents for discovery, rights of authorship, etc.; and 4th. In an action intended by a citizen of one State against a citizen of another. In all these cases the jurisdiction devolves on the federal court of circuit or of district. Though the judges have no political privileges, they possess each in his own sphere, great power; inasmuch as they may refuse to apply the law on the ground of unconstitutional impropriety in particular cases brought before them—an ingenious but sure method of fixing the character of imperfection on a particular law. In order to place in one view the documents necessary to give the most perfect view of American legislation on the various matters contained in a com-

mercial code, it was necessary to have recourse to the best accredited expositions and commentaries, and to which the Americans themselves attach the highest authority. The author generally followed, as the most accurate, is Chancellor Kent, whose *Commentaries on American Law*, presents an admirable and general view of commercial legislation. With reference to bankruptcies, the Congress having made use of the power granted to it by the Constitution, voted 19th June, 1841, a general law for all the States of the Union, which came in force 1st February, 1842. See *INSOLVENCY*.

50. *Wallachia and Moldavia*.—These principalities are ruled by laws, originally a mixture of Roman law, and usage. More recently the laws of the Lower Empire came into force, and retained their authority to a period not yet remote. The position of the two countries, pressed by the great powers which surround them, has led them to feel the importance of stability in civil legislation. For this purpose there have been established organic regulations, with a view to protect the citizens against the usurpations of the governing authorities, as well as to render secure the rights of the principalities against their powerful protectors. A desire has been felt also to preserve the traditional usages which are the expression of national habits, though sometimes these usages are not perfectly in harmony with the French legislation, which has been adopted as the leading authority. The aristocratic principle is maintained in all its rigor in their laws. As the primary element in that principle is the preservation of the great estates, the law confers on parents, according to their rank, and, failing these, on inhabitants of the locality, a preference in the right of purchase, and also a power of redemption on the sale of immovable property. In the case of encroachments on contiguous property, prescription is not admitted. So jealous indeed are the inhabitants in preserving their estates intact that the property conveyed in dowry by the wife (such is the rigor with which the dotal system is carried into execution), is freed from obligation to a leasehold by the simple fact of marriage, if the husband refuses to confirm the lease; a regulation greatly tending to shackle and discourage the labors of the agriculturist. In 1840 a commercial code was laid before the General Assembly, containing, with a few alterations, the same regulations with that of France. It has 595 articles. After having been adopted by the General Assembly it received the sanction of the prince, June, 1840, and was to come into force 1st January, 1841.

CHRONOLOGICAL TABLE OF COMMERCIAL LAWS.

Date.	Title.	Countries.
B.C.	Maritime Law of Menu.....	India.
B.C.	Maritime Law of Burges.....	India.
	General Code of Malacca.....	India.
B.C.	Law on Contract, Usury, Factor, Exchange, Debtor and Creditor, Partnership, Books of Commerce, Maritime.....	Greece.
B.C.	Law on Bankers, Debtors and Creditors, Maritime, etc.....	Rome.
5th cent.	Aniani Breviarum of Alaric II., a Court of Admiralty at Amalfi for all Nations trading in the Mediterranean and Constantinople.....	Amalfi.
9th cent.	Excerpta Juris Orientalis ad Rem Nauticam Pertinentia.....	Eastern Empire
9th cent.	Jus Navale Rhodiorum.....	Rhodes.
940.	The Gelaping on Shipping.....	Norway.
1068.	Maritime Law of Trar.....	Two Sicilies.
11th cent.	The Maritime Law of William the Conqueror.....	England.
1150.	Statutes of Steswick Maritime Law.	Denmark.
1150.	Statutes of Arles.....	France.
1158.	Code.....	Lubec.
1160.	Constitutum Usus.....	Pisa.
12th cent.	Maritime Law from the Book of the Assizes, and from the Usages of the Kingdom of Jerusalem, by the Court of Burgesses. [From this document it appears that other laws were enacted on commerce in general.].....	Jerusalem.

CHRONOLOGICAL TABLE OF COMMERCIAL LAWS—Continued.

Date.	Title.	Countries.
12th cent.	Maritime Law known under the name of Rodes or Judgments of.	Oleron.
12th cent.	Law of Grâgû's, or the Code of	Iceland.
12th cent.	Maritime Law of the Burghs of	Scotland.
12th cent.	Maritime Law called Biar Keyar-Rett.	Norway.
1214.	Civil Statutes of.	Curzola.
1223.	Maritime Law from Coutume of.	Montpellier.
1224.	Maritime Privilege granted to Lubec in the town of.	Stralsund.
1231.	Extract from a Constitution of Frederick II. for the Kingdom of.	Sicily.
1232.	The Criminal Statute regarding Shipping.	Venice.
1240.	Maritime Extract from the Code of.	Lubec.
1243.	Maritime Privileges granted to the city of Valence by the King of Aragon.	Valence.
1250.	Maritime Law, extracted from the coutume of.	Valence.
1254.	Maritime Law, Statute of Blarkoo, or Birca.	Sweden.
1255.	Maritime Law, from the Statute of.	Marseilles.
1255.	Maritime Statutes.	Venice.
1255.	Maritime Statutes, extracted from the <i>Fuero Real</i> .	Castilla.
1258.	Ordinance of the King of Aragon on the policy of Navigation of.	Barcelona.
1266.	Privilege granted by the King of Aragon to the Magistrates of Barcelona to nominate the Consuls beyond the Seas.	Barcelona.
1266.	Maritime Law, from the <i>Partidas</i> .	Castilla.
1269.	Maritime Law, extract of Privilege granted to.	Barcelona.
1270.	Maritime Statute. [This statute is also dated 1276 and 1292.]	Hamburg.
1270.	Maritime Statute, extract from the statute of.	Riga.
1271.	Maritime Law, extracted from a Pragmatic.	Barcelona.
1274.	Maritime Law, extracted from the <i>Gulathingslagh</i> of the King Magnus.	Norway.
1274.	Maritime Statutes.	Bergen and Drontheim.
1278.	Maritime Statutes.	Stralsund.
1280.	Maritime Law, extracted from the <i>Ions-bog</i> Code.	Iceland.
1282.	Maritime Law, a Constitution.	Two Sicilies.
1283.	Maritime Law, a Constitution.	Two Sicilies.
1283.	Maritime Law, the <i>Recognoverint Procces</i> .	Barcelona.
1284.	Maritime Law, from the Statute of.	Flensburg.
1285.	Letters Patent of Edward I. on the Contribution of Jetison.	England.
1286.	Maritime Law, extracted from a Constitution of Jacob I.	Sicily.
1288.	Pragmatic of the King of Aragon relative to Shipwrecks.	Aragona.
1288.	Pragmatic of the King of Aragon relative to Pirates.	Aragona.
1292.	Maritime Law, extracted from the Statute of.	Hadersleben.
1298.	Maritime Law, from the <i>Breve Curia maris</i> .	Pisa.
1299.	Maritime Statute.	Lubec.
About 1300.	Maritime Law of Bremen.	Bremen.
13th cent.	<i>Constitutio Societatis Navium</i> .	Bayonne.
13th cent.	Maritime Law, extracted from the 1st and 2d Skraa.	Novogorod.
13th cent.	Maritime Code.	Malacca.
13th cent.	Maritime Laws, extracted from the General Codes.	Malacca.
13th cent.	Maritime Code.	Manag Kassar and Bougui, in the Island of Celebes.
13th cent.	Maritime Code.	Bougui.
13th cent.	Maritime Code, extracted from Statutes of Genoa.	Colony of Pera.
13th cent.	Maritime Law, extracted from the Statute of Zara.	Dalmatia.
13th cent.	Maritime Law, extracted from the Establishments of.	Montpellier.
1303.	Maritime Law, extracted from the Establishments of.	Bari.
1303.	Maritime Law, extracted from the Establishments of.	Bremen.
1303.	Maritime Law, extracted from the Establishments of.	Rimini.
1304.	Pragmatic of Maritime Law.	Catagagna.
1306.	Articles of Maritime Law.	Hamburg.
About 1316.	Extract from a Maritime Statute of Genoa.	Genoa.
About 1316.	Maritime Law, extract of a Statute of Sassari.	Island of Sardinia.
1318 or 1319.	<i>Breve portus Killuretan</i> (Caglia).	Island of Sardinia.

CHRONOLOGICAL TABLE OF COMMERCIAL LAWS—Continued.

Date.	Title.	Countries.
About 1320.	Maritime Law, extracted from the Statute of the City of Wisby.	Island of Gothland.
1330.	Extract from a Statute of Genoa (Sept. 24).	Genoa.
1330.	Privilege for the Charters (armateur in course).	Catalonia.
1331.	Maritime Law, extract from the Statute of Pharo Island, of Lesina in the.	Adriatic.
1333.	Maritime Statute of Genoa (Jan. 29).	Genoa.
1335.	Maritime Law, extract from the Skraa.	Appenrade.
1338.	Extract from an Inquiry on the Maritime Law of.	England.
1399.	Maritime Statute of Genoa (Nov. 15).	Genoa.
1340.	Maritime Law, extracted from the Coutume of.	Island of Oleron.
1340.	Maritime Ordinance of the King of.	Aragona.
1341.	Maritime Statute of Genoa (Sept. 6).	Gazarie.
1341.	Maritime Ordinance relative to the Consuls of Barcelona.	Sicily.
1343.	Ordinance of the Magistrates of Barcelona on Maritime Law.	Barcelona.
1343.	Regulations of Consular Procedure.	Valenza.
1346 or 1347.	Maritime Law, extracted from 6th volume of the "Civil Statutes".	Venice.
1354.	Ordinance of the King of Aragon on Men-of-War.	Aragona.
1354.	Ordinance of the King of Aragon on Navigation in Times of War.	Aragona.
1356.	Ordinance of the King of Aragon on Maritime Courses.	Aragona.
1369.	Reces of the Hanseatic League.	Hanse Towns.
1375.	Extract of the Inquiry of Queenborough on the Maritime Law.	England.
1377.	Maritime Law, extract from the Statute of Levant.	Genoa.
1378.	Reces of the Hanseatic League.	Hanse Towns.
1380.	Reces of the Hanseatic League.	Hanse Towns.
1381.	Regulation in the Consulate of Barcelona.	Alexandria.
1386.	Regulation for the Consulate of Barcelona.	Damasco.
1390.	Maritime Law, extracted from the Coutume.	Harlem.
1391.	Reces of the Hanseatic League.	Hanse Towns.
1397.	Maritime Statute.	Ancona.
1399.	Privileges of the Grand Admiral.	Sicily.
14th cent.	Maritime Law, known under the name of Jugements de Damme, or Laws of Westcapelle.	Low. Netherlands.
14th cent.	Body of Maritime Law, known under the name of <i>Consolato del Mare</i> .	Venice.
14th cent.	Articles of Maritime Law.	Bremen.
14th cent.	Maritime Law, extracted from the Compilation of the Law of Lubec, published by Brokes.	Lubec.
14th cent.	Maritime Law, extracts from the Statute of.	Riga.
14th cent.	Maritime Law, from the Civil Statute of Cataro.	Dalmatia.
14th cent.	Chapters on the Armaments in Course.	Catagogna.
14th cent.	Maritime Law, extracted from the Recapitulation of the Ordinance of.	Seville.
14th cent.	Maritime Law, extract from the <i>Livre de Justice et de plet</i> , drawn up in.	France.
1405.	Royal <i>Cedule</i> , relative to the Jurisdiction of Judges, Consuls.	Barcelona.
1412.	Reces of the Hanseatic League.	Hanse Towns.
1417.	Reces of the Hanseatic League.	Hanse Towns.
1418.	Reces of the Hanseatic League.	Hanse Towns.
1428.	Law on Averages (June 9).	Venice.
1432.	Privilege in favor of Judges, Consuls of.	Barcelona.
1434.	Reces of the Hanseatic League (June 5).	Hanse Towns.
1434.	Reces of the Hanseatic League (Oct.).	Hanse Towns.
1435.	Ordinance of the Magistrates on Maritime Police.	Barcelona.
1435.	Ordinance on Insurances.	Barcelona.
1435.	Ordinance on Insurances.	Barcelona.
1436.	Ordinance on Maritime Police.	Barcelona.
1441.	Reces of the Hanseatic League.	Hanse Towns.
1441.	Maritime Statute of Genoa.	Genoa.
1449.	Reces of the Hanseatic League.	Hanse Towns.
1447.	Reces of the Hanseatic League.	Hanse Towns.
1450.	Maritime Law, extract of the notorious Role.	Bremen.
1454.	Reces of the Hanseatic League.	Hanse Towns.
1455.	Maritime Law, extract of a <i>Willekur</i> .	Dantzic.
1455.	Maritime Law, extract of a <i>Willekur</i> .	Dantzic.
1457.	Maritime Law, extract of a <i>Willekur</i> , additions.	Dantzic.

CHRONOLOGICAL TABLE OF COMMERCIAL LAWS—Continued.

Date.	Title.	Countries.
About 1457.	Regulations on Maritime Navigation.	Florence.
1458.	Ordinance of the Magistrates on Insurances.	Barcelona.
1461.	Ordinance of the magistrates on Insurances.	Barcelona.
1468.	Ordinance on Insurances (July 2).	Venice.
1470.	Reces of the Hanseatic League.	Hanse Towns.
1482.	Reces of the Hanseatic League (May).	Hanse Towns.
1484.	Ordinance of the Magistrates on Insurances.	Barcelona.
1493.	Maritime Law, extract from the Statute (April 29).	Ancona.
1494.	Pragmatic, which constitutes a Consulate.	Burgos.
1497.	Maritime Law, extract from the General Code.	Hamburg.
1498.	Maritime Law, Code of Emmanuel.	Portugal.
15th cent.	Maritime Law, known under the name of " <i>Usages Maritimes de Amsterdam, Echuyzen, Stav-ern</i> ," etc.	Northern Nether-lands.
15th cent.	Compilation of the Maritime Law.	Wisby.
15th cent.	Maritime Law.	Dantzic.
15th cent.	Maritime Law, extracted from the <i>Statuta Anconitano urbis</i> .	Ancona.
15th cent.	Additions to the Maritime Statutes of 1397.	Ancona.
1507.	Maritime Ordinance of the Officers of the <i>Casa de la Contratacion</i> (Nov. 21).	Seville.
1508.	Maritime Law, attributed to the King John.	Denmark.
1510.	Pragmatic of the King of Aragon relative to the Consular Jurisdic-tions.	Barcelona.
1510.	Maritime Law, extract from a Stat-ute of (June 21).	Ancona.
1512.	Pragmatic concerning the Freight-ing of Ships (Jan. 31).	Burgos.
1512.	Maritime Law, extract from a Stat-ute of (Dec. 19).	Ancona.
1523.	Statute on Insurances (Jan. 28).	Florence.
1523.	Statute on Insurances (Jan. 27).	Florence.
1526.	Statute on Insurances (June 15).	Florence.
1526.	Maritime Law, extracted from a Privilege granted.	Dantzic.
1527.	Ordinance on the Loading of Ships (July 12).	Venice.
1527.	Statute relative to the Bottomry (Aug. 13).	Amsterdam.
1530.	Reces of the Hanseatic League.	Hanse Towns.
1532.	Maritime Law, extract from a Stat-ute.	Pisaro.
1533.	Ordinance of Bottomry.	Dordrecht.
1537.	Maritime Law, extract from an Ord-inance (May 25).	Brabant.
1538.	Additions to the Pragmatic of Jan-uary 31, 1512.	Burgos.
1538.	Regulation on the Police of the Con-tractation.	Burgos.
1538.	Ordinance for Insurance.	Burgos.
1540.	Maritime Law extract of an Ord-inance.	Prussia.
1542.	Maritime Ordinance.	Lubec.
1549.	Maritime Law, extract of an Ord-inance (Jan. 29).	Netherlands.
1551.	Maritime Ordinance (July 19).	Netherlands.
1552.	Extract of the Maritime Ordinance Charles V.	Spain.
1556.	Maritime Law, extract of the Book II. of the Criminal Statute.	Genoa.
1556.	Maritime Law, extract from the Ordinance of the Contractation.	Seville.
1567.	Extract of a Statute relative to In-surance (Oct.).	Genoa.
1560.	Maritime Ordinance for the Con-tractation.	Bilboa.
1561.	Maritime Code.	Denmark.
1563.	Maritime Ordinance (Oct. 31).	Netherlands.
1567.	Policy of Insurance.	Ancona.
1569.	Law on Shipwrecks (June 8).	Venice.
1569.	Law on Loading of Ships and Ship-wrecks.	Venice.
1570.	Maritime Ordinance (Jan. 20).	Netherlands.
1570.	Extract on Bottomry Bonds.	Middelburg.
1572.	Reces of the Hanseatic League.	Hanse Towns.
1582.	Extract on Insurances of the Cou-tume.	Antwerp.
1584.	Edict on the Admiralty (March).	France.
1585.	Law on Bottomry Bonds (Aug. 4).	Venice.
1586.	Law on Shipwrecks (June 28).	Venice.
1586.	Law on Insurance (Sept. 28).	Venice.
1586.	Maritime Law, extracted from the Statutes.	Lubec.
1588.	Maritime Law, extracted from the Civil Statutes (Dec. 16).	Genoa.

CHRONOLOGICAL TABLE OF COMMERCIAL LAWS—Continued.

Date.	Title.	Countries.
1589.	Law on Loading of Ships (Nov. 4).	Venice.
1591.	Law on Shipwrecks.	Duchy of Urbino.
1597.	Maritime Law, extract from the Statutes of.	Dantzic.
1598.	Ordinance on Insurance (Jan. 31).	Amsterdam.
1598.	Maritime Law, extract from the an-cient Statute of.	Culm.
1599.	Pragmatic of the King of Aragon on the Consular Jurisdiction.	Barcelona.
1600.	Ordinance on Insurance (Sept. 30).	Middelburg.
16th cent.	Guidon de la mer.	Guidon.
16th cent.	Maritime Law, extract from the Statute of.	Gaeta.
16th cent.	Hanseatic Regulations on the Police of Ships.	Hanse Towns.
16th cent.	Maritime Law, extract from the Political Statute of.	Savona.
16th cent.	Maritime Law, from the Statute of the Court of Merchants.	Lucen.
1601.	Statute of Elizabeth on Insurance.	England.
1602.	Law on Navigation (Aug. 31).	Venice.
1603.	Statute on Books of Commerce.	Hamburg.
1603.	Mercantile Law, extract from the 2d part of the General Statute of.	Hamburg.
1604.	Pragmatic on Sailors (July 23).	Two Sicilies.
1604.	Ordinance on Insurance.	Rotterdam.
1605.	Law on loading and arming Ships (April 16).	Venice.
1606.	Ordinance on Insurance (June 20).	Amsterdam.
1608.	Law on the Luggage of Sailors (Oct. 3).	Venice.
1609.	Ordinance on Bottomry Bonds (Feb. 14).	Portugal.
1609.	Maritime Law, extracted from the Statute of Bonifacio.	Corsica.
1610.	An Act concerning Monopolies.	Great Britain.
1610.	Maritime Law, from the Coutume of.	Ostend.
1610.	Ordinance on Insurance (Jan. 26).	Amsterdam.
1614.	Ordinance on Insurance (May 9).	Amsterdam.
1614.	Reces of the Hanseatic League.	Hanse Towns.
1615.	Maritime Law, from the Chapters of the Court of.	Sardinia.
1617.	Maritime Law, from the Coutume of.	Zuittotte.
1618.	Maritime Law, from the <i>Stadt-z-Lugh</i> .	Sweden.
1620.	Maritime Law, from the Code of the Duchy of.	Prussia.
1620.	Ordinance on Insurance (Dec. 5).	Amsterdam.
1621.	Declaration of the Magistrates of Amsterdam on the Bottomry.	Amsterdam.
1621.	Ordinance on Insurance (Sept. 7).	Amsterdam.
1622.	Law on Quarantine (Sept. 13).	Venice.
1622.	Ordinance on Insurance.	Two Sicilies.
1623.	Ordinance on Bottomry Bond (Aug. 23).	Portugal.
1623.	Ordinance on Insurances.	Two Sicilies.
1624.	Law on Insurance (March 12).	Venice.
1626.	Ordinance on Insurances (Jan. 30).	Amsterdam.
1632.	Law on Provisioning of Ships (April 30).	Venice.
1532.	Law on the Police of Navigation (May 1).	Venice.
1633.	Maritime Law, extract from the computation of the Pragmatic of.	Sardinia.
1639.	Extract of an Ordinance of Enchuy-sen on Insurance.	Enchuyzen.
1640.	Maritime Law, from the Pragmatic of the Grand Master.	Malta.
1644.	Law on Bottomry Bond (May 20).	Genoa.
1655.	Ordinance on Maritime Law and Ju-risdiction (March 16).	Rotterdam.
1661.	Ordinance on Insurance (Feb. 12).	Flessing.
1664.	Act of Charles II. on Maritime Law and Jurisdiction.	England.
1667.	Maritime Code.	Sweden.
1672.	Maritime Law, extract from Statute of.	Riga.
1681.	The Law on Bills of Exchange of Copenhagen (April 16).	Denmark.
1681.	Ordinance on the Marine (Aug.).	France.
1681.	Regulations on the Marine (Oct. 24).	France.
1683.	Regulations on Bottomry (Jan. 30).	Amsterdam.
1682.	A Tribunal of Commerce established (Dec. 21).	Leipzig. Saxony.
1682.	Law on Bills of Exchange (Oct. 2).	Leipzig. Saxony.
1682.	Ordinance of St. Sebastian on the Contractation (Sept. 19).	St. Sebastian.
1683.	Maritime Law, from the general code.	Denmark and Norway.
1683.	Maritime Law, Code of Christian V.	Denmark.
1684.	Ordinance on Insurance (Nov. 22).	Portugal.
1687.	Ordinance on Insurance (Jan. 31).	Amsterdam.
1687.	Ordinance on Insurance.	Senate of Bremen.
1688.	Ordinance on Insurance (Jan. 29).	Amsterdam.
1688.	Ordinance on Insurance (Oct. 29).	Portugal.
1693.	Ordinance on Insurance (Jan. 26).	Amsterdam.

CHRONOLOGICAL TABLE OF COMMERCIAL LAWS—Continued.

Date.	Title.	Countries.
1697.	Pragmatic on Maritime Law of Grand-Master Perellos (Sept. 1).	Malta.
1699.	Ordinance on Insurance (Jan. 23).	Amsterdam.
17th cent.	Maritime Law, extract from a code of Georgia, by the Prince Vakhtang.	Georgia.
17th cent.	Usages on customs of Olonne.	France.
1705.	An Act for giving like remedies on Promissory Notes as is now upon Bills of Exchange, and for the better payment of Inland Bills of Exchange (May 1).	Great Britain.
1710.	An Act for reviving, continuance, and appropriating certain Duties (March 8).	Great Britain.
1711.	Law on Bills of Exchange (March 1).	Hamburg.
1719.	Law on Bills of Exchange (March 22).	Bremen.
1714.	An Act to reduce the rate of interest (Sept. 29).	Great Britain.
1715.	Law on Bills of Exchange (Aug. 1).	Brunswick.
1719.	Ordinance on Bankruptcy. Basle.	Switzerland.
1721.	An Act for preventing trading to the East Indies (June 24).	Great Britain.
1722.	Regulations on Bills of Exchange for the City of Nuremberg (Feb. 16).	Bavaria.
1731.	Regulations on Insurances and Averages (Sept. 1).	Hamburg.
1732.	Ordinance on Bills of Exchange signed by minors and persons not engaged in trade (Sept. 4).	Hamburg.
1734.	Swedish Code.	Sweden.
1734.	An Act to prevent the infamous practice of Stock-jobbing (June 1).	Great Britain.
1734.	An Act for settling the responsibilities of Owners of Ships for the acts of Masters and Seamen (June 24).	Great Britain.
1739.	Ordinance on Bills of Exchange (May 26).	Frankfort.
1746.	An Act to regulate Insurance of Ships and on Merchandise (Aug. 1).	Great Britain.
1746.	An Act for regulating Insurance upon Lives, etc.	Great Britain.
1747.	Ordinance on Bankruptcies (May 16).	Hesse-Electorate.
1748.	Ordinance on Bills of Exchange (Feb. 1).	Sweden.
1750.	Ordinance on Bills of Exchange.	Saxe-Altenburg.
1753.	Regulation on Bankruptcies (Aug. 31).	Hamburg.
1755.	Ordinance on Bills of Exchange (March 20).	Schwartzburg, Rudolstadt.
1756.	Ordinance on Commerce (March 4).	Austria.
1763.	Ordinance on Bills of Exchange (Oct. 1).	Austria.
1766.	Additional Articles on Bankruptcies (Dec. 4).	Hamburg.
1773.	Regulations on Bills of Exchange (Nov. 5).	Angsburg.
1774.	Law on Merchant Shipping (July 25).	Austria.
1775.	Law on Tribunals of Exchange and Commerce (July 22).	Austria.
1776.	Ordinance on Bills of Exchange.	Saxe-Cob. Gotha.
1779.	On the declaration of Cargoes at the arrival and sailing of Ships (March 18).	Austria.
1784.	Ordinance on Bills of Exchange. St. Gall (June 18).	Switzerland.
1785.	Ordinance on Bills of Exchange (Nov. 24).	Bavaria.
1786.	An Act to explain and amend an Act on the Responsibility of Owners of Ships, etc., (Sept. 1).	Great Britain.
1787.	Concerning the Regulations established for obtaining a Royal Patent of Navigation (Sept. 14).	Austria.
1788.	Ordinance on Commercial Partnerships (Nov. 21).	Hesse Electorate.
1794.	Maritime Loan (Dec. 19).	Denmark.
1796.	Ordinance on Books of Commerce (Dec. 21).	Hesse-Electorate.
1801.	Ordinance of Brokers. Basle (April 28).	Switzerland.
1802.	Ordinance on Bills of Exchange (Aug. 31).	Anhalt-Coethen.
1804.	On the deposit of Accounts at the "Greffe" in case of Bankruptcy (Nov. 8).	Switzerland.
1805.	Law on Bills of Exchange. Zurich (May 16).	Switzerland.
1808.	Code of Commerce (Jan. 1).	France.
1808.	Law on Bills of Exchange (Dec. 14).	Switzerland.
1810.	Law on Bankruptcy. Basle (Dec. 18).	Switzerland.
1811.	Law on Bankruptcy. Basle (Dec. 2).	Switzerland.
1818.	An Act to limit the responsibility of Ship-owners in certain Cargoes (July 21).	Great Britain.
1815.	Regulation on Bankruptcy (Nov. 1).	Malta.
1815.	Procedure in matter of Bankruptcy (Nov. 1).	Malta.

CHRONOLOGICAL TABLE OF COMMERCIAL LAWS—Continued.

Date.	Title.	Countries.
1815.	Ordinance on Commercial Jurisdiction (Dec. 15).	Hamburg.
1816.	Ordinance on Bills of Exchange (Feb. 12).	Sweden.
1817.	Ordinance on Brokers. Basle (Aug. 3).	Switzerland.
1818.	On Bankruptcy. Basle (Feb. 11).	Switzerland.
1818.	Law on Bankruptcy. Zug (May 11).	Switzerland.
1818.	Ordinance on Brokers. Leipzig (March 7).	Saxe.
1819.	Code of Commerce (March 26).	Two Sicilies.
1819.	Ordinance on Bills of Exchange (April 20).	Saxe-Weimar.
1819.	Act for resumption of Specie Payments.	Great Britain.
1821.	An Act to regulate acceptance of Bills of Exchange (June 1).	Great Britain.
1821.	An Act for preventing Fraud upon Creditors, etc. (July 2).	Great Britain.
1821.	Provisional regulation of Commerce (June 24).	Roman States.
1822.	Regulation on Brokers (June 26).	Lubec.
1822.	Ordinance on Bills of Exchange (July 23).	Hanover.
1822.	Law on Merchants. Basle (Dec. 28).	Switzerland.
1823.	Law on Bankruptcies (March 26).	Brunswick.
1823.	Law on Bankruptcies. Berne (Dec. 22).	Switzerland.
1824.	Regulation on Brokerage (Dec. 15).	Hamburg.
1825.	An Act to amend the Laws relative to Bankrupts (May 2).	Great Britain.
1825.	Ordinance on Bills of Ex. (May 18).	Denmark.
1825.	An Act to alter and amend the Law for the better protection of the Property of Merchants (July 5).	Great Britain.
1826.	Code of Commerce (Jan. 31).	Russia.
1826.	Haytian code (March 28).	Hayti.
1826.	An Act for better regulating co-partnership of certain Bankers in England (May 26).	Great Britain.
1827.	Bills of Exchange payable on Good Friday or Christmas Day (Apr. 12).	Great Britain.
1827.	Ordinance on Bills of Exchange (Dec. 17).	Rostock.
1828.	On Bills of Exchange (Jan. 21).	Bremen.
1828.	An Act for rendering a written memorandum necessary to the validity of certain promises and engagements (May 9).	Great Britain.
1830.	Code of Commerce (May 1).	Spain.
1830.	Establishment of a Tribunal of Appeal at Ancona (Feb. 27).	Papal States.
1830.	Law on Bankruptcy (March 12).	Sweden.
1831.	An Act to prohibit the payment in certain trades of wages in goods, etc. (Oct. 15).	Great Britain.
1832.	On the establishments of Brokers. Dresden (April 14).	Saxony.
1832.	An Act for regulating the protesting for non-payment of Bills of Exchange (Aug. 9).	Great Britain.
1832.	Bankruptcy amendment (Aug. 15).	Great Britain.
1832.	Law on commercial firms, partnerships, female property Lucerne (Oct. 11).	Switzerland.
1832.	An Act to establish a Court in Bankruptcy (Oct. 20).	Great Britain.
1833.	Bank Charter (Aug. 29).	Great Britain.
1833.	Code of Commerce (Sept. 18).	Portugal.
1833.	Ordinance on the evidence resulting from Books and Papers of Brokers (Sept. 21).	Saxony.
1834.	Slavery abolished in Jamaica.	Great Britain.
1834.	Law on the Organization of Justice (Sept. 17).	Greece.
1834.	Circular on Bankruptcies. Berne (Sept. 17).	Switzerland.
1834.	Legislation and Judiciary Regulations (Nov. 10).	Roman States.
1835.	Law on Bills of Exchange (May 20).	Sweden.
1835.	Illegal Securities (Aug. 31).	Great Britain.
1835.	Weights and Measures (Sept. 9).	Great Britain.
1835.	An Act to amend the Law touching the Letters-patent for Invention (Sept. 10).	Great Britain.
1835.	Regulation of Partnership (Dec. 29).	Hamburg.
1836.	An Act for declaring the Law as to the day for presentation for payment of Bills of Exchange, etc. (Aug. 13).	Great Britain.
1837.	Joint-stock Companies (July 17).	Great Britain.
1838.	Joint-stock Bank Partners (Aug. 14).	Great Britain.
1838.	Imprisonment for Debt and Insolvent Act (Aug. 16).	Great Britain.
1838.	Cheap Postage Act.	Great Britain.
1839.	Law on Bills of Exchange. Vaud (June 4).	Switzerland.
1839.	Law on the confirmation of the Civil Code and Code of Commerce. Berne (June 22).	Switzerland.

CHRONOLOGICAL TABLE OF COMMERCIAL LAWS—Continued.

Date.	Title.	Countries.
1889.	An Act for the better protection of parties dealing with persons liable to the Bankrupt Laws (July 19).....	Great Britain.
1889.	Exempting certain Bills of Exchange, etc., from the operation of the Law relating to Usury (July 29).....	Great Britain.
1840.	Admiralty Court (Aug. 7).....	Great Britain.
1840.	On Bankruptcies (Aug. 7).....	Hanover.
1842.	New Factor's Act (June 30).....	Great Britain.
1842.	Law on Bills of Exchange (Aug. 4).....	Norway.
1842.	An Act for the relief of Insolvent Debtors (Aug. 12).....	Great Britain.
1842.	Bankruptcy Amendment Act (Aug. 12).....	Great Britain.
1842.	Code of Commerce (Dec. 30).....	Sardinia.
1844.	Bank Regulation Act (July 19).....	Great Britain.
1844.	Debtors' and Creditors' Arrangement Bill (Aug. 6).....	Great Britain.
1844.	Insolvency, Bankruptcy, etc., amendment (Aug. 9).....	Great Britain.
1844.	Joint-stock Bank Act (Sept. 5).....	Great Britain.
1846.	Duties on Cotton abolished.....	Great Britain.
1845.	Navigation Act (Aug. 4).....	Great Britain.
1845.	Ship-registry Act (Aug. 4).....	Great Britain.
1845.	Merchant Seamen Protection Act (Aug. 8).....	Great Britain.
1846.	Regulation on Commerce and Manufactures (Dec. 22).....	Sweden.
1846.	Ordinance on Partnership.....	Prussia.
1846.	Ordinance on Tribunals of Commerce.....	Prussia.
1847.	Corn Law reform.....	Great Britain.
1847.	Act for relief of Ireland (£8,000,000).....	Great Britain.
1847.	Amendment of Registration, etc.; Joint-stock Company's Act, etc. (July 22).....	Prussia.
1847.	Bankruptcy and Insolvency Jurisdiction Act (July 22).....	Prussia.
1848.	Suspension of Bank of France legalized (March 15).....	France.
1848.	An Act to consolidate and amend the Laws relative to Insolvent Debtors in India (June 9).....	Prussia.
1848.	Joint-stock Company's Winding-up Act (Aug. 14).....	Prussia.
1848.	An Act to empower the Commissioners of the Court of Bankruptcy to order the release of Bankrupts from Prison in certain cases (Aug. 31).....	Prussia.
1849.	An Act to amend the Laws in force for the encouragement of British Shipping and Navigation (June 26).....	Prussia.
1849.	Bankruptcy Law Consolidation Act (Aug. 1).....	Prussia.
1849.	Bankruptcy Amendment Act (Aug. 1).....	Ireland.
1849.	Joint-stock Company's Winding-up Enactment (Aug. 1).....	Ireland.
1847.	Institution of Tribunals of Commerce (April 5).....	Prussia.
1849.	Law on Bills of Exchange for all Leipzig (May 1).....	Germany.
1850.	A Stamp Law on Bills of Exchange, Shares, Policy of Ins. (June 5).....	France.
1850.	New Stamp Act.....	Great Britain.
1850.	County Court Extension Act.....	Great Britain.
1850.	Mercantile Marine Act.....	Great Britain.
1854.	Repeal of Unnry Laws (Aug. 5).....	Great Britain.

See COMMERCIAL LAW OF THE WORLD, by LEONE LEVI.

Lazaretto. See QUARANTINE.

Lead (Ger. *Bley*, *Blei*; Du. *Lood*, *Loot*; Fr. *Plomb*; It. *Piombo*; Sp. *Plomo*; Rus. *Свинetz*; Pol. *Ołow*; Lat. *Plumbum*; Arab. *Anuk*; Hind. *Sisa*; Pers. *Surb*), one of the most useful metals. It is of a bluish white color, and when newly melted is very bright, but it soon becomes tarnished by exposure to the air. It has scarcely any taste, but emits, on friction, a peculiar smell. It stains paper, or the fingers, of a bluish color. When taken internally, it acts as a poison. It is one of the softest of the metals; its specific gravity is 11.35. It is very malleable, and may be reduced to thin plates by the hammer; it may also be drawn out into wire, but its ductility is not very great. Its tenacity is so small, that a lead wire 1-126 inch diameter is capable of supporting only 18.4 lbs. without breaking. It melts at 612°.—*Tromson's Chemistry*. Lead is a metal of much importance in the arts. Its durability and malleability make it very suitable for the roofing of buildings, the construction of gutters, and such like purposes. It used to be very extensively employed in the formation of water-pipes and

cisterns. But though water has no direct action on lead, it facilitates the action of the external air; and hence the lead of cisterns and of pipes from which the air is not entirely excluded becomes oxydized, and is covered with a white crust at the point where the surface of the water comes into contact with the air. Inasmuch, however, as this oxyd is extremely deleterious, lead pipes and cisterns are now very generally superseded by those of cast iron. At present, perhaps, lead is more extensively used in the manufacture of small shot than in any other way. Its salts, though poisonous, are used in medicine to form sedative external applications; and frequently not a little, by the disreputable wine merchant, to stop the progress of acetous fermentation. Wine thus poisoned may, however, be readily distinguished; a small quantity of the bicarbonate of potass producing a white precipitate, and sulphureted hydrogen a black one. Pure wine will not be affected by either of these tests. "The oxyd of lead enters into the composition of white glass, which it renders clearer and more fusible; it is also used in glazing common earthen vessels; hence the reason that pickles kept in common red pans become poisonous. Lead, with tin, and a small quantity of some of the other metals, forms pewter; with antimony, it forms the alloy of which printing types are made."—*JOYCE'S Chemistry*. Mines of this valuable mineral have been wrought in England from the era of the Romans. It does not, however, appear that it was obtained any where except in Derbyshire, till 1289, when it was discovered in Wales; and the fact that silver was found intermixed with the Welsh ores having transpired, gave a new stimulus to the business; but in other respects the discovery of silver was of no use; the quantity obtained being insufficient to defray the cost of its separation from the lead. At present, the most productive English lead mines are situated in Northumberland; in Cumberland; in the western parts of Durham; in Yorkshire; in Derbyshire, and in Cornwall. The Welsh mines are principally situated in the counties of Flint, Cardigan, and Montgomery; those of Scotland in Ayr, Kirkcudbright, and Lanark; and those of Ireland, in Wicklow, Down, Limerick. Lead mines are also wrought to considerable advantage in the Isle of Man. We subjoin an abstract deduced from the accounts furnished by the Museum of Practical Geology, of the

QUANTITIES OF LEAD ORE AND LEAD PRODUCED IN GREAT BRITAIN, IN 1852.

	Lead ore. Tons.	Lead. Tons.
England.....	62,411	43,818
Wales.....	18,379	13,708
Ireland.....	4,493	3,223
Scotland.....	3,499	2,881
Isle of Man.....	2,415	1,885
Total.....	91,193	64,961

"In 1852, 14,124 tons of lead were imported, and 26,548 tons (including 2,967 tons foreign), were exported. It consequently follows that the produce of British mines is sufficient not only to supply the home demand, but to furnish a surplus of 9,457 tons for exportation. Pig lead was worth, in the London market, in September, 1853, £22 10s. 6d. a ton. In 1832 it was only worth £13 10s. a ton.

"Lead, when first extracted from its ore, always contains a certain portion of silver, varying from a few grains to 45 oz. or more in the ton. When the silver mixed up with the lead is sufficient to repay the expense, it is usual to separate it, which is effected by the process termed *refining*. The lead of some of the English mines, especially those of Cornwall, and, also, of the Isle of Man, contains very considerable quantities of silver, and our readers will, perhaps, be surprised to learn that it has been estimated by the highest authority that, in 1852, the United Kingdom furnished no fewer than 818,325 oz. of silver, worth, at 5s an oz., £205,080, obtained from lead."

The consumption of lead in France has greatly increased within the last 20 years. In 1852, about 30,000 tons of ore were imported, of which from 8-10ths to 9-10ths were brought from Spain.

The lead mines of the United States are principally

situated in Illinois and Wisconsin, on the Upper Mississippi. Their produce and that of the other mines in the Union, may, perhaps, average from 16,000 to 18,000 tons a year. Lead ore is also found in abundance in Missouri.

AN ACCOUNT OF BRITISH LEAD AND LEAD ORE EXPORTED FROM THE UNITED KINGDOM IN 1852, DISTINGUISHING THE COUNTRIES TO WHICH IT WAS SENT, AND THE QUANTITIES SENT TO EACH.

Countries to which exported.	Lead ore.		Pig and rolled lead.		Shot.		Litharge.		Red lead.		White lead.		Total Exports.
	Tons, cwts.	Tons, cwts.	Tons, cwts.	Tons, cwts.	Tons, cwts.	Tons, cwts.	Tons, cwts.	Tons, cwts.	Tons, cwts.	Tons, cwts.	Tons, cwts.	Tons, cwts.	
Russia.....	1,918 0	3 0	181 7	41 3	17 19	2,106 9							
Denmark.....	295 0	38 0	36 4	20 5	169 15	554 4							
Prussia.....	252 0	18 4	16 19	5 4	287 7								
Hanseatic Towns.....	435 0	45 0	59 5	132 8	48 4	719 17							
Holland.....	70 0	207 0	2 0	24 18	157 11	471 2							
Belgium.....	269 0	1 0	20 5	107 5	....	897 10							
France.....	2,244 0	....	13 13	1 7	....	2,259 0							
Portugal, Azores, and Madeira.....	172 0	....	26 8	53 2	169 18	426 8							
Turkey.....	71 0	49 0	0 18	8 19	7 4	137 1							
Syria and Palestine.....	16 0	30 0	11 0	....	5 10	62 10							
Egypt.....	102 0	21 0	1 0	....	4 18	129 8							
Western coast of Africa.....	....	84 0	7 0	....	0 6	93 19							
British possessions in S. Africa.....	....	199 0	23 0	0 16	9 9	267 4							
British territories in E. Indies.....	6 0	1,311 0	200 0	0 2	150 15	1,928 9							
Java.....	....	21 0	23 0	....	0 7	46 2							
China.....	....	2,202 0	3 0	....	0 5	2,208 4							
British settlements in Australia.....	....	438 0	147 0	2 9	7 8	795 5							
British North Amer. colonies.....	1 0	638 0	419 0	1 17	88 14	1,278 8							
British West Indies.....	....	226 0	58 0	0 5	2 17	376 1							
Foreign West Indies.....	....	62 0	46 0	0 1	22 10	153 16							
United States.....	....	6,466 0	38 0	7 16	151 4	6,764 1							
Brazil.....	....	499 0	104 0	11 1	69 5	877 10							
Uruguay.....	....	9 0	10 0	0 7	....	24 8							
Chili.....	....	107 0	15 0	0 10	0 18	142 6							
Peru.....	....	15 0	4 0	0 4	2 10	26 0							
Other places.....	....	405 0	113 0	126 8	171 2	1,039 15							
Total.....	195 0	18,641 0	1,355 0	477 13	1,181 15	23,581 9							

The annexed table shows the total product of the lead mines, and the average yearly price at Galena, Illinois.

Years.	Pig lead.	Total pounds.	Price.
1842.....	447,909	31,353,630	\$2 24
1843.....	559,261	39,148,270	2 34
1844.....	624,672	43,727,040	2 30
1845.....	778,499	54,494,860	2 96
1846.....	782,408	51,288,210	2 89
1847.....	772,656	51,095,920	3 17
1848.....	631,969	47,737,830	3 24
1849.....	623,935	41,025,350	3 67
1850.....	568,589	39,801,280	4 20
1851.....	474,115	38,188,050	4 18
1852.....	403,628	28,603,960	4 12
1853.....	425,814	29,807,930	5 50
1854.....	428,617	29,653,190	5 50
1855.....	430,865	30,125,550	5 75
1856.....	*	*	6 00

* Estimated at 25 per cent. less than 1855.

The following tables show the quantity of lead of Western production received in the port of New Orleans from 1844 to 1855 inclusive, and also of foreign lead, paying 20 per cent. duty, imported into the port of New York, from 1849, the first year of late importations of this staple, to 1856, both inclusive:

Years.	Received at New Orleans, and mostly forwarded to northern cities of U. S.	Foreign lead imported into New York.
	Pounds.	Pounds.
1844.....	44,746,830	....
1845.....	51,248,750	....
1846.....	54,977,580	....
1847.....	46,509,030	....
1848.....	36,487,620	....
1849.....	35,598,990	28,375,000
1850.....	29,078,600	30,004,240
1851.....	22,785,350	49,464,120
1852.....	18,729,480	88,451,000
1853.....	14,720,090	37,918,160
1854.....	2,456,000	55,948,900
1855.....	3,000,000	40,327,140
1856.....	1,300,000	42,281,680

Estimating the American lead to weigh 70 pounds each pig, and the foreign 140 pounds each, which is deemed about the average of both.

LEAD RECEIVED AT ST. LOUIS FROM WESTERN MINES.

Years.	Pigs.	Pounds.
1854.....	306,827	= 21,470,890
1855.....	315,677	= 22,097,890
1856.....	204,656	= 14,325,920

In 1844 the Galena mines produced 51,494,860 pounds of lead, and the price at St. Louis was about 3 cents per pound. In 1856 they landed at St. Louis 14,325,920 pounds—less than one fourth the supply of 12 years previous, and the price was about 6½ cents per pound, thus being more than doubled. In 1854 there was imported into the single port of New York 55,945,900 pounds of foreign lead—more than the Galena mines ever produced in any one year. Doubling the price, doubling the demand, has reduced the production to one quarter, and it is certain that in 1857 the western manufacturers of lead will have to procure a portion of their staple from imported foreign lead in the Atlantic cities.

STATEMENT EXHIBITING THE FOREIGN IMPORTATIONS AND EXPORTATIONS, DOMESTIC EXPORTS AND HOME CONSUMPTION OF FOREIGN IMPORTATIONS OF LEAD, AND THE MANUFACTURES THEREOF; ALSO HOME CONSUMPTION OF FOREIGN IMPORTATIONS, LESS DOMESTIC EXPORTS, OF LEAD, AND THE MANUFACTURES OF LEAD, AND DOMESTIC EXPORTS, LESS HOME CONSUMPTION OF FOREIGN IMPORTATIONS OF LEAD, AND THE MANUFACTURES THEREOF, FOR THE LAST SEVENTEEN YEARS, AND THE ANNUAL AVERAGE THEREOF.

Years.	Foreign importations.	Foreign exports.	Domestic exports.	Home consumption of foreign importations.	Home consumption of foreign importations, less domestic exports.	Domestic exports, less home consumption of foreign importations.
	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
1840....	20,356	34,090	89,687	....	....	89,687
1841....	5,959	....	117,294	5,989	....	111,305
1842....	815	....	540,217	815	....	539,402
1843*....	227	525	492,765	....	....	492,765
1844....	103	47	605,256	56	....	605,200
1845....	....	192	357,050	....	....	357,050
1846....	....	....	624,796	....	....	624,796
1847....	5,435	....	188,675	5,435	....	183,240
1848....	7,192	121	92,017	7,071	....	84,946
1849....	86,257	11,501	43,394	74,756	31,362	....
1850....	1,187,425	61,876	85,479	1,125,549	1,090,070	....
1851....	1,524,138	154,246	28,200	1,369,392	1,341,692	....
1852....	1,284,672	132,644	51,194	1,152,028	1,100,834	....
1853....	1,619,757	60,657	19,604	1,559,100	1,539,496	....
1854....	2,102,487	28,117	48,352	2,074,370	2,031,018	....
1855....	2,566,168	90,688	19,531	2,475,525	2,455,994	....
1856....	2,554,294	139,578	33,140	2,414,656	2,381,516	....
Average	564,350	54,941	198,038	943,480	1,496,498	332,048

* The year 1843 is given for nine months only, in consequence of a change in the fiscal year.

STATEMENT SHOWING THE IMPORTS OF LEAD INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Fig. bar, sheet and old.		Shot.		Pipes.		Manufactures of, not specified.
	Pounds.	Dollars.	Pounds.	Dollars.	Pounds.	Dollars.	Dollars.
Swedish West Indies.....	4,528	95	.....	.....	.....	.....	.....
Danish West Indies.....	8,758	105	.....	.....	.....	.....	.....
Hamburg.....	427,068	18,288	10,000	595	.....	.....	.....
Bremen.....	38,289	1,896	.....	.....	.....	.....	.....
Holland.....	409,784	21,284	.....	.....	.....	.....	.....
Dutch Guiana.....	291	6	.....	.....	.....	.....	.....
Belgium.....	1,257,147	55,458	.....	.....	.....	.....	.....
England.....	20,265,075	972,218	248,610	14,524	5,679	880	932
Scotland.....	.....	.....	60	8	.....	.....	.....
Gibraltar.....	6,160	197	.....	.....	.....	.....	243
Canada.....	8,825	234	.....	.....	.....	.....	1
Other British North Amer. pos.	64,807	1,811	.....	.....	.....	.....	.....
British West Indies.....	701,244	23,213	454	26	.....	.....	.....
British Guiana.....	16,315	496	.....	.....	.....	.....	.....
France on the Atlantic.....	9,244,288	415,825	850	21	.....	.....	487
France on the Mediterranean.....	13,578,997	626,288	.....	.....	.....	.....	.....
French West Indies.....	8,777	77	.....	.....	.....	.....	.....
Spain on the Atlantic.....	1,491,794	69,151	.....	.....	.....	.....	.....
Spain on the Mediterranean.....	6,642,896	297,560	183,632	8,887	.....	.....	.....
Cuba.....	4,753	135	.....	.....	.....	.....	156
Porto Rico.....	800	24	.....	.....	.....	.....	.....
Sardinia.....	32,169	1,632	.....	.....	.....	.....	.....
Mexico.....	1,091,766	22,545	.....	.....	.....	.....	15
New Granada.....	520	23	.....	.....	.....	.....	.....
Venezuela.....	215	13	.....	.....	.....	.....	.....
Total.....	55,294,256	2,528,014	448,106	24,156	5,679	880	1,884

EXPORTS OF LEAD FROM THE UNITED STATES, FOR THE YEARS ENDING JUNE 30TH, 1853, 1854, 1855, AND 1856.

Exported to	1853.		1854.		1855.		1856.	
	Pounds.	Dollars.	Pounds.	Dollars.	Pounds.	Dollars.	Pounds.	Dollars.
England.....	8,950	400	48,000	2,700	.....	.....	.....	.....
Canada.....	10,890	807	232,844	14,913	66,259	589	228,702	21,110
British Amer. col.....	225	12	56,000	3,940	1,720	187	1,425	150
Cuba.....	2,219	100	.....	.....	604	51	3,280	210
Havtl.....	65,783	3,469	8,421	521	6,183	482	.....	.....
Mexico.....	6,150	320	32,886	2,622	12,850	1,875	1,500	100
Venezuela.....	6,611	432	21,642	1,843	21,636	1,774	.....	.....
British W. Indies.....	.....	.....	390	445	3,560	304	*9,199	674
Central Republic.....	.....	.....	1,000	70	1,000	100	†40,832	3,092
New Granada.....	.....	.....	959	75	1,225	99	2,525	200
Africa.....	.....	.....	2,075	145	300	25	3,978	231
Australia.....	.....	.....	.....	.....	5,900	472	.....	.....
British East Indies.....	.....	.....	.....	.....	758	64	‡6,640	530
Porto Rico.....	.....	.....	.....	.....	209	17	500	29
Brazil.....	.....	.....	.....	.....	2,525	199	.....	.....
Buenos Ayres.....	.....	.....	.....	.....	86,181	2,714	.....	.....
Peru.....	.....	.....	.....	.....	473	39	630	73
Sandwich Islands.....	.....	.....	.....	.....	4,093	337	11,870	1,065
Total.....	100,773	5,540	404,247	26,874	165,583	14,293	310,029	27,512

* Including British Honduras and Guiana.

† Including Venezuela.

‡ China.

The production of lead at the Galena mines, of late years, has been materially reduced by the discovery of gold in California

White Lead.—The manufacturers of white lead, shot, lead pipe, etc., have petitioned Congress to place the raw material, pig lead, on the free list, and the committee reported favorably on the subject. The petition was signed by all the leading houses engaged in the trade, and the facts presented in favor of their request are numerous and conclusive. They say that for a long time previous to 1849 the domestic supply of pig lead was more than adequate to the entire domestic demand. Up to 1847 the Galena mines steadily increased in productiveness, and kept pace with the increase in consumption. Since that year the consumption has been in advance of the home supply, and the manufacturers on the seaboard have had to pay comparatively high prices for the raw material, the western States now manufacturing nearly all the pig lead they produce. Out of 60,000,000 pounds of pig lead imported into New York in 1854, only about 2,500,000 pounds were American. The duty on pig lead, by the tariff of 1846, was 20 per cent. *ad valorem*, and at the time that act was passed, it protected all domestic interests, for we produced as much lead as the country consumed. Since 1848 we have been obliged to import the bulk of our consumption, and all consumers and manufacturers are therefore injured, while foreign manufacturers are benefited by the duty now imposed on the article. Our manufacturers are shut out of all foreign markets by the enhanced price

which the duty of 20 per cent. puts upon their goods. The manufacturers ask only that pig lead should be put in the free list. It is their wish that all articles manufactured from pig lead should remain as at present, under a duty of 20 per cent. The manufacturers of articles from pig lead ask no more than the Secretary of the Treasury has repeatedly suggested in his annual reports—"that the raw materials used in our manufactures should be admitted free of duty." By the tariff of 1857, passed 3d March, the duty on lead manufactures generally was reduced from 30 per cent. to 24; lead in pig and bars from 20 to 15 per cent. Ore from 20 to 15 per cent.

Lead, for sounding. The common hand lead weighs 11 lbs. with about 20 fathoms of line. The leadsman stands somewhere on the side of the vessel, leaning against a band for the purpose; lets the lead descend near the water; then, swinging it over his head once, or twice, if the ship is going fast, throws it forward. The line is marked at 5, 7, 10, 13, 17, and 20 fathoms. The numbers between are called *deeps*: thus, "by the mark 7," "by the deep 9," indicates 7 and 9 fathoms. When the depth is great, the deep-sea lead of 28 lbs. is used. The lead is dropped from the fore part of the vessel, the line being passed outside all. It is generally necessary to heave the ship to. See SOUNDINGS.

League, a measure of length, used in reckoning distances by sea. The sea league is three nautical or geographical miles, or the 1-20th of a degree, and consequently about 3.45 English miles. The common

land league is a well-known itinerary measure on the continent of Europe, chiefly in France. The French, however, have two distinct leagues: the legal posting league (*lieue de poste*), containing 2000 toises, and equal to 2.42 English miles; and a league of 25 to the degree (anciently the *lieue moyenne*), or equal to about 2.76 English miles. This last, however, can scarcely be regarded as a definite measure; and previous to the Revolution the league was different in the different provinces. The word is said to be derived from the Celtic leach, *stone*; the distances having been marked by stones in the Roman provinces. In Gaul alone of those provinces, they were marked in some instances by leagues as well as miles. The Gaulish league was considered by the Romans as equal to a mile and a half of their own measure, or as containing 1500 Roman paces. It is supposed that the league, or *leuca*, was introduced into England by the Normans, where at an early period, it came to be reckoned as an equivalent to 2 miles of the time; this being the sense in which the term *leuca* is used by the oldest law writers, and in most of the old English charters. A league, or 3 miles, is the limit from shore generally allowed for the jurisdiction of a country to extend in fisheries, etc.; and also the limit of neutral water, in which a fugitive ship is safe. See FISHERIES and NEUTRALS. See MILE.

Leak, at sea, is a hole in the ship, through which the water comes in. A ship is said to *spring a leak*, when she begins to leak or let in the water. The manner of stopping a leak is to put into it a plug wrapped in oakum and well tarred, or to insert a tarpauling clout which keeps out the water, or to nail a piece of sheet-lead on the place. Seamen sometimes stop a leak by thrusting a piece of salt beef into it. The sea-water, says Mr. Boyle, being fresher than the brine imbibed by the beef penetrates into its body and causes it to swell so as to bear strongly against the edges of the broken plank, and thereby stops the influx of the water. A ready way to find a leak in a ship is to apply the narrower part of a speaking-trumpet to the ear and the other to the side of the ship where the leak is supposed to be; then the noise of the water rushing in at the leak will be distinctly heard, and thereby discovered.

Leakage, in commerce, an allowance in the customs, granted to importers of wine for the waste and damage the goods are supposed to receive by keeping.

Leather. The skins of various animals, in their fresh state, are flexible, tough, and elastic, and appear to be admirably adapted to the purposes of clothing. But in drying, they become hard and horny, and, on exposure to moisture, putrid. The art of restoring the supple qualities to skins, and rendering them durable, appears to have been discovered at an early period of man's history; and the word *leather*, from the Saxon *lith*, *lithe*, or *lither*, indicates the quality of suppleness. Leather is formed by the chemical union of the *dermis*, *corium*, *cutis*, or true skin of an animal, with an astringent vegetable principle, known as *tannin*, or *tannic acid*. The word *tan*, from the French *tanner*, to *tan*, appears to be derived from the low Latin *tanare*. Leather may, however, be prepared by impregnating the skin with alum, oil, or grease. In the animal hide or skin, the outer part, which is covered with hair or wool, is called the *epidermis* or *cuticle*, below which is the *reticulated tissue*, and then, in contact with the flesh, is the *dermis*, or true skin, which is the only part which admits of being tanned. It varies in thickness in different parts; the mane, the back and the rump, being thicker than the belly. The skin is converted into *gelatin*, or *glue*, by the action of boiling water.

Varieties.—Leather tanned is generally divided into three kinds, namely, *hides*, *kips*, and *skins*; and these yield different varieties of leather, such as *butts* and *backs*, which are made of the stoutest and heaviest ox-hides. When hides are tanned whole for sole leather,

they are called *crop hides*. Skins produce the lighter varieties of leather. Large quantities of hides, dry salted, are imported into the United Kingdom from South America and different parts of Europe, from the Cape of Good Hope, Morocco, etc. Calf skins are imported from the Baltic, and the calves being killed younger than in England, the leather prepared from them is used for book-binding, gloves, and ladies' shoes.

The stoutest leather is made from butts or backs. Buff leather was formerly made from the hide of the buffalo, but it is now furnished by the cow-hide, and is used chiefly for soldiers' belts. Bull-hide is thicker than cow-hide, while that of the bullock is intermediate. Calf-skin supplies the great demand for the upper part of boots and shoes. Sheep-skins form a thin, cheap leather; lamb-skins are used for gloves; goat and kid-skins form a light leather of fine quality; deer and antelope are usually *shamoyed*, or dressed in oil; horse-hide is prepared for harness-work, etc., and this, with seal-skin, is used for making enameled leather; dog-skin makes a thin tough leather, but most of the gloves sold as dog-skin are made of lamb-skin. Hog-skin makes a thin, porous leather, and is used for covering the seats of saddles. There is a large import trade in skins. The great demand for leather for the best gloves is supplied by lamb-skins from Italy, Spain, the south of France, and other parts, where, in consequence of the lamb being killed earlier than with us, the skin is small, fine, and thin, and is used instead of kid; but it is neither so strong nor so glossy. The skin of lambs that die soon after their birth are sometimes dressed with the wool, and are used for lining gloves and shoes. The best kid-skins are from the south of France; they are also imported from Germany, Switzerland, Italy, and Ireland. It is said that as soon as the kid begins to feed on herbage, the skin suffers in fineness and delicacy, and is no longer suitable for the best gloves. The best morocco leather is made from Swiss goat-skins, another kind is from Mogador and East Indian goat-skins, which are often made into black morocco, known as "black Spanish leather," from the circumstance of the first supplies having been obtained from Spain. The leather from the Cape sheep-skin is nearly equal to morocco. Hippopotamus hides are imported from south Africa, and when tanned with oak bark, they make an extremely thick and compact leather.

Tanning Materials.—The vegetable substances used in tanning have of late years become almost as numerous as the varieties of hides and skins on which they are employed. The active vegetable principle, tannin, varies somewhat according to the source from which it is derived; but it is always marked by an astringent taste, a bluish-black, or dark-green precipitate, in aqueous solutions, by admixture with a solution of one of the salts of peroxyd of iron; while, with a solution of gelatin, it gives a dirty white or brown precipitate. A cold aqueous solution of tannin, mixed in certain proportions with one of gelatin in the form of glue, size, or isinglass, forms a substance which is known as *tanno-gelatin*, which may be formed by the application of heat into a viscid elastic mass, resembling India-rubber. By the action of ether, containing a little water, on gall-nuts, pure tannin may be procured. The ethereal solution separates by repose into two layers, the lower one, which is of an amber color, being a solution of tannin in water; while the upper layer contains gallic acid, mixed with other substances. On gently evaporating the aqueous solution, nearly pure tannin is procured, to the extent of from 35 to 40 per cent. from galls. Obtained in this way, it is a shining, porous, uncrystallizable mass; it is soluble in water, and then exerts the properties of an acid. By exposure to air it absorbs oxygen, and gives off a carbonic acid; two new products, gallic acid and ellagic acid, being formed at the expense of the tannin, the latter being insoluble. Tannin may be precipitated from its

solutions by sulphuric and some other acids; by boiling the precipitate with sulphuric acid for a few minutes in a dilute solution of the same acid, gallic acid is formed, and crystallizes in cooling. Gallic acid exists in gall-nuts, sumach, vallonea, tea, and other substances, and probably arises from the decomposition of tannin. It does not combine with gelatin, and is, therefore, useless in tanning. Some tanners, however, imagine the gallic acid of the waste liquor to be useful in swelling or raising the hides, preparatory to removing them to a stronger liquor. It is important to the tanner to understand the circumstances under which tannin is converted into gallic acid; they are numerous and somewhat complicated, and their investigation belongs to the scientific chemist, to whom the manufacturer already owes so many obligations.

During a long period the principal tanning material has been oak bark. That which is stripped in the spring is the most esteemed, for it then contains a larger quantity of tannin than that stripped in autumn, and this more than the bark stripped in winter. The best bark is obtained in a warm spring, from coppice-trees about 12 years of age. Oak bark contains from 5.6 to 6.0 of tannin, which is contained in the inner white layers next the albumen, as in the case of other astringent barks. The tannin of bark is probably not identical with that of galls, as it does not yield pyrogallie acid when subjected to destructive distillation. From four to six pounds of oak bark are required for every pound of leather. After the stripping, the bark is stacked to dry. Should the season be rainy a portion of the tannin may be washed out, and the bark be thus deteriorated. There is no doubt that the peculiar excellence of the sole leather of England is due in great measure to the superior oak bark which is possessed. Oak bark imparts firmness and solidity to leather, while other sorts give softness; thus the peculiar softness of French curried leather is referred to the bark of the evergreen oak, with which the better kinds are tanned, while the other tanning materials next to be named give each its peculiar quality with respect to color, scent, toughness, or the power of resisting moisture and decay.

The other tanning materials, used chiefly for fancy leathers, are as follows:—Sumach, consisting of the young branches and powder of the leaves of *Rhus Coriaria*, *Venus sumach*, or the wild olive, and *Rhus Coriaria*. Sumach varies in its amount of tannin from 16.4 per cent. in Malaga and Sicilian specimens, to 10 and 5 in Virginia and Carolina sumach. The solution is liable to fermentation. *Divi*, or *divi-divi*, is the pod of a South American shrub, *Cospalpinia Coriaria*. The pod is dark-brown, about three inches long, and curled up as if by heat. It is rich in tannin, the whole of which is found in the rind below the epidermis. Vallonea, consisting of the acorn cups of *Quercus Egilops*, or prickly-cupped oak, growing in the Morea. A smaller kind, called *camata*, containing a larger proportion of tannin, is for the most part used by the silk dyers. About two pounds of vallonea are required for making one pound of leather. Vallonea and oak bark may be mixed together with good effect. *Catechu*, *cutch*, *Terra japonica*, or *terra*, are the inspissated aqueous extracts of the bark, wood, and leaves of the *Acacia Catechu*, and *Uncaria gambier*. The two varieties are known in commerce as catechu, or gambier, and cutch; that from Bombay is richer in tannin than that from Bengal. *Myrobalan* is a name given to the fruit of several East India trees; the husk, being the portion valuable to the tanner, is separated by bruising the nut which it incloses. *Mimosa* or *Wattlebark* is furnished by different species of *Mimosa* growing in Australia and New Zealand. *Cork-tree bark* is the inner bark of the cork oak, the outer, or dead bark being the well-known substance, cork. It is obtained from Corsica, Spain, and a few other countries, and contains twice as much tannin as average oak bark. *Larch bark* is sometimes used for tanning sheep-skins,

and *Willow bark* for kid and lamb-skins. The last-named bark is used in making Russia leather, but its peculiar odor is given by means of the oil of birch-tree bark. In addition to the tannin contained in the above substances, there are mucilaginous, coloring and other matters which have an influence on the kind of leather produced. The tannin itself may also vary in different materials; thus catechu and divi give a more porous leather than oak bark or vallonea, while larch bark gives a very inferior leather to that prepared from oak bark. The coloring matter in some excellent tanning materials prevents their use, since it is the custom to sell both upper and sole leathers of a yellowish-fawn color, and any thing which interfered with the production of this tint would be objected to; thus, catechu and cutch would be among the cheapest of tanning materials, were it not that they impart to the leather a reddish-brown color, which would in no way interfere with the dressing or currying.

STATEMENT SHOWING THE EXPORTS OF LEATHER FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whither exported.	Leather.		Boots and shoes of leather.	
	Pounds.	Dollars.	Pairs.	Dollars.
Russian Poss. N. Amer.	.....	.....	2,004	8,530
Danish West Indies	11,723	2,474	6,172	7,857
Hamburg	20,000	4,670	.....	.....
Bremen	1,200	225	.....	.....
Holland	1,000	150	.....	.....
Dutch West Indies	11,447	2,460	.....	.....
Dutch Guiana	400	57	.....	.....
Dutch East Indies	86	23	.....	.....
Belgium	5,000	750	200	185
England	43,707	9,785	4,905	8,377
Scotland	84,866	4,826	.....	.....
Canada	393,194	181,049	215,100	882,748
British N. Amer. pos.	379,891	80,141	153,513	142,115
British West Indies	3,610	820	20,870	17,682
British Honduras	.....	.....	4,992	5,955
British Guiana	750	227	.....	.....
British poss. in Africa	.....	.....	2,191	2,049
British Australia	.....	.....	143,585	358,770
New Zealand	.....	.....	100	250
French N. Amer. poss.	1,056	258	252	210
French West Indies	300	56	.....	.....
Cuba	25,543	4,936	11,154	11,654
Porto Rico	.....	.....	342	211
Cape de Verd Islands	.....	.....	900	778
Turkey in Europe	.....	.....	468	410
Turkey in Asia	.....	.....	588	543
Other ports in Africa	.....	.....	2,708	3,675
Hayti	6,122	1,371	10,469	12,758
San Domingo	.....	.....	2,042	2,055
Mexico	2,425	405	580	730
Central Republic	600	70	3,946	4,770
New Granada	3,200	752	7,837	10,652
Venezuela	11,594	3,902	4,040	8,227
Brazil	4,300	763	1,304	1,142
Uruguay	.....	.....	3,000	2,524
Buenos Ayres	300	68	13,436	18,567
Chili	.....	.....	17,322	14,515
Peru	4,000	686	19,753	17,237
Sandwich Islands	3,642	822	26,746	30,432
China	2,600	541	2,128	4,199
Whale Fisheries	212	57	494	560
Total	972,768	252,344	688,140	1,060,967

IMPORTS OF LEATHER MANUFACTURES INTO THE UNITED STATES, FOR THE YEARS ENDING JUNE 30TH, 1853, 1854, 1855.

Leather.	1853.	1854.	1855.
	Dollars.	Dollars.	Dollars.
Tanned, bend and sole	28,267	\$50,147	\$50,147
Tanned and dressed upper	1,052,120	1,265,630	1,252,969
Skins tanned and dressed	436,666	518,636	496,081
Skins tanned & not dressed	16,520	19,838	.....
Skivers	39,760	50,433	68,496
Boots	54,601	68,677	90,813
Shoes and pumps	87,603	33,126	.....
Gloves	1,868,997	1,326,335	926,225
General	251,748	397,382	225,926
Total	3,816,282	3,661,204	3,069,800

Grained Leather, which is carried on the hair or grained side, is called *black on the grain*, and is mostly used for the upper leathers of ladies' shoes. In preparing such leather, the waxing is performed as follows: A solution of sulphate of iron, called *copperas-water*, or *iron-liquor*, is applied to the grain side of the wet skin, when the salt, uniting with the gallic acid of the tan,

produces an ink dye; stale urine is then applied to the skin, and when dry, the stuffing is applied. The grain is raised, and when dry the skin is whitened, bruised, and again grained; after which a mixture of oil and tallow applied to the grain side, completes the process.

Varnished and Enameled Leather.—For many years it was found difficult to cause a bright varnish to adhere to leather without cracking, an effect which is now produced by means of boiled linseed oil, mixed

with vegetable black and Prussian blue. This composition, of the consistence of a thick paste, is rubbed upon the surface of the leather, and then dried at a temperature of from 150° to 170° Fahr. The process is repeated from 3 to 7 times, and when quite dry, the varnish adheres very firmly, and will bear considerable flexure and tension without cracking. By mixing colored pigments with the varnish, enameled leather of various colors may be produced.

STATEMENT SHOWING THE IMPORTS OF LEATHER AND MANUFACTURES OF LEATHER, INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Tanned, bend, sole, and upper.		Skins tanned and dressed.		Skivers.		Boots and shoes.		Gloves for men, women, and children.		Manufactures of leather not specified.
	Pounds.	Dollars.	Dozen.	Dollars.	Dozen.	Dollars.	Pairs.	Dollars.	Dozen.	Dollars.	
Prussia.....	1,659	796	42	506	.....	.....	.....	.....	.....	.....	.....
Swedish West Indies.....	.....	.....	1	0	.....	.....	.....	.....	.....	.....	.....
Danish West Indies.....	.....	.....	40	181	.....	.....	.....	.....	.....	.....	.....
Hamburg.....	83,591	12,645	643	7,272	.....	.....	828	1,208	15	62	5,372
Bremen.....	74,678	29,594	2,551	22,338	289	1,779	1,065	1,985	15,626	79,865	52,889
Holland.....	18,890	8,411	53	625	.....	.....	716	2,048	.....	.....	1,065
Belgium.....	108,611	42,702	101	1,081	.....	.....	.....	.....	.....	.....	944
England.....	411,837	141,168	39,184	283,400	11,035	54,730	36,255	85,656	118,261	560,010	79,025
Scotland.....	7,190	1,538	1,585	12,304	.....	.....	.....	.....	.....	.....	208
Malta.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	49
Canada.....	8,300	1,947	56	895	.....	.....	451	495	.....	75	3,264
Other Br. N. Amer. pos.....	1,646	508	54	286	.....	.....	30	81	.....	.....	11
British W. Indies.....	.....	.....	100	553	.....	.....	98	228	.....	.....	21
British Guiana.....	.....	.....	65	239	.....	.....	.....	.....	.....	.....	.....
British Australia.....	.....	.....	273	8,408	.....	.....	120	154	.....	.....	.....
British East Indies.....	.....	.....	19,455	47,402	.....	.....	.....	.....	.....	.....	.....
France on the Atlantic.....	8,843,480	1,669,889	34,637	873,935	2,325	12,653	22,777	40,210	141,998	693,641	168,640
France on the Mediter.....	6,035	8,816	32	183	.....	.....	514	338	100	174	46
Philippine Islands.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21
Cuba.....	497	386	.....	.....	.....	.....	40	79	.....	.....	.....
Portugal.....	970	320	.....	.....	.....	.....	.....	.....	.....	.....	.....
Two Sicilies.....	.....	.....	.....	.....	.....	.....	.....	.....	80	68	.....
Turkey in Asia.....	.....	.....	40	154	.....	.....	.....	.....	.....	.....	.....
Other ports in Africa.....	.....	.....	10	44	.....	.....	.....	.....	.....	.....	.....
Mexico.....	1,055	211	1	13	.....	.....	0	5	.....	.....	638
Central Republic.....	366	71	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Granada.....	446	171	24	283	.....	.....	8,921	5,950	8,310	10,655	531
Brazil.....	150	60	18	74	.....	.....	.....	.....	.....	.....	.....
Uruguay.....	.....	.....	197	914	.....	.....	.....	.....	.....	.....	.....
Buenos Ayres.....	.....	.....	426	2,797	.....	.....	.....	.....	.....	.....	.....
Chili.....	250	59	.....	.....	.....	.....	.....	.....	.....	.....	.....
China.....	.....	.....	28	820	.....	.....	.....	.....	.....	.....	2,524
Total.....	4,519,651	1,919,987	99,561	758,758	13,599	69,219	60,821	138,372	279,849	1,344,550	310,243

STATISTICS OF THE TANNERIES IN THE UNITED STATES, ACCORDING TO THE CENSUS OF 1850.

States.	No. of tanneries.	Capital invested.	No. of hides and skins.		Value raw material.	No. of hands employed.		Monthly wages.		No. of sides of leather, skins, etc., produced.		Value of manufacs.
			Hides.	Skins.*		Males.	Fem.	Males.	Fem.	Skins.	Sides leath.	
		Dollars.			Dollars.			Dollars.	Dollars.			Dollars.
Maine.....	213	732,747	316,334	81,850	892,343	787	3	17,229	28	81,850	632,665	1,620,636
New Hampshire.....	163	441,975	166,579	109,595	543,779	502	.....	11,737	.....	109,595	883,158	900,421
Vermont.....	152	346,250	125,052	44,380	357,946	890	.....	8,807	.....	44,380	250,104	557,466
Massachusetts.....	246	1,377,725	753,220	293,000	2,311,178	1,510	32	41,245	363	293,000	1,500,440	3,519,123
Rhode Island.....	10	42,900	10,571	14,861	40,615	85	.....	829	.....	14,861	21,142	75,040
Connecticut.....	115	360,500	122,455	67,110	453,354	407	.....	10,027	.....	67,110	244,910	731,000
New York.....	942	5,025,143	1,707,862	871,894	6,065,221	4,914	31	103,171	293	871,894	3,415,724	9,800,000
New Jersey.....	133	572,557	101,435	120,731	423,537	405	.....	8,946	.....	120,731	202,970	724,466
Pennsylvania.....	1,039	3,540,318	926,450	293,798	3,169,309	2,978	2	54,754	17	293,798	1,832,900	5,275,492
Delaware.....	16	99,350	26,050	12,950	99,020	108	.....	2,538	.....	12,950	52,100	163,742
Maryland.....	116	628,900	169,555	68,810	725,612	479	.....	8,034	.....	68,810	889,170	1,103,139
Virginia.....	341	676,988	169,200	74,673	493,926	900	6	13,643	62	74,673	373,400	894,877
North Carolina.....	151	251,055	77,805	24,835	191,237	372	1	5,291	4	24,835	155,610	352,535
South Carolina.....	91	134,335	55,000	13,930	181,679	264	.....	3,667	.....	13,930	110,000	261,332
Georgia.....	140	262,585	81,484	21,705	185,604	402	.....	7,107	.....	21,705	162,968	361,536
Florida.....	4	9,400	2,100	1,200	4,300	12	.....	189	.....	1,200	4,200	9,200
Alabama.....	149	210,570	79,093	13,922	158,247	457	5	7,700	45	13,922	158,066	395,911
Mississippi.....	92	145,615	52,315	9,730	111,474	266	3	4,924	25	9,730	104,639	229,407
Louisiana.....	15	33,800	10,500	2,850	26,440	51	3	900	22	2,850	21,000	55,025
Texas.....	22	33,550	9,350	1,750	19,624	63	1	1,007	10	1,750	18,700	52,050
Arkansas.....	51	42,100	16,450	3,851	85,280	110	.....	1,814	.....	3,851	32,900	75,774
Tennessee.....	394	490,320	168,944	43,429	396,159	915	6	14,338	32	43,429	393,388	746,454
Kentucky.....	275	763,455	196,200	69,580	537,147	877	2	14,417	9	69,580	892,440	985,267
Ohio.....	706	1,340,389	844,280	228,493	1,118,080	1,326	.....	35,530	.....	228,493	688,560	1,964,591
Michigan.....	60	236,000	72,365	23,600	203,450	265	.....	6,782	.....	23,600	144,730	363,930
Indiana.....	358	514,397	141,549	57,070	405,838	826	2	15,199	14	57,070	253,098	718,813
Illinois.....	96	138,373	50,825	21,575	129,907	240	.....	5,145	.....	21,575	101,650	244,028
Missouri.....	148	228,095	120,667	44,493	247,956	412	5	8,806	41	44,493	241,394	466,241
Iowa.....	14	20,350	5,340	850	10,745	23	.....	543	.....	850	10,630	24,520
Wisconsin.....	2	78,950	29,300	14,900	93,380	75	.....	1,710	.....	14,900	59,000	175,710
California.....	1	500	120	.....	200	3	.....	60	.....	.....	240	940
Dist. of Columbia.....	2	25,000	5,000	4,200	25,600	10	.....	270	.....	4,200	10,000	40,000
Total.....	6,263	18,900,557	6,128,970	2,653,865	19,618,237	20,909	102	416,214	970	2,653,865	12,257,940	32,861,796

* There are about 6,000,000 sheep, goat, and other small skins dressed annually which are not included in the above table.

Thin Leather.—The process of tanning differs considerably in the mode of treatment, with the kind of skin, and the result desired. A large number of thin leathers which are intended to be dyed, are tanned in various ways. White leathers are not tanned, but

tawed; or treated with alum, salt, and some other matters. Wash leather is dressed with oil, or shamed. But whatever may be the subsequent treatment, the preparatory steps somewhat resemble each other, whereby hair, wool, grease, and other matters, are

removed, and the skin is reduced to the state of a gelatinous membrane called *pelt*. The hair is removed from kid and goat-skins by means of cream of lime; the wool is generally removed by the fell-mongers before the skin is passed to the tawers. Foreign lamb-skins, which are received with the wool on, are washed, scraped on the flesh side, and sweated in a close room, until, in consequence of the putrefactive fermentation, the wool can be easily removed. After this, fatty

matters are got rid of by subjecting the skins to hydrostatic pressure; they are next worked at the beam, and pared into shape, treated with lime, and next with dogs' or pigeons' dung if the skins are to be tanned, and with bran and water if they are to be tawed, the object being in either case to get rid of the lime. During these operations the skins are worked a few times at the beam, and are finished by washing in clean water.

EXPORTS OF LEATHER AND MANUFACTURES OF LEATHER, FROM THE UNITED STATES, FOR THE YEARS ENDING JUNE 30TH, 1853, 1854, 1855.

Exported to	1853.			1854.			1855.			
	Leather.	Boots and Shoes.	Value.	Leather.	Boots and Shoes.	Value.	Leather.		Boots and Shoes.	
	Pounds.	Pairs.	Dollars.	Pounds.	Pairs.	Dollars.	Pounds.	Dollars.	Pairs.	Dollars.
Swedish West Indies.....	378	73	73	900	182	182	643	117	...	...
Danish West Indies.....	7,892	6,379	7,692	14,045	9,223	11,546	80,927	6,368	13,088	10,161
Dutch West Indies.....	9,239	1,593	15,266	15,266	2,695	15,027	2,854	...	...	...
England.....	573,872	86	85,071	541,639	3,275	87,031	457,993	79,400	3,702	4,913
Scotland.....	163,120	...	26,500	332,957	...	53,673	194,239	26,053	...	...
Gibraltar.....	250	...	52	...	...	...	...	...	...	...
Honduras.....	8,366	2,959	4,451	5,476	6,530	10,744	12,080	2,143	8,945	8,160
British Guiana.....	732	2,623	2,934	1,925	626	1,175	2,724	713	3,870	3,896
British West Indies.....	3,651	18,866	18,436	9,063	17,133	17,592	12,077	1,859	27,651	24,746
Canada.....	179,576	70,671	104,373	490,008	106,842	271,447	238,790	75,835	112,484	206,433
British American colonies.....	190,297	113,322	121,645	266,990	155,495	219,562	417,536	74,650	161,487	172,011
Australia.....	468	126,452	193,788	4,100	42,791	84,363	...	...	83,863	186,054
Miquelon and Brit. E. Indies.....	150	...	190	...	...	...	...	...	391	640
Teneriffe.....	1,150	...	261	...	...	...	...	...	...	...
Cuba.....	21,866	14,704	3,562	19,295	1,743	5,598	80,550	5,245	340	365
Spanish West Indies.....	594	25	145	...	48	59	...	...	...	...
Madeira.....	...	85	64	200	...	35	...	...	...	...
Cape de Verd Islands.....	...	60	66	...	268	300	...	...	946	946
Hayti.....	6,266	22,794	19,876	15,241	14,316	16,255	10,299	1,899	4,372	4,062
Mexico.....	500	1,243	1,361	2,256	1,802	1,446	1,500	216	1,630	8,026
Central American Republic.....	...	5,214	6,089	2,490	1,946	3,955	...	...	5,213	4,331
New Granada.....	264	6,500	7,880	116	7,669	9,317	1,500	274	13,525	11,798
Venezuela.....	8,852	2,250	4,212	19,340	2,594	6,526	10,539	2,750	3,665	7,513
Brazil.....	260	10	63	...	2,132	2,191	1,800	250	2,174	2,008
Uruguay.....	...	4,972	4,095	...	25	75	...	...	1,652	1,633
Argentine Republic.....	...	7,960	5,524	...	5,483	5,369	12,000	2,080	16,004	13,730
Peru.....	...	7,729	8,573	1,110	8,330	10,813	...	...	27,556	36,503
Chili.....	...	6,324	7,535	...	30,632	29,227	2,567	425	72,696	64,578
China.....	...	...	...	4,500	1,0	1,829	3,500	804	3,268	3,502
South America generally.....	...	3,340	3,324	...	62	75	...	...	...	...
West Indies generally.....	60	780	1,146	...	...	...	11,501	2,318	446	512
Africa.....	...	2,836	2,950	...	2,310	2,572	...	...	4,625	4,623
Indian Ocean.....	...	300	340	...	...	...	...	...	...	...
South Seas and Pacific Ocean.....	1,350	22,623	25,223	9,034	27,876	30,146	2,147	521	31,732	32,240
Other places.....	...	...	...	5,325	5,385	9,162	17,546	2,513	5,356	5,372
Total Exports.....	1,172,561	440,709	673,708	1,763,066	455,630	593,723	1,400,938	288,867	610,104	763,539

Morocco.—Morocco leather is prepared by tanning goat-skins with sumach, and dyeing on the grain side. Inferior moroccoes are prepared from sheep-skins similarly treated, for which purpose each skin of pelt is sewed up into a bag, the grain side outermost, distended with air, and placed in a mordant of tin or alum. They are next placed in a warm cochineal bath for red, indigo for blue, orchil for purple, and are worked by hand until the dye has properly struck. For certain colors the tanning precedes the dyeing. The tanning or sumaching is carried on in a large tub, containing a weak solution of sumach in warm water; another and stronger solution is contained in an adjoining vessel, a portion of which, together with some sumach leaves, is poured into the bag; some of the weak solution is then added, the bag is then distended with air, and the skin thrown into the vat. In this way about 50 skins are treated, and are kept in motion a few hours in the sumach tub by means of paddles worked by hand or by machinery. The skins are then taken out and heaped up on a shelf at the side of the tub, the pressure thus produced causing the liquor to escape slowly through the pores of the skin, the bags being shifted about from time to time. The bags are next passed into a second vat containing a stronger solution, where they remain for 9 hours. The bags are now opened and washed; fine red skins being finished in a bath of saffron. All the skins are next struck on a sloping board until they are smooth and flat, and in order to improve their appearance in the currying, a little linseed oil may be rubbed on the grain side. They are then hung up in a loft to dry, when they become horny, and are in the crust, as it is

called. They next pass through much laborious friction with the pommel, and with a glass-ball; while the peculiar ribbed appearance of morocco is given by means of a ball of box-wood, on which is a number of narrow ridges. Sheep-skin morocco is prepared from split skins; the skin-splitting machine resembles in principle that already described, only as the membrane is thinner certain variations are required. Instead of stretching the skin on a drum, it is passed between two rollers, the lower one of gun-metal, and solid, and the upper made of gun-metal rings; while between the two rollers, and nearly in contact, is the edge of the sharp knife, which is moved by a crank, as already mentioned. When a skin is introduced between the two rollers, it is dragged through against the knife edge and divided, the solid lower roller supporting the membrane, while the upper one, being capable of moving through a small space by means of its rings, adjusts itself to inequalities in the membrane; where this is thin the rings become depressed, and where it is thick they rise up, so that no part escapes the action of the knife. The divided skins are not sewed up into bags, as from their thinness they can be sumached quickly.

In preparing white leather by tawing, the pelt is made as pure as possible; the best kind of leather being prepared from kid-skins, while sheep or lamb-skins make the inferior kinds. They are first fed with alum and salt in a drum or tumbler made like a huge churn; about 3 lbs. of alum, and 4 lbs. of salt being used to 120 skins of medium size. The alumina of the alum probably forms some definite compound with the gelatin of the skins, while the salt serves to whiten them.

When taken out, the skins are washed in water, then allowed to ferment in bran and water, to remove the surplus alum and salt, and to reduce the thickness. They are next dried in a loft, and become tough and brittle, but they are made soft and glossy by means of a dressing of 20 lbs. of wheat flour, and yolks of 8 dozen eggs. By rotating the skins in the drums for some time the dressing is absorbed, and scarcely any thing but water remains. This dressing is usually repeated, and the skins are hung up to dry. The beautiful softness and elasticity of this leather is now given by manipulation. The skins are first dipped in clean water, worked upon a board, and staked upon a stretching, or softening iron, consisting of a rounded iron plate fixed to the top of an upright beam, by which the skins become extended and made smooth. They are finished by being passed over a hot iron.

STATEMENT EXHIBITING THE FOREIGN IMPORTS AND EXPORTS AND DOMESTIC EXPORTS, TOGETHER WITH THE HOME CONSUMPTION OF FOREIGN IMPORTATIONS OF LEATHER, AND THE MANUFACTURES THEREOF, FOR THE LAST SEVENTEEN YEARS, AND THE YEARLY AVERAGE THEREOF.

Years.	Foreign importations.	Foreign exports.	Domestic exports.	Home consumption of foreign importations.
	Dollars.	Dollars.	Dollars.	Dollars.
1840.....	542,498	14,248	238,917	528,250
1841.....	809,854	22,503	232,272	787,351
1842.....	912,585	10,253	191,427	902,382
1843*.....	287,217	3,446	142,137	233,771
1844.....	778,407	5,216	243,197	773,191
1845.....	979,886	40,263	344,454	939,623
1846.....	1,130,064	5,193	373,138	1,124,871
1847.....	1,060,818	2,330	273,672	1,058,488
1848.....	1,390,492	6,692	210,578	1,383,800
1849.....	1,460,125	13,098	161,201	1,447,027
1850.....	2,107,520	16,066	193,593	2,091,454
1851.....	2,815,663	26,049	472,147	2,789,614
1852.....	2,627,911	23,787	447,325	2,604,124
1853.....	3,816,232	40,670	639,156	3,275,612
1854.....	3,661,204	82,633	9,605	3,578,571
1855.....	3,069,860	132,700	324,912	2,931,160
1856.....	4,585,122	73,297	1,319,076	4,461,325
Yearly average.	1,849,143	30,850	397,227	1,818,298

* The year 1843 represents but nine months, in consequence of a change in the fiscal year.

STATEMENT EXHIBITING THE FOREIGN IMPORTATIONS AND EXPORTATIONS, DOMESTIC EXPORTS AND HOME CONSUMPTION OF FOREIGN IMPORTATIONS OF HIDES AND SKINS IN THE UNITED STATES, FOR THE LAST SEVENTEEN YEARS, AND THE YEARLY AVERAGE THEREOF.

Years.	Foreign importations.	Foreign exports.	Domestic exports.	Home consumption of foreign importations.
	Dollars.	Dollars.	Dollars.	Dollars.
1840.....	2,756,214	.....	112,500	2,756,214
1841.....	3,457,243	63,972	45,898	3,399,276
1842.....	4,067,816	64,752	58,187	4,008,064
1843*.....	2,619,815	7,528	59,340	2,612,257
1844.....	.....	.....	62,653	.....
1845.....	.....	.....	111,636	.....
1846.....	.....	.....	143,323	.....
1847.....	1,529,948	.....	181,394	1,529,948
1848.....	4,262,069	.....	36,145	4,262,069
1849.....	3,507,300	127,616	29,390	3,379,634
1850.....	4,799,031	78,822	71,940	4,720,209
1851.....	5,964,838	103,638	86,624	5,861,200
1852.....	4,823,119	101,044	55,421	4,722,075
1853.....	5,919,391	67,632	25,955	5,851,759
1854.....	7,620,272	179,793	29,622	7,440,479
1855.....	8,048,015	304,088	861,928	7,743,927
1856.....	8,083,292	101,924	101,174	7,951,368
Yearly average.	4,818,455	109,164	91,305	4,732,638

* Year 1843 is given for nine months only, in consequence of a change in the fiscal year.

† For but six months.

See HIDES, for the imports into, and exports from, the United States, of hides and leather.

Ledger, the principal book of accounts kept by merchants and tradesmen, wherein every person's account is placed by itself, after being extracted from the Journal. For an extended summary of the laws of different countries regulating the keeping of accounts, see LEONE LEVI'S *Commercial Law of the World*.

Lee, an epithet used by seamen to distinguish that part of the hemisphere to which the wind is directed from the other part whence it blows, and which is accordingly called to *windward*. This expression is chiefly used when the wind crosses the line of a ship's course, so that all on one side of her is called to windward, and all on the other side to leeward. Hence, *under the lee*, implies further to the leeward, or further from that part of the horizon whence the wind blows. Under the lee of the shore, means a short distance from the shore which lies to windward. This phrase is commonly understood to express the situation of a vessel anchored, or sailing under the weather-shore, where there is always smoother water and less danger of heavy seas than at a great distance from it. *Lee lurches*, the sudden and violent rolls which a ship often makes to the leeward in a high sea particularly when a large wave strikes her on the weather-side. *Lee side*, all that part of a ship or boat that lies between the mast and the side furthest from the direction of the wind; or, otherwise, that part of a ship which is pressed down toward the water by the effort of the sails, as separated from the other half by a line drawn through the middle of her length. That part of the ship which lies to windward of this line is accordingly called the weather side. Thus, admit a ship to be sailing southward with the wind at east, then is her starboard or right side the lee side, and the larboard or left the weather side.

Leeward Ship, signifies a vessel that falls much to leeward of her course when sailing close-hauled and consequently loses much ground. To leeward, toward that part of the horizon which lies under the lee, or whither the wind blows. Thus, "We saw a fleet under the lee," and "we saw a fleet to leeward," are synonymous expressions.

Lee-way, in navigation, is the deviation of the course actually run by a ship from the course steered upon; or it is the angle formed between the line of the ship's keel and the line which she actually describes through the water. In consequence of the action of the wind or currents, a ship is generally impelled *sideways* as well as forward, whence the direction of her motion is different from that of the keel.

Leeward Islands, a name frequently applied to those of the West India Islands lying between N. lat. 15° and 19°, and W. long. 60° 30' and 65° 40'. The group comprises the British possessions of Antigua, Dominica, Montserrat, Nevis, St. Christopher's, Anguilla, Barouda, and the Virgin Islands, which are all included under one government. The French, Dutch, Danes, etc., have also possessions in the group. There are 23 islands, besides numerous islets, having in all an area of about 1700 square miles, and a population of about 321,000.

Leech-Fishery. The demand for the medicinal leech (*Hirudo medicinalis*) is so great as to afford employment to a considerable number of persons in catching and selling the animal. It is common throughout Europe, America, and India, inhabiting lakes and pools. Norfolk supplies the greater part of the leeches brought to the London market; but some are taken in Kent, Suffolk, Essex, and Wales; and large quantities are imported from Bordeaux and Lisbon. They are caught in spring and autumn by people who wade into the pools and allow them to fasten on their limbs; or more generally the catchers beat, as they wade in the surface of the water with poles, which sets the leeches in motion, and brings them to the surface; when they are taken with the hand, and put into bags. As they come to the surface just before a thunder storm, this is regarded a good time for collecting them.—THOMSON. We extract from the *Gazette des Hôpitaux* the following interesting account of the fishery of leeches at La Brenne, in France:

"The country about La Brenne is, perhaps, the most uninteresting in France. The people are miserable-looking, the

cattle wretched, the fish just as bad—but the leeches are admirable. If ever you pass through La Brenne, you will see a man, pale and straight-haired, with a woollen cap on his head, and his legs and arms naked; he walks along the borders of a marsh, among the spots left dry by the surrounding waters, but particularly wherever the vegetation seems to preserve the subjacent soil undisturbed; this man is a leech-fisher. To see him from a distance—his woe-begone aspect—his hollow eyes—his livid lips—his singular gestures—you would take him for a patient who had left his sick bed in a fit of delirium. If you observe him every now and then raising his legs, and examining them one after the other, you might suppose him a fool; but he is an intelligent leech-fisher. The leeches attach themselves to his legs and feet as he moves among their haunts; he feels their presence from their bite, and gathers them as they cluster about the roots of the bull-rushes and sea-weeds, or beneath the stones covered with green and gluey moss. Some repose on the mud, while others swim about, but so slowly that they are easily gathered with the hand. In a favorable season, it is possible, in the course of three or four hours, to stow ten or twelve dozen of them in the little bag which the gatherer carries on his shoulder. Sometimes you will see the leech-fisher armed with a kind of spear or harpoon; with this he deposits pieces of decayed animal matter in places frequented by the leeches; they soon gather round the prey, and are presently themselves gathered into a little vessel half full of water. Such is the leech-fishery in spring. In summer the leech retires into deep water; and the fishers have then to strip naked, and walk immersed up to the chin. Some of them have little rafts to go upon; these rafts are made of twigs and rushes, and it is no easy matter to propel them among the weeds and aquatic plants. At this season, too, the supply in the pools is scanty; the fisher can only take the few that swim within his reach, or those that get entangled in the structure of his raft. It is a horrid trade, in whatever way it is carried on. The leech-gatherer is constantly more or less in the water, breathing fog and mist and fetid odors from the marsh; he is often attacked with ague, catarrhs, and rheumatism. Some indulge in strong liquors to keep off the noxious influence, but they pay for it in the end by disorders of other kinds. But, with all its forbidding peculiarities, the leech-fishery gives employment to many hands: if it be pernicious, it is also lucrative. Besides supplying all the neighboring *pharmaciens*, great quantities are exported, and there are regular traders engaged for the purpose. Henri Chartier is one of those persons; and an important personage he is when he comes to Meobecq, or its vicinity; his arrival makes quite a fête—all are eager to greet him. Among the interesting particulars which I gathered in La Brenne relative to the leech-trade, I may mention the following: One of the traders—what with his own fishing and that of his children, and what with his acquisitions from the carriers, who sell quantities *second-hand*—was enabled to hoard up 17,500 leeches in the course of a few months; he kept them deposited in a place where, in one night, they all became frozen *en masse*. But the frost does not immediately kill them; they may generally be thawed into life again. They easily, indeed, bear very hard usage. I am told by one of the carriers, that he can pack them as closely as he pleases in the moist sack which he ties behind his saddle; and sometimes he stows his cloak and boots on top of the sack. The trader buys his leeches *pêle mêlé*, big and little, green and black—all the same; but he afterward sorts them for the market. Those are generally accounted the best which are of a green ground, with yellow stripes along the body."

A tract published at Paris in 1845, by M. Joseph Martin, leech-merchant, contains a great variety of curious and instructive details in regard to the natural history of leeches, the trade carried on in them, and the frauds of the dealers. They are, we believe, much more extensively used in medical practice in France than in England; and, at all events, their consumption in the former seems to be quite immense. Notwithstanding the exhaustion of some of the marshes and ponds in different parts of the country, whence supplies of leeches were formerly procured, great numbers are still obtained at home. By far the larger portion of the necessary supplies is, however, brought from abroad; principally from Germany, Spain, Sardinia, Turkey in Europe, Algiers, Asia Minor, etc. In the French custom-house the imports are estimated at 500 leeches per kilog.; but M. Martin affirms that 1000 leeches do not, at an average, weigh more than a kilog. Hence the numbers and values of the leeches imported

into France during each of the five years ending with 1847, will be:

Years.	Numbers, according to official Returns.	Numbers corrected.	Official Value, Francs.
1843	17,607,696	85,215,892	528,281
1844	15,232,673	80,465,346	456,980
1845	13,843,483	27,686,960	415,304
1846	12,721,545	26,448,090	381,647
1847	11,790,840	23,581,680	358,710

See DE BOW'S *Rev.*, xiii., 80.

Leghorn, a city and sea-port of Italy, in Tuscany, lat. 43° 33' 6" N., long. 10° 16' 45" E. Population, in 1851, 84,000. Leghorn has an outer harbor, protected by a fine mole, running in a north north-west direction upward of half a mile into the sea, and a small inner harbor or basin. The water in the harbor is rather shallow, varying from 8 feet in the inner basin to 18 or 19 feet at the end of the mole. The rise of the tides is about 14 inches. Ships lie within the mole with their sterns made fast to it by a cable, and an anchor out ahead. The light-house is built on a rock a little to the south-west of the mole. It is a conspicuous object, being about 170 feet above the level of the sea. The roadstead lies west north-west of the harbor, between it and the Melora bank. The latter is sandy, lying north and south, 4 miles in length by 2 in breadth, the side nearest the shore being about 4 miles from it. It consists, for the most part, of sand and mud, and has from 8 to 8½ fathoms water over it; but toward its southern extremity it is rocky; and there, on some of the points which project above the water, the Melora tower has been constructed to serve as a sea-mark; it bears from the light-house west one half north, distant about 4 miles. The best course for entering the roads is to keep to the northward of the Melora bank at about a mile from it, and then, having doubled it, to stand on for the light-house about 2½ miles, anchoring in from 7 to 9 fathoms, the light-house bearing south south-east one half east 4 miles off. The entrance by the channel to the south of the Melora bank is also quite safe; but it is not so suitable for large ships as that by the north. During southerly winds there is sometimes a heavy sea in the roads, but the holding-ground is good; and with sufficient anchors and cables, and ordinary precaution, there is no danger. The lazaretto lies to the south, about one mile from the tower, and is said to be one of the best in Europe.

Trade, &c.—The comparative security and freedom which foreigners have long enjoyed in Tuscany, still more than its advantageous situation, render Leghorn the greatest commercial city of Italy. Its exports are similar to those from the other Italian ports; consisting principally of raw and manufactured silks, olive oil, borax, fruits, shumac, valonia, wines, rags, brimstone, cheese, marble, argol, anchovies, manna, juniper berries, hemp, skins, cork, etc. Leghorn platting for straw hats is the finest in the world; and large quantities are imported into Britain. See HATS, STRAW. Besides the above, all sorts of articles, the produce of the Levant, may be had at Leghorn. Recently, however, this trade has fallen off; the English and other nations who used to import Levant produce at second hand from Italy, preferring now, at least for the most part, to bring it direct from Smyrna, Alexandria, etc. The imports are exceedingly numerous and valuable, comprising all sorts of commodities, with the exception of those produced by Italy. Sugar, coffee, and all sorts of colonial produce; cotton stuffs, yarn, and wool; corn, woollen stuffs, spices, dried fish, indigo, dye-woods, rice, iron, tin, hides, etc.; are among the most prominent articles. Ships with corn on board may unload within the limits of the lazaretto, without being detained to perform quarantine; a circumstance which has contributed to make Leghorn one of the principal *dépôts* for the wheat of the Black Sea. Hard wheat, particularly from Taganrog, is in high estimation here and in the other Italian ports. It is particularly well

fitted for making vermicelli, macaroni, etc. The government do not publish any official account of the imports of Leghorn; and no mercantile circulars that we have been fortunate enough to fall in with supply the deficiency.

Money.—Down to 1837 accounts were principally kept in *pezze da otto reali* (or dollars of 8 reali), the pezza being divided into 20 soli or 240 denari; but this money has been discontinued since the above date, and accounts are now kept in *lire Toscana*. The lire of 100 centesimi is worth 7·82d.; so that the par of exchange with London is 30·69 lire per £1. The lire is divided in 20 soldi di lira each of 5 centesimi.—TATE'S *Cam-bist*, p. 37.

Weights and Measures.—The pound by which gold and silver and all sorts of merchandise are weighed is divided into 12 ounces, 96 drachms, 288 denari, and 6912 grani. It is = 339·542 French grammes, or 5240 English grains. Hence 100 lbs. of Leghorn = 74·864 lbs. avoirdupois; but in mercantile calculations it is usual to reckon 100 lbs. of Leghorn = 77 lbs. avoirdupois: this, perhaps, has arisen from taking the tares and other allowances, as to which there is a good deal of uncertainty, into account. Thus it is found that the English cwt. seldom renders more than 140 or 142 lbs. at Leghorn, though it is = 150 lbs.; in the instances of logwood, tobacco, and a few others, it does not render more than 135 lbs. The quintal, or centinago = 100 lbs. The centaro is generally 150 lbs.; but a centaro of sugar = 151 lbs.; that of oil = 88 lbs.; of brandy = 120 lbs.; of stock-fish, and some other articles = 160 lbs. The rotolo = 3 lbs. Corn is sold by the sacco or sack = 2·0739 Winch. bushels; hence 4 sacks = 1 imperial quarter, very nearly. The liquid measures are:

2 Mezzette = 1 Boccale.
2 Boccale = 1 Fiasco.
20 Fiaschi = 1 Barile = 12 English wine gallons.

The barile of oil is 16 fiaschi, of two boccali each = 8·83 wine gallons; it weighs about 66 lbs. avoirdupois. A large jar of oil contains 30 gallons; a small one 15; and a box with 30 bottles = 4 gallons.

The long measure is the braccio, which is divided into 20 soldi, 60 quattrini, or 240 denari; it contains 22·98 English inches. 155 bracci = 100 English yards. The canna of 4 bracci = 92 English inches.

Credit, Charges, etc.—Goods in general are bought and sold for silver money; between which, and the money in which bills of exchange are bought, there is a difference of 7 per cent. (agio) against silver; i. e., \$107 in silver are equal to \$100 in gold. On goods bought or sold (unless it be in effective money, where there is no discount) there is, generally speaking, a discount of 3 per cent.; on all cotton manufactures, 4 per cent. Charges on sales, including commission, are generally from 6 to 8 per cent.; on fish, 8 or 10 per cent. **Tares.**—Cinnamon lb. 12 to 14 per half bale; Mocha coffee, 5 to 7 per cent.; indigo seroons, lb. 20, 30 to 40 per seroon; sugar Havana, 14 per cent.; crushed, 42 per cent. or real tare of package; loaf package, and 4 per cent. for paper; Brazil of 19 inches, 18 per cent. upward 20 per cent.; tobacco, 10 per cent.; rosin, 12 per cent. For most other articles specified in the price current the real tare is allowed. **Exchanges, Three Months' Date.**—London, liv. @ per £ stg.; Spanish dollars, £6 11s.; Paris, liv. @ per 100 francs; doubloons, £101; Genoa, liv. @ per 100 Ln.; Trieste, liv. @ per 100 C. Flor.

In 1836 a joint-stock bank was established in Leghorn, with a capital of 2,000,000 lire (£66,666 sterling, taking the lire at 8d.) in shares of 1000 lire each. The whole of the capital is paid up, and the responsibility is limited to the capital. The managers have the power of issuing promissory notes to the extent of 6,000,000 lire. These notes, though received by the government, are not legal tender. The operations of the bank are confined to the discounting bills of ex-

change not having more than four months to run, and to the purchase and sale of foreign coins. The rate of discount is fixed at 5 per cent. The superintendence is vested in a director and eight regents, nominated by the shareholders; and the government appoints a commissary and three censors (from among the shareholders), who exercise the highest authority, to secure obedience to the statutes. An annual report and balance-sheet is produced, and is accessible to all shareholders. The maximum amount for which notes are issued is 2000 lire = £66 13s. 4d. sterling; the lowest, 200 lire = £6 13s. 4d. sterling. It is a profitable establishment; its shares are at a considerable premium, and it has every prospect of success.

IMPORTS OF THE LEADING ARTICLES INTO LEGHORN, DURING THE YEARS 1850, 1851, 1852.

Articles.	1850.	1851.	1852.
Sugar, Havana . . lbs.	8,400,000	1,149,000	2,510,000
" crushed . . lbs.	13,374,000	7,536,000	15,132,000
" loaf lbs.	18,500	6,000	37,000
" Brazil . . . lbs.	602,000	185,000	89,000
" E. I. & Santos	1,512,800	129,000	966,000
Coffee lbs.	3,028,000	4,499,000	8,610,000
Cotton lbs.	211,500	650,700	138,900
Pepper lbs.	295,500	635,000	886,000
Indigo cases .	152	128	273
" seroons	123	131	111

ACCOUNT OF THE NUMBER, TONNAGE, AND CREWS OF THE MERCHANT VESSELS WHICH BELONGED TO EACH MARITIME DIVISION OF TUSCANY IN 1850.

Maritime Divisions.	1 to 49 tons.			Above 50 tons.			Total.		
	Ves.	Tons.	Crews	Ves.	Tons.	Crew	Ves.	Tons.	Crews.
Leghorn . . .	108	2,677	857 118	14,574	1,309	221	17,251	2,166	
Orbetello . .	124	818	940 . .	....	....	124	818	940	
Isl. of Elba .	168	2,234	1,438 46	4,668	790	214	6,947	2,228	
Viareggio . .	98	2,172	547 54	3,612	341	152	6,324	883	
Total . . .	498	8,491	3,782 213	22,849	2,440	711	31,340	6,222	

CUSTOMS DUTIES RECEIVED IN THE GRAND DUCHY OF TUSCANY, IN 1848, 1849, AND 1850.

Duties.	1848.		1849.		1850.	
	Livres.	£	Livres.	£	Livres.	£
Import . . .	8,411,749	118,725	3,614,281	120,476	4,660,466	155,843
Export . . .	236,490	7,589	274,010	9,134	297,710	9,924
Transit . .	81,922	2,780	100,751	3,333	79,798	2,660
Total . . .	3,730,161	124,383	3,989,042	132,968	5,037,974	167,937

Leipsic, or more correctly Leipzig, one of the four circles into which Saxony is divided, comprises the north-west part of that kingdom, and is bounded on the north and west by Prussia, south by Saxe-Altenburg and the circle of Zwickau, and east by the circle of Dresden. Area, 1336 square miles. The country is generally level, and lies lower than any other part of Saxony. It is most elevated in the south, where some offsets of the Erzgebirge appear, but do not attain any great height. Leipsic belongs to the basin of the Elbe, and is principally drained by its tributaries the Elster and Mulda. The soil is fertile, and in general well cultivated. The principal crop is corn. The rearing of cattle, and especially of sheep of a superior breed, is much attended to. Tobacco is extensively grown. There are no metals; but limestone, marble, potters' clay, fullers' earth, and peat are abundant in various parts. The manufactures in this circle are flourishing, and include woolen, cotton, and linen goods, and earthenware. Population (1855) 454,262.

Leipsic, or Leipzig, the capital of the above circle, and the second city in the kingdom, is situate on an extensive and fertile plain, on the White Elster, here joined by the Pleisse and Parde, 72 miles W.N.W. of Dresden by railway. The fortifications which formerly surrounded the town have been converted into beautiful walks and gardens. The houses are chiefly old-fashioned stately buildings, frequently six stories in height, besides three or four additional ones in the pyramidal roof, and exhibiting much carved masonry. The streets are narrow, and from the height of the houses, have rather a dingy appearance, but are well

paved and clean. The suburbs, however, of which there are four, are of recent date, and more regularly built.

Leipsic is connected by railways with Dresden, Magdeburg, Berlin, and Altenburg, and is the centre of a very extensive trade. The celebrated Leipsic fairs are held thrice a year—on the 1st of January, at Easter, and at Michaelmas. They usually last for three weeks, and are attended by merchants from all parts of Germany, England, France, America, Russia, Italy, Greece, Turkey, Persia, etc. The goods comprise all kinds of woollen, linen, and cotton stuffs, silks, lace, hardware, jewelry, watches, toys, paper, books, leather, etc. The value of the goods brought to these fairs in 1855 was estimated at about \$55,000,000. On these occasions the town presents the greatest bustle and confusion; the streets and squares are occupied by temporary booths, in addition to the ordinary shops, while the population of the town is nearly doubled. The Easter and Michaelmas fairs, particularly the former, are famous for the vast number of new publications brought there for sale. The Easter fair is attended by booksellers from all parts of Germany, and even from other countries, sometimes to the number of 600. Prospectuses and specimens of new publications are brought here for circulation, annual accounts are settled, and purchases made. In the Easter fair catalogue for 1856 the number of new works announced as published in Germany during the preceding year was 9540, as forthcoming, 1171. Leipsic is also of considerable importance as a manufacturing town. It has large type-foundries, oil-mills, paper-mills, and manufactories of silken goods, stockings, leather, hats, hardware, musical, optical, and mathematical instruments. There are about 150 publishing establishments in the town; and in 1853 there were 36 printing-offices, with 58 steam, and 164 hand presses. Leipsic was the scene of a tremendous conflict on the 16th, 17th, and 18th of October, 1813, between the allies under Prince Schwartzenberg, and the French, under Napoleon, in which the latter were totally defeated. See HISTORY OF FRANCE. Population (1855), 69,986.—E. B.

Leith, although an independent burgh, may be considered the sea-port of Edinburgh, from which it is only about a mile and a half distant. The Water of Leith, at its confluence with the Firth of Forth, divides the town into two parts, called, respectively, North and South Leith. The first mention made of Leith is in the charter of erection of Holyrood Abbey, founded by David I. in 1128, where it is styled Inverleith. The magistrates of Edinburgh obtained a grant of the harbor and mills from Robert I. in 1329, and they subsequently purchased, from Logan of Restalrig, all the other rights and privileges.

The chief manufactures of Leith are ropes, sailcloth, locomotive engines and machinery, glass, soap, ale, refined sugar, and oil-seed cakes. Iron and timber ship-building is also carried on to a considerable extent. Various efforts have from time to time been made to overcome the natural obstacles that lay in the way of Leith as a shipping port. In 1720 a dock was formed on the east side of the river, and in 1777 a small quay called the custom-house quay was built. Between 1800 and 1817, two wet docks were constructed, each measuring 750 feet in length by 300 in width, and having a united area of about 10 acres. In 1831 two great additional works were undertaken, viz., an addition to the old or east pier of 500 yards, and the formation of a covering bulwark, by means of which the water in the channel was deepened about two feet. There were still, however, only 17 feet of water over the bar at its mouth at high-water spring tides, and no vessel of above 400 tons could enter the harbor without lightening. Further improvements were commenced in 1848, and completed in 1855. These included the formation of the Victoria Dock,

equal in extent to either of the others; the new western pier and low-water landing slip; the extension of the eastern pier 1000 feet seaward. The length of the east pier is now 3530 feet, and of the west, 3123 feet. They are unsurpassed by any in the kingdom; and, in addition to other important purposes, afford the means of a healthful and pleasant promenade. By means of these improvements, a depth of 26 feet water has been obtained in the new harbor at high-water spring, and of 21 feet at neap, tides. The Victoria Dock has 25 feet water at spring, and 20 feet at neap, tides, upon the gate sill, and two feet more within the dock; and the two old docks have 18 feet at spring, and 13 feet at neap, tides. Vessels of upward of 2000 tons burden, of 320 feet in length, and 58 feet in breadth, can be accommodated in the Victoria Dock. There are also five dry or graving docks at Leith, of the following dimensions:

No. of docks.	Length.		Width.			Depth of water over dock sills at high-water spring tides.
	Of floor.	At top.	Of floor.	At top.	Of gates.	
1	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
1	160 0	174 0	45 0	70 6	36 0	16 6
1	173 0	177 0	32 0	58 0	36 0	18 8
1	166 0	172 0	36 9	49 6	30 9	12 5
1	117 6	121 6	41 0	51 0	33 9	12 6

A new graving dock of greater capacity is proposed to be made on the east sands, and to enter the present new harbor a little to the north of the entrance to Victoria Dock. The following are its proposed dimensions: length of floor, 300 feet, at top, 330 feet; width of floor, 45 feet, at top, 80 feet; of caisson, 72 feet; depth of water over sills at high-water springs, 24 feet 5 inches. Besides having regular steam communication with Rotterdam, Hamburg, Hull, London, Newcastle, and the north of Scotland, Leith trades largely with the Baltic, Mediterranean, North America, and Australia. The exports are principally coal, iron, spirits, ale, paper, linen yarn, etc. Of coal and iron the quantities exported during the last three years were as follows:

	EXPORTS.		
	Coals.	Pig-iron.	Malleable iron.
	Tons.	Tons.	Tons.
To May 15th, 1854....	29,773	24,072	2,008
" 1855....	35,098	33,094	1,196
" 1856....	30,898	29,220	2,352

The principal import is grain, of which the quantity imported during the last three years is given in the following table. After grain and timber, the chief articles of import are hemp, flax, wool, linseed, oil-cakes, guano, agricultural seeds, butter, cheese, fruit, corkwood, wines, spirits, oil, sugar, tea, etc.

Years ending May 15th.	Wheat.	Flour.	Timber from	
			Baltic and other ports.	North America.
	Qrs.	Bags & barrels.	Lords.	Lords.
1854.....	277,256	80,637	36,350	10,547
1855.....	271,917	46,893	19,539	15,234
1856.....	254,006	35,700	25,544	18,059

NUMBER AND TONNAGE OF VESSELS ARRIVING AT LEITH, FOR THE YEARS ENDING MAY 15TH, 1854, 1855, 1856.

Years.	British sailing vessels.		British steam vessels.		Foreign vessels.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
1854	3,406	192,936	643	89,111	563	87,452	4,612	369,499
1855	3,314	193,431	626	86,052	516	78,481	4,756	357,964
1856	3,259	194,789	630	88,064	774	81,138	4,698	363,941

NUMBER AND TONNAGE OF VESSELS SAILING FROM LEITH, FOR THE YEARS ENDING MAY 15TH, 1854, 1855, 1856.

Years.	British sailing vessels.		British steam vessels.		Foreign vessels.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
1854	3,410	191,200	630	87,504	842	85,213	4,882	364,022
1855	3,316	194,284	625	85,899	778	78,486	4,719	353,669
1856	3,303	195,227	623	87,668	842	88,585	4,778	371,475

The amount of customs duties received at Leith for the last four years were: 1853, £485,915; 1854,

£455,403; 1855, £462,917; and 1856, £498,172. The vessels registered as belonging to the port on 31st December, 1855, were: sailing vessels, of and under 50 tons, 71; tonnage, 2218; above 50 tons, 80; tonnage, 17,058; steam vessels of and under 50 tons, 14; tonnage, 289; above 50 tons, 28; tonnage, 6654. The recent war with Russia has checked the increase in the trade that would otherwise have resulted from the greatly enlarged accommodation.—E. B.

Lemons (Ger. *Limonen*; Du. *Limoenen*; Fr. *Lemons*, *Citrons*; It. *Limoni*; Sp. *Límones*; Port. *Limões*; Rus. *Limón*; Arab. *Lēmōn*), the fruit of the lemon tree (*Citrus medica*, var. β , C.). It is a native of Assyria and Persia, whence it was brought into Europe: first to Greece, and afterward to Italy. It is now cultivated in Spain, Portugal, and France, and is not uncommon in our 'green-houses.' Lemons are brought to England from Spain, Portugal, and the Azores, packed in chests, each lemon being separately rolled in paper. The Spanish lemons are most esteemed. Like most of its tribe, the lemon produces under cultivation a great number of varieties. Several are known in commerce. The principal are: the Wax Lemon (*Citrus Limonium cerascum* of Risso); this is the smooth-peeled one, most generally found in the markets; its rind is thick. The Bignette Lemon (*Citrus Limonium Bignetta* of Risso) is a thinner-peeled fruit than the wax lemon, less oval in shape, and more blunt at the point; the color of the rind is less clear, and is usually tinged with green. It is cultivated more largely than any other variety, as it yields a larger quantity of juice, and is a most abundant bearer. The Clustered Lemon (*Citrus Limonium racemosum* of Risso) is the least oval of the imported lemons, but the nipple-like point is fully developed. The rind is thick, and has a bright yellow color. The pulp is less agreeable than the varieties previously mentioned. One or two other varieties, as the imperial and Gaeta lemons, are occasionally brought to this country, but not in any considerable quantities.

Lemon Juice, or Citric Acid (Ger. *Zitronensaft*; Fr. *Jus de limon*; It. *Agro o Sugo de limone*; Sp. *Jugo de limon*), the liquor contained in the lemon. It may be preserved in bottles for a considerable time by covering it with a thin stratum of oil: thus secured, great quantities of the juice are exported from Italy to different parts of the world; from Turkey, also, where abundance of lemons are grown, it is a considerable article of export, particularly to Odessa. The discovery of the antiscorbutic influence of lemon juice is one of the most valuable that has ever been made. The scurvy, formerly so fatal in ships making long voyages, is now almost wholly unknown: a result that is entirely to be ascribed to the regular allowance of lemon juice served out to the men. The juice is also frequently administered as a medicine, and is extensively used in the manufacture of punch.

Lemon Peel (Ger. *Zitronenschalen*, *Limonschellen*; Fr. *Lames d'écorce de citron*; It. *Scorza de limone*; Sp. *Corteza de citra*). The outward rind of lemons is warm, aromatic, and slightly bitter—qualities depending on the essential oil it contains. It is turned to many uses, and, when well candied, constitutes a very good preserve. In Barbadoes, a *liqueur*, known under the name of *Eau de Barbade*, is manufactured from lemon peel, which the inhabitants have the art of preserving in a manner peculiar to themselves. Both the liqueur and the conserve used to be in high repute, especially in France.

Lending-houses. That it should have once been conceived unlawful to exact interest for the loan of money, will not appear surprising when it is considered that at an early period the occupations by which a man could support his family were neither so numerous nor so productive as in modern times. As money, therefore, was at that time sought to remove immediate necessity, those who advanced it were influenced

by benevolence and friendship. But on the extension of trade, arts, and manufactures, money lent produced much more than what was adequate to the borrower's daily support, and therefore the lender might reasonably expect from him some remuneration. To the lending of money upon interest, according to the earliest accounts, succeeded the practice of establishing funds for the relief of the needy, on condition that they could deposit any thing equal in value to double the sum borrowed, for which they were to pay no interest. But, as upon the one hand, the idea of exacting interest for the loan of money was odious to the members of the Catholic church in general, while, on the other, it appeared proper, and even necessary, to pay interest for money to be employed in commerce, the pontiffs themselves at length allowed the lending-houses to take a moderate interest; and, in order not to alarm the prejudices of those to whom the measure was obnoxious, it was concealed under the name of being paid *pro indemnitate*, the expression made use of in the papal bull.

It appears that lending-houses, which gave money on receipt of pledges at a certain interest, are by no means of recent date; for many houses of this description, in Italy at least, were established in the 15th century, by Marcus Bononiensis, Michel a Carcano, Cherubinus Spoletanus, Antonius Vercellensis, Bernardinus Tomitano and others. The lending-house at Perugia established by Barnabas Interamensis was inspected in 1485 by Bernardinus, who augmented its capital, and in the same year established one at Assisi, which was confirmed by Pope Innocent, and visited and improved by its founder in the year 1487. He likewise established one at Mantua after formidable opposition, having procured for it the sanction of the Pope. The same person also founded lending-houses at Florence, Parma, Chieli, and Piacenza, in doing which he was sometimes well received, while at others he frequently met with great opposition. A house of this kind was established at Padua in the year 1491, and another at Ravenna, which were approved of and confirmed by Pope Alexander VI.

Long after the period here referred to, lending-houses were established at Rome and Naples; that of the former city having been opened in 1539, and that of the latter probably in the following year. A lending-house was established at Nuremberg, in Germany, about 1618, the inhabitants having obtained from Italy the regulations of different houses in order to select the best. In France, England, and the Netherlands, lending-houses were first known under the denomination of lombards. Similar institutions were formed at Brussels in 1619, at Antwerp in 1620, and at Ghent in 1622. Although such houses must be allowed to be of very considerable utility under certain circumstances, especially when interest is not allowed to be exorbitant, yet they were always odious in France. One was, however, established at Paris in 1626 in the reign of Louis XIII., which the managers next year were obliged to abandon. The *mont de piété* in that city, which has sometimes had in its possession forty casks full of gold watches which had been pledged, was established by royal authority in the year 1777, as we learn from the *Tableau de Paris*, published at Hamburg in the year 1781.—E. A.

Lengthening, in ship-building, the operation of cutting a ship down across the middle and adding a certain portion to her length. It is performed by sawing her planks asunder in different places of her length on each side of the midship frame to prevent her from being too much weakened in one place. The two ends are then drawn apart to a limited distance, which must be equal to the proposed addition of length. An intermediate piece of timber is next added to the keel, upon which a sufficient number of timbers are erected to fill up the vacancy produced by the separation. The two parts of the keelson are afterward united by an ad-

ditional piece, which is scored down upon the floor timbers, and as many beams as may be necessary are fixed across the ship in the new interval. Finally, the planks of the side are prolonged so as to unite with each other, and those of the ceiling are refitted in the same manner, by which the whole process is completed.

Lentil, the seeds of *Errum lens* (natural order *Leguminosæ*). The lentil is closely allied to the tare, and is probably the most ancient of all the food products which man derives from the pea-tribe. The *red potage* in Gen. xxv. 34, is the small lentil decorticated, as it is sold at the present day in the bazaars of India. Pliny mentions two kinds of lentils grown in Egypt, one rounder and blacker than the other. These were, probably, only varieties resulting from cultivation. Three such are cultivated in France, where, as in most Roman Catholic countries, this kind of pulse is extensively used during Lent; to which season, as some suppose, it gives its name. The lentil is a native of Europe, Asia, and northern Africa; or, at all events, it is naturalized in those parts of the world. It is cultivated occasionally in some parts of England, but chiefly as a fodder plant. The ripe seeds are very nutritious, and contain a large proportion of gluten. They are frequently imported from Alexandria for cattle-feeding; while, for culinary purposes, the larger and lighter-colored varieties are imported from France and Germany, where considerable attention is paid to their cultivation and harvesting. In Egypt the lentil forms a large proportion of the general food of the inhabitants, and the haulm is used for packing purposes. The empirical preparation called *Revalenta Arabica*, has been proved to be nothing but the meal of decorticated lentils; a food by no means well adapted to all constitutions, especially those of infants. The quantity of starch in the lentil is very considerable; and, in addition to the gluten, renders this pulse one of the most nutritive of vegetable food products. Lentils are, however, heating if used much. The starch, according to Einhoff, is nearly one third its weight.

Letters of Credit. A letter of credit is an open letter of request, whereby one person requests some

other person or persons to advance money or to give credit to a third person, named therein, for a certain amount, and promises that he will repay the same to the person advancing the same, or accept bills drawn upon himself for the like amount. It is called a general letter of credit when it is addressed to all merchants, or other persons in general, requesting such advance to a third person, and a special letter of credit when it is addressed to a particular person by name, requesting him to make such advance to a third person. If the letter of credit be of the latter sort, there does not seem to be any doubt that it is an available promise in favor of the person to whom it is addressed, and who makes the advance upon the faith thereof. But if the letter of credit be general, it is a matter of some doubt whether the writer is bound to the person making advance upon the strength of the letter. The question does not appear to have been ever decided in England, but it has several times been thoroughly discussed in the Supreme Court of the United States (*Laurason vs. Mason*, 3 Cranch, 492; *Adams vs. Jones*, 12 Peters, 207). The doctrine was maintained in these cases that the letter writer is bound positively and directly to any party making the advance upon the faith of the letter, not only where the letter purports, on its face, to be addressed generally to any person or persons whatsoever who should make the advance, but also in cases where the letter is addressed solely to the person to whom the advance is to be made, and merely states that the person signing the same will become his surety for a certain amount, without naming any person to whom he will become security, if it is obviously to be used to procure credit from some third person, and the advance is made upon the faith of the letter by such third person.

Formerly, and up to the years 1825—1830, remittances to India and China, for importations into the United States, were made almost exclusively in Spanish dollars. After that period letters of credit were liberally issued by the Bank of the United States, on their European correspondents, in favor of American merchants. This mode of remittance is made universally from the United States.

FORMS OF LETTERS OF CREDIT, AS USED IN NEW YORK, AND AS ISSUED BY THE WESTERN BANK OF SCOTLAND, FOR REMITTANCES TO INDIA, ETC.

No. 130. 2300 Sterling. For First of Exchange. New York, 7th June, 1842.
To Geo. D. Carter, eastward of the Cape of Good Hope, or holder hereof. We are duly authorized by Messrs. Palmers, Mackillop, Dent, & Co., London, to engage on their behalf that they will accept the first presented bill of this set of Exchange at Six Months' sight, provided this Certificate be presented therewith and delivered to Messrs. Palmers, Mackillop, Dent, & Co., on their acceptance. On behalf of Palmers, Mackillop, Dent, & Co.

DAVIS, BROOKS & CO. FIRST.

No. 130.

Exchange for £300 Sterling.

2385

R. S. & Co.

Six Months after sight of this First of Exchange (Second and Third unpaid) pay to the order of Davis, Brooks, & Co. Three Hundred Pounds Sterling, value received, as advised by

Your obedient servant,

GEO. D. CARTER.*

To

Messrs. Palmers, Mackillop, Dent, & Co.,
London.

* The bill is indorsed, "Pay George D. Carter, or order.—Davis, Brooks, & Co.

New York, 7th June, 1842.

No. £
FOR FIRST OF EXCHANGE.
WESTERN BANK OF SCOTLAND.

To
I hereby engage to accept, and to pay at Maturity, the first presented Bill of the set of Exchange, of which the annexed is the First, to be drawn by on the Western Bank of Scotland, on or before

at Sixty Days' Sight, provided this Letter of Credit, as annexed to such Bill, be presented therewith and delivered to me on acceptance thereof. For the Western Bank of Scotland, Manager.

BY THE WESTERN BANK OF SCOTLAND.

No. £ 1851.

Sixty days after sight, pay this First of Exchange (Second and Third of same tenor and date unpaid), to the order of at Messrs. Jones, Lloyd, & Co.'s, London, value received as advised.

To the
Western Bank of Scotland,
Glasgow.

BY THE CLYDESDALE BANK.

THIRD OF EXCHANGE.

£ CLYDESDALE BANK, GLASGOW.

To
We hereby engage to accept and to pay at maturity, the first presented Bill of the set of Exchange, of which the annexed is the Third, to be drawn by you on us, on or before the
for £ say
Sterling, payable in London at a date not less than and not exceeding
days' sight, provided this Letter of Credit be delivered to us on acceptance of the annexed Bill. For the Clydesdale Banking Company.

No.

£ 1851.

after sight, pay this Third of Exchange

(First and Second of the same tenor and date unpaid), to the

Order of

in London

Value received as advised

Sterling.

To

In New York it has been held (Hill's Rep., vol. v., 634) that letters of credit and commercial guaranties are not negotiable instruments. In Campbell's Rep., iv., 393, it was decided that a letter of credit, addressed to any person who should make an advance upon the faith of the letter, is an available promise in favor of the person making the advance; and it is considered as available if it be a general letter of credit, in favor of any person who makes the advancement the faith of it. See articles BANKS, BILLS OF EXCHANGE, and EXCHANGE.

Levant, a name derived from the Italian word for the south-east, and applied in the middle ages to that quarter of the Mediterranean east of Cape Matapan, now generally applied to the coasts of Asia Minor, Syria, etc. *Levant*, in *geography*, signifies any country to the eastward of us, or in the eastern part of any continent or country, or in that quarter where the sun rises.

Levee, an embankment on the margin of a river to confine it within its natural channel. The lower part of Louisiana, which has been formed by encroachments upon the sea, is subjected to be inundated by the Mississippi and its various branches for a distance of more than 300 miles. In order to protect the rich lands on these rivers, mounds are thrown up of clay, cypress-logs, and green turf, sometimes to the height of 15 feet, with a breadth of 30 feet at the base. These, in the language of that part of the country, are called *levees*. They extend for hundreds of miles; and when the rivers are full, cultivated fields covered with rich crops, and studded with villages, are seen several feet below the river courses. The giving way of these levees, sometimes occasioned by a sudden and violent pressure of the water, and sometimes by accidental perforations, is called a *crevasse*; French, a disruption.

Lew-Chew Islands. See LOO-CHOO ISLANDS.

Liberia, an independent Negro republic of west Africa, established 1823, extends along the coast of Guinea, between Sierra Leone and Cape Mensurado, from the Shebar River on the north, to the Garaway on the south, a distance of 350 miles, with an average breadth of 80 miles. Population 1850, 250,000, of whom 10,000 are free blacks from the United States, and the remainder aborigines, or captives released from slavers. The country has been all purchased from time to time by the American Colonization Society, and its climate has improved greatly by a systematic drainage, and clearance of woods. It is estimated that 2,000,000 inhabitants of the interior now obtain supplies of European goods from this republic and Cape Palmas. Liberia, formerly a dependency of the United States of America, was recognized as an independent republic in July, 1848. Government vested in a president, vice-president, and a senate of 6 members, and a house of representatives of 28 members, elected by all possessors of a real estate to the value of \$30. About 50,000 of the population are said to use the English language, and children are sent from the surrounding countries, 400 or 500 miles distant, to attend the schools of this State, which also supports two public journals. The sea-port and capital, Monrovia, has a population of 9,000.

The treaty concluded in 1852 between France and the republic of Liberia was finally ratified in the year 1856. The independence of the republic was recognized successively by the United States, England, Belgium, Prussia, and Brazil, from 1847 to 1854. To this list France has at last added her name by the late treaty. The original colony of Liberia was founded by the American Colonization Society, under the direction of its first President, Mr. Finley. It is situated at the northern extremity of the coast of Guinea, and is about 370 miles in length. Its capital, Monrovia, is on the former site of the principal slave-market on this part of the African coast, and stands as a living protest against the slave-trade, in the abolition of which the colony has been largely instrumental. In February, 1820, the first ship-load of emigrants left New York for the coast of Guinea. They were 80 in number—forming 25 families—under the care of 3 citizens of the United States, a clergyman, a lawyer, and a physician. In 1847 Liberia emerged from its dependent colonial condition, and became an independent State. In 1854 it contained a population of about 12,000 black colonists, chiefly Americans, and from 140,000 to 150,000 natives, whose social and religious condition is far in advance of that of their blood-thirsty and idolatrous ancestors.

The capital is now a flourishing maritime city, having a fort, a light-house, a commercial market, a small marine, and schools, churches, newspapers, charitable associations, and other institutions similar to those in the United States. The 6th article of the constitution of the republic declares that, inasmuch as the essential object of its foundation was to open an asylum for the scattered and oppressed children of Africa, and, at the same time, to regenerate the people of the vast continent of Africa, yet enveloped in the darkness of ignorance, none but persons of color will be allowed to become citizens of the republic.

The exports of Liberia, consisting chiefly of palm-oil, logwood, and other dye-woods, which are transported to England and the United States, amount to about \$1,000,000 annually. Besides all the usual tropical productions, it produces Indian corn, rice, the potato, sugar, coffee, and cotton. Gold is also found in considerable quantities. The cotton of Liberia, which has been highly approved in the Manchester market, has lately attracted much attention, and its probable successful cultivation promises to exert a most important influence on the future of the republic. A communication from a highly respectable and reliable source recently appeared in the *National Intelligencer*, the writer of which gave a decided preference to the cotton of Liberia over that of Brazil, in point of quality, cheapness of production, and facility of transportation to market. The subject deserves further and full investigation. Considered simply as an experiment in practical benevolence, Liberia deserves and will receive the protection of the great powers of the world. Whether or not it be destined, as some have thought, to work out the solution of the vexed question of slavery in the United States, it will yet gain the great glory of redeeming from barbarism and idolatry many millions of the human race.

Trade is the chosen employment of the great mass

of the Liberians, and some of them have been decidedly successful in this vocation. It consists in the exchange of articles of American or European manufacture for the natural products of the country, of which palm-oil, cam-wood, and ivory, are the principal articles. Cam-wood is a rich dye-wood, and it is brought to Monrovia on the shoulders of the natives from a great distance. It is worth, in the European and American markets, from \$60 to \$80 per ton. The ivory of this region does not form an important item of commerce. The Liberian merchants own a number of small vessels, built by themselves, and varying in size from 10 or 15 to 40 or 50 tons. These are navigated by the Liberian sailors, and are constantly engaged in bringing palm-oil to Monrovia, from whence it is again shipped in foreign vessels for Liverpool or New York.

Under the general name of Liberia are comprehended the territories of the republic and of the Maryland colony, founded at Cape Palmas. The political jurisdiction of the republic extends from Shebar, a point immediately north of Gallenas, to Grand Sesters, giving a coast frontier of 350 miles, or, including the Maryland colony, of 470 miles, running into the interior an average of 40 miles; the whole territory embracing an area of upward of 14,000 square miles. The jurisdiction of the Maryland colony extends from Grand Sesters to the River San Pedro, opening a coast frontier of 120 miles. These territories have, of late years, been considerably extended by means of purchase, the most important addition being the annexation of Gallenas, formerly the point at which the slave-trade was most extensively conducted. The New Jersey Colonization Society, established in 1825, is said to have recently purchased from the natives 150,000 acres in the interior of Bassa country. The population in 1850, as estimated by the Rev. R. R. Gurley, who was sent out by government to obtain information in respect to Liberia, was, in the republic, emigrants, 6,000; natives, 140,000 to 200,000. In the Maryland colony, emigrants, 9,000; natives, 100,000. The independence of the republic of Liberia has been recognized by France, Belgium, Prussia, the Hanse Towns, and England; and, with the latter country, a treaty of peace, friendship, and commerce, was concluded, August 1, 1849. Treaties of friendship, etc., have also been entered into with several tribes of the interior, containing stipulations for the abolition of the slave-trade, and including new territory within the political and judicial jurisdiction of the republic. The soil of the republic is capable of yielding, in the greatest abundance, the most valuable productions of the tropics. Rice, cotton, the sugar-cane, and coffee are classed among the staples of Liberia; and corn, cassada, yams, sweet potatoes, arrow-root, vegetables, and beans, of every variety, are among the productions of this region.

It is stated, on the authority of persons thoroughly acquainted with the resources of this region of Africa, that no clime or country in the world will bring coffee to higher perfection than Africa; and, whether introduced at an early period by the Portuguese and Spaniards, or whether it is a native of the country, it has propagated itself along a great extent of the African coast, without culture, for many ages. The commerce of the republic with foreign countries consists chiefly in the exportation of articles supplied by the native population, from the spontaneous growth of the country, such as palm-oil, cam-wood, ivory, tortoise-shell, and gold, which are bartered for tobacco, powder, muskets, rum, cotton goods, salt, soap, crockery, and iron wares, copper and iron rods, and American provisions. This commerce must necessarily expand with the growing development of the agricultural resources of the country, and the extension of the arts of civilization and industry, in a region so highly favored in soil and climate, and so eminently adapted

to the production of so great a variety of valuable staples.

In a letter from the Secretary of the Treasury of Liberia, in November, 1849, that gentleman says, "The committee whose duty it was to furnish you with a report, have, I think, considerably underrated the annual exports from Liberia. It may be fairly stated at \$500,000, in African commodities (one fifth of which is \$100,000), and our imports from the United States may be estimated at \$150,000. It is worthy of remark that, at present, it is only from the United States that our merchants import goods; and, further, that the kinds of goods most suitable for the African trade come from Europe. The commerce of Liberia is in its infancy, but it advances rapidly. The two principal articles of trade are tobacco and powder; and no country can compete with the United States in these items. Provisions, also, will soon find an extensive market in Liberia; already the natives have commenced purchasing them, particularly beef, pork, and salt fish. I am not exaggerating when I say that the trade advances at least 50 per cent. annually. The American cotton goods are, in quality, superior to those brought from Europe; but there is a material difference in price. The European is the cheapest, and hence the inability of the American to compete with the European. In Liberia we attribute the difference in price to the low price of labor in Europe." Changes have occurred in the commercial movements of Liberia since the date of Mr. Gurley's report. Then, Liberia imported English goods, though not directly from England; but now, importations from England are very large, while from the United States they are annually diminishing. It is estimated that there are not less than 100 ships, some of them of 1000 tons' burden, regularly trading between British ports and the coast of Africa, while a regular line of steamers plies monthly between England and Liberia. Most of the supplies of every description are derived from England; while the only articles going from the United States are powder, rum, flour, beef, pork, tobacco, herrings, mackerel, and some few cotton goods; the latter article constantly diminishing. A reliable statement, recently put forth, estimates the value of the average annual exports from all this region of western central Africa, to the European States, at some \$15,000,000, and at a commercial exchange in favor of the European merchants of about 500 per cent. The commerce has been carried on chiefly by native and Liberian traders from Liberian ports and others on the Gulf of Guinea, in European vessels. France, Spain, Denmark, Portugal, and Germany, have participated in this commercial intercourse; but they are all surpassed by Great Britain.

From the "Annual Statements of the Trade and Navigation of the United Kingdom," it appears that the imports into Great Britain from the western coast of Africa—the limits of which are not particularly designated, though estimated to contain some 50,000,000 inhabitants—consist chiefly of bar-wood, cam-wood, ebony, guano, gum-anini, gum-copal, untanned hides, palm-oil, orchal, elephants' teeth, and bees'-wax—the heaviest item, by far, being palm-oil, which averaged some 450,000 cwt. each of the five years ending with 1853; and amounted to 633,508 cwt., at a "computed real value" of £1,457,068, in 1854. The aggregate value of imports in 1854 is given officially at £1,528,896. The exports, during the same year, the produce and manufactures of the United Kingdom, or of other countries, consisted of arms and ammunition, wearing apparel, manufactures of cotton, wool, silk, iron, brass, copper, steel, and glass; salt, soap, spirits, staves, coals, beads, unmanufactured tobacco, earthenware, and porcelain; of which the heaviest items were cottons, gunpowder, guns, staves, and tobacco. The average "declared value" of cottons thus exported, during the six years ending 1854, was £187,000; and

of tobacco, the average quantity was 2,150,000 pounds. The computed real value of the 1,816,827 pounds of tobacco exported in 1854 is given at £56,760. The computed real value of all foreign exports to western Africa for the same year was £174,073; and of all domestic exports, £646,868; being more than that of 1853, and double that of 1852—the average value of each of the six years ending with 1854, being upward of £460,000.

It is thus seen that the trade of Great Britain with western Africa is rapidly increasing—amounting, in value, in 1854, to £1,528,896 imports: domestic exports, £646,868; foreign exports, £174,073; aggregate (imports and exports) £2,349,837=£11,749,185. And this, independently of the British colony of Sierra Leone, the trade of which amounted in 1854 to \$1,421,865; and of the British possessions on the Gold Coast and the River Gambia, amounting to \$1,547,285 more; and of those at the Cape of Good Hope and south Africa, swelling the amount \$8,383,090 more; making, in all, an aggregate of over \$23,000,000 in 1854, for the western coast of Africa entire. The trade of the United States with west Africa, there are no means of determining—the values of imports and exports being given in Commerce and Navigation for “Africa Generally.” “Liberia,” it is true, appears in the reports from 1849 to 1854, inclusive, but with no figures to indicate trade, and but few to indicate navigation; giving, it is inferred, the tonnage of colonization vessels only—none others, perhaps, being engaged in the direct intercourse with Liberia. The following table shows the trade of the United States with Africa during the seven years ending June 30, 1855:

Years.	Exports.	Imports.	Total.
1849.....	\$708,411	\$495,742	\$1,204,153
1850.....	759,266	524,722	1,283,988
1851.....	1,840,644	1,163,176	2,503,820
1852.....	1,246,141	1,057,657	2,303,798
1853.....	1,610,833	1,202,986	2,813,819
1854.....	1,804,972	1,386,560	3,191,532
1855.....	1,375,905	1,337,527	2,713,432

From this statement, it will be perceived that, although the figures for 1855 show a falling off in that year, as compared with 1854 and 1853, yet that there is a regular and very rapid advance from 1849. But, while the average value of the trade of the United States with all Africa, during the six years ending 1854, is found to be only \$2,200,000; that of Great Britain with west Africa, alone, for the same period, averaged \$2,800,000; and, including all of her African colonies and possessions, together with the *estimated* value of her trade on the eastern coast, it could not have averaged much less than \$20,000,000.

In 1854, the trade of the United States with “Africa Generally” rose to \$3,191,532—a higher figure than before or since; at the same time, the trade of Great Britain with west Africa, only, amounted to \$11,749,185. The value of the unmanufactured tobacco alone—derived mostly from the United States—amounted to nearly \$300,000 of that total; and the value of British trade with “Africa Generally” was, as has been seen, more than \$23,000,000, or nearly 8 times that of the United States.

The establishment of a line of commercial steamers between the United States and the western coast of Africa has been urged, as tending greatly to the augmentation of our commerce with that country. The uses which such steamers might subserve have been stated thus:—1. The transportation of free negroes from the United States to Liberia. 2. The carrying of the mails. 3. The transportation of merchandise. 4. The carrying of pilgrims on their way to Mecca. 5. The carrying, on the return voyage, of the pilgrims, who now assume the name of Hadjis; the certain and expeditious transportation of the fruit and other products of the Mediterranean; and the greater facility afforded to passengers from central Europe

to America, whose expense of travel will be greatly diminished by embarking at the south of France instead of at the usual western ports.

Palm-oil has become, within a few years, a staple of export from Liberia. More than 30 vessels were freighted with the article at her ports, in 1855; while three years before, the quantity exported did not exceed 1000 gallons, at a cost of \$1 per gallon. The quantity exported at the present time is, at least, 700,000 gallons; but the price has fallen to 83 cents per gallon. The trade in ground-nuts, chiefly carried on with France, is becoming of great importance. They are shipped in bags, and, when ground, supply a wholesome substitute for olive-oil. Sugar, cotton, and coffee are, however, viewed as the great natural staples of product for the soil and climate of Liberia. The import duties in the republic of Liberia are 6 per cent. *ad valorem*.

From recent intimations, it is not improbable that the country east of Liberia may shortly be more extensively explored, with a view of planting new settlements in the interior of the present coast line, which it is hoped will be beyond the reach of malaria. Should such an enterprise be successfully carried out, the immense natural resources of that fertile region would soon attract foreign commerce, and thus the philanthropic labors of those engaged in the movement would be greatly facilitated.—*Com. Rel., U. S.*

There can be no question that vast commercial advantages would accrue to the commerce of western Africa, if the Niger and Tschadda, the natural highways into the interior to Timbuctoo and other large cities of the continent, were effectually opened and maintained so for a few years. The last expedition is a proof that, under judicious management, and at the proper season, there is no greater danger to health in a navigation of those streams, than of other rivers in Brazil and our southern States. While the British export trade with different parts of the world has only increased in the last 20 years 50 per cent., the export trade of western Africa has more than doubled. British manufactures are mainly dependent on that quarter for several articles, especially vegetable oils and ivory. The yearly export of palm-oil has risen to the value of nearly £2,000,000 sterling, or \$10,000,000. Ground-nuts, for oil, are a leading article of production. Dyewoods are important. Of the whole imports of ivory into Great Britain, Africa supplies one half. When it is noticed what has been done in stimulating the cultivation of coffee, sugar, spices, and other staples in Liberia, there is no reason why a great stimulus may not be given also to the countries bordering on the rivers of the interior.

The following returns to Parliament illustrate the increase of British exports to the west coast of Africa, and of imports from the same region:

Years.	Exports.	Imports.	Total.
1850.....	£639,429	£605,958	£1,245,387
1851.....	654,543	794,810	1,449,353
1852.....	533,725	707,024	1,240,749
1853.....	901,402	749,378	1,650,779
1854.....	958,809	905,634	1,864,443

This is independent of the British colonies of Sierra Leone, the trade of which amounted in 1854 to \$1,421,865, and of the British possessions on the Gold Coast and the River Gambia, amounting to \$1,547,285 more, and of those at the Cape of Good Hope and in south Africa, swelling the amount \$8,383,090 more; making in all an aggregate of over \$23,000,000 in 1854, for the western coast of Africa entire.

An American steam line to Africa would be a pioneer of civilization. It would afford a rapid communication with the interesting republic of Liberia, which is proving the capacity of the Christianized and Americanized African for self-government, according to Anglo-Saxon ideas and institutions. It could not fail to promote powerfully the prosperity of that young com-

monwealth. It would practically bridge the Atlantic in a new direction, and connect together the most progressive and the most stationary of the continents. It would soon be an effectual aid in that African exodus from the soil of the new world to the ancient fatherland of the race, of which we now see the faint beginnings. Its realization would involve more wide-reaching and beneficial results than even its warmest friends have ever hoped.

Libraries. In a volume on Public Libraries of the United States, published by the Smithsonian Institution, the following statistics appear, obtained for a large part from replies to circulars, and therefore less full than those of the census :

Libraries.	No.	Volumes.
State Libraries.....	89	285,987
Social Libraries.....	126	611,334
College Libraries.....	124	586,912
Students' Libraries.....	142	254,639
Seminaries and Professional Libraries	227	320,909
Scientific and Historical Societies' do.	34	138,901

GREAT LIBRARIES OF EUROPE IN 1848.

Libraries.	Volumes.
* Paris National.....	824,000
* Munich Royal.....	600,000
Petersburg Imperial.....	446,000
* London British Museum.....	435,000
* Copenhagen Royal.....	412,000
* Berlin Royal.....	410,000
* Vienna Imperial.....	318,000
* Dresden Royal.....	300,000
Madrid National.....	200,000
Wolfenbützel Ducal.....	200,000
Stuttgart Royal.....	187,000
Paris Arsenal.....	180,000
* Milan Breza.....	170,000
Paris St. Genevieve.....	150,000
Darmstadt Grand Ducal.....	150,000
* Florence Magliabecchian.....	150,000
* Naples Royal.....	150,000
* Brussels Royal.....	138,500
Rome Casanate.....	120,000
* Hague Royal.....	100,000
Paris Mazarin.....	100,000
Rome Vatican.....	100,000
* Parma Ducal.....	100,000

These marked thus (*) are entitled by law to a copy of every book published within the States to which they respectively belong.

Lien. It has been decided that no shipwright has a lien upon a vessel for the repairs, etc., done to the vessel, when he parts with the possession of the vessel, and can only recover the same from the owners in an action for debt, as he in this case, as well as tradesmen, who have no lien upon the ship, are supposed to have given the credit for the requisites required for the vessel to the owner. In maritime lien, the persons who have a claim in the Admiralty Court *in rem*, and can compel reimbursement, consist of those who have rendered services to the ship by their labor, as mariners, by pilotage, tonnage, salvage, and by the loan of money as bottomry for repairs. The wages of seamen have the first claim upon a vessel, and then come salvage, pilotage, tonnage, or bottomry. Bottomry, however, has a precedence over prior salvage, although it gives way to subsequent salvage. Sir John Michel, speaking of lien, says : " Subjects which operate for the protection of prior interests are privileged over those interests."

Lieutenant, of a ship of war, the officer next in rank and power to the captain, in whose absence he is accordingly charged with the command of the ship, as also the execution of whatever orders he may have received from the commander.

Lieutenant (*locum tenens*, holding the place of), in a military sense, means the person second in command ; as, lord-lieutenant, one who represents the prince or governing power ; lieutenant-general, one who stands next to the general ; lieutenant-colonel, the next to a colonel ; and lieutenant, the next to a captain, in every company of both foot and horse, and who takes the command upon the death or absence of a superior officer.

Life-Boats. See LIFE-PRESERVERS.

Life-Preservers. Although it too frequently happens that an accident which materially endangers the life of an individual, deprives him, in the meantime, of that presence of mind which alone would enable him to take proper measures for his safety ; yet to have meditated, in an interval of leisure, upon the best method of proceeding in case of emergency, must tend greatly to diminish the embarrassment and confusion that commonly accompany the accident, even if it should not be thought necessary to provide any particular apparatus for the purpose of escaping the danger. There are also many ways in which those who are not immediately involved in the disaster may contribute to the preservation of life, whether actuated by interest, or by humanity only ; and the modes of relief will therefore be naturally divided into the *internal* and the *external*, whether relating to *fires* or to *shipwrecks*.

Internal Fire-Escapes.—Whenever a family establishes itself in a residence not detached from others, it becomes of importance to ascertain what facilities the house affords for ascending to the roof, and for passing to those of the neighboring houses. It is scarcely possible that a conflagration should extend at once to the contiguous houses on each side, before the inhabitants of the house in question have had time to escape. But in a detached house, if there are not two or more stair-cases remote from each other, and even in a house contiguous to others, when there is no facility of communicating by the roof, it becomes highly expedient to provide some *internal means* of escaping through the windows, in case of fire, and to have on every floor a strong rope, with a hook or a loop at the end, by which it may be fastened to a bed-post, so as to enable an active person to descend by its help out of the window, finding from time to time a partial footing in the inequalities of the wall. This process will be greatly facilitated by having the rope knotted at intervals of about a foot throughout its length ; the knots being nearly as convenient as the blocks or clips, that are sometimes made for the purpose of retarding the descent, by holding them, and regulating the friction by the pressure of the hand ; unless the clip be attached to a strong cross-bar, on which a person may sit, while he regulates the position of the clip by its handles, allows himself to descend with more or less velocity at pleasure.—EMERSON'S *Mechanics*, figs. 228, 229 ; LEUPOLD'S *Theatrum Machinarum*, plate liv.

External Means of Escape from Fire.—The external means to be employed in cases of conflagration must be provided by the managers of fire-offices, or by other public officers ; and every ingenious workman whom they may employ will be able at his leisure, to devise such apparatus as he can the most conveniently execute, and to give it a full trial in the absence of all danger ; it will therefore only be advisable that he should compare for himself the particular inventions which have been suggested for this purpose, and that he should choose from among them such as he thinks most likely to do him credit ; and he may, indeed, very possibly find means of improving on any of them. In Leupold's *Theatrum Machinarum* (plates liv. lv.), we find the representation of a chair calculated to be drawn up or down by means of pulleys. Mr. Varcourt obtained, in 1761, the approbation of the Parisian Academy of Sciences for his invention of a hollow mast, fixed in a wagon, and supporting a stage, with the means of ascending and descending.—*Hist.*, p. 158. In the beginning of the present century, a fire-escape of Mr. Audibert was approved by the Parisian Institute.—*Mém. Inst.*, lv. A committee was also appointed for examining several similar inventions at the Lyceum of Arts, and a medal was awarded by it to Mr. Daujon, for his apparatus, which consists of a platform carried on wheels, supported by three frames, with brass wires, on which boxes are made to slide up and down for the conveyance of persons or furniture.—*Annales des Arts*.

Repertory, ii., vol. i., p. 439. Mr. Collins's invention of pipes raised by ropes, and affording a centre to a long lever, is described in the fourth volume of the *American Transactions*, and in the *Repertory*, vol. xv., p. 35. In the 81st volume of the *Transactions of the Society of Arts* for 1813, p. 244, we have an account of a fire-escape invented by Mr. Adam Young, for which he received a medal from the society. It appears to constitute by far the most portable of ladders, consisting of cross bars or rounds connected by ropes, and having their ends fitted together, so as to form a pole, which is readily elevated to the window; and the rounds being separated, and the hooks at the end properly fixed to the window-frame, the whole forms itself into a very convenient ladder of a mixed structure. The 34th volume, for 1816, p. 227, contains a description of Mr. Braby's fire-escape, consisting of a car made to slide on a strip of plank fixed to a pole, and governed by a rope, which is cased with iron, to protect it in case of necessity, from the effect of the fire.

A great many other forms of fire-escapes might be noticed, for it is one of those subjects which readily appeal to the ingenious mechanic in a large city where fires are numerous; and every form of fire-escape must at times fail. Hence, there has been a sort of competition among the uneducated inventors, who have displayed some mechanical ingenuity, but have not, so far as we are aware, developed any new principle.

Internal Means of Escape from Shipwreck.—The means of escaping from shipwreck may be similarly divided into *internal* and *external*, or into the precautions to be taken by the ship's company, and the measures to be adopted by persons on shore. The internal means depend either on enabling the individuals to swim or float, or establishing a connection with the shore by ropes; and of the former, we may first consider those which require no particular preparation before the occurrence of the accident that calls them into action, and which are, therefore, the most universally applicable. Of such expedients, the most effectual appear to be those which depend on the employment of empty water-casks for assisting the ship's company to drift on shore. 1. A paper on the arrangement of water-casks, to serve as floats in case of shipwreck, appears in the publications of the Society for the Improvement of Naval Architecture, dated in 1796 (vol. ii., p. 51). 2. In 1818, Mr. Grant of Bideford obtained a gold medal from the Society of Arts, for the invention of a life-preserver, consisting of a 36 gallon cask, with some iron ballast fixed on a wooden bed, and lashed to the cask, and with ropes round it for the men to hold; and it was found that 10 men were supported by it with convenience in tolerably smooth water, the bung of the cask being well secured by cork (vol. xxxvi., p. 63). The ballast could be of very little use, and a cask simply tied round with a rope, like a common parcel, would probably answer the purpose equally well. It would, indeed, be prudent for every ship in a storm, on a lee shore, to have a few of her casks well emptied and stopped, and tied in this manner, before the actual occurrence of imminent danger. 3. In 37th volume of the *Transactions of the Society* (p. 110), there is an account of Mr. Cook's life-raft, consisting of a square frame with canvas nailed across it, supported by a cask at each corner, for which the gold medal was voted to him. 4. It is followed by a description of Lieutenant Rodger's life-raft (p. 112), which obtained a similar compliment. This raft has the advantage of requiring only such materials as are usually found on board of every ship; capstan-bars, boat-masts, yards, or any other spars of moderate dimensions, which are tied together so as to make a sort of wagon frame, with a large cask fixed on each side; it appears to afford a very convenient support to the men, but it can scarcely

possess any great strength for resisting the force of the breakers.

Mr. J. Bremer, a clergyman in the Orkneys, had received a medal from the Society in 1810, for his method of converting any ship's boat into a life-boat by putting into it 3 or 4 casks lashed to the keel, which is to have ring-bolts fixed in it for receiving the ropes by which the casks are fastened; he gives particular directions for making all the necessary arrangements, in the 28th volume of the *Transactions* (p. 134); he particularly advises that no use should be made of the natural buoyancy of the cavity of the boat, but that the bottom should be perforated without hesitation, wherever the hole would afford any additional facility for fixing a rope. Captain Manby's jolly-boat, fitted as a life-boat, "at the expense of £3," seems to be comprehended among those preparations which are to be made previously to the voyage. The buckling a soldier's canteen on his breast as an assistance to enable him to float, belongs to those temporary expedients which may occasionally be employed with advantage. Tying a hat in a pocket-handkerchief, and holding it as a float, has been recommended by Mr. Dawson in the *Philosophical Magazine* (vol. xx., p. 362); he advises that the crown of the hat should be held downward, and observes that a stick may be employed, to enable us to use 2 or 4 hats at once; but this method can only be adopted when the accident occurs in very still water.

In China, a frame of bamboo surrounding the person is used for a float, and the lightness and strength of this substance must well adapt it for the purpose; sometimes also a gourd is tied to a child, to secure its floating in case of accident. The inflated goat-skins used from time immemorial by the Arabs, or the seal-skins employed by the Chilians, have the disadvantage of being easily rent or torn by a rock or a spar; an objection which is also more or less applicable to all substances containing air; for example, to the air-jackets described in Leupold's *Theatrum Pontificum*, published about 1724. A float of a semicircular form was recommended by Ozanam, the author of the *Recreations*; and Bachstrom, in his *Art of Swimming*, proposed to float a troop of cavalry, by fixing cork to the saddles. The cork jacket of Gelacy is described in the *History of the Parisian Academy of Sciences* for 1757, and Lachapelle's *Scaphander*, which is considered an improvement on it, in the volume for 1765. In the year 1764 the attention of the British public was particularly called to the floating powers of cork, by some experiments which were made with cork jackets on the Thames, together with some comparative experiments on air-jackets; and Dr. Wilkinson, in the *Philosophical Transactions* for 1765, describes some experiments by which he ascertained that about a pound of cork was amply sufficient to enable a man of ordinary size and make to float without effort. It is almost superfluous to enumerate the multitude of trifling variations that have been made in the arrangements of cork jackets and air-jackets, apparently for the purpose of exciting a momentary interest, though possibly from the best motives. Mr. Bosquet advised a bag of cork shavings to be kept in readiness by each person; the *Seaman's Friend* was composed of two pieces of cork, united by straps; the *Collinetta* was a hollow vessel of copper, divided into cells; a "marine spencer" has been described by Mr. Spencer, in the 16th volume of the *Philosophical Magazine*, consisting of a number of old corks, arranged so as to form a girdle; and in 1806, Mr. T. C. Daniel obtained a gold medal from the Society of Arts, for the invention of an apparatus of waterproof leather, surrounding the body, which, according to the testimonials he produced, had saved the lives of some persons who had been sailing in a pleasure-boat on a river. In smooth water, it has been suggested that throwing a foot-ball, with a small weight tied to it, to the person immersed, would often afford sufficient assistance;

and, with respect to floating, there is no doubt that any of the assistances which have been proposed would be sufficient if they were at hand; but there is another object, to which it is necessary to attend, in cold, and even in temperate climates, that of supporting a temperature compatible with life and health, if the immersion is likely to be of long duration; and an additional provision of worsted stockings, jackets, and trousers, will be almost as essential, in such cases, as the means of obtaining buoyancy.

The invention of India-rubber cloth led to the introduction of inflated belts, the advantages of which, compared with cork, and other forms of belt, are their greater buoyancy compared with their bulk, and their greater portability, for, when emptied of air, they can be folded up, and packed into a small space. The objections to them are their liability to get punctured or torn, and to decay, from being put away damp; the metal valves by which they are inflated may also get out of order; during the hurry and confusion of a wreck they are liable to be only partially inflated, and the valves to be only half screwed up, so as to allow of the escape of the inclosed air. Commander J. R. Ward, R. N., inspector of life-boats to the National Life-Boat Institution, has invented a belt with 4 compartments, which admit of being separately inflated, thus mitigating the danger arising from puncture or injury to the inflating valves; it has a buoyancy equal to 30 lbs., and should two of its compartments be disabled, the remaining two would be sufficient to float the wearer.

For the rough purposes of ordinary boat-work, Commander Ward insists on the advantages of cork as a material for life-belts, and he has invented a form of belt, which has been selected by the National Life-Boat Institution for the use of its life-boats' crews. The buoyant power of each belt is from 20 to 24 lbs., the cork is uncovered, so that its quality can be seen, and it is divided into numerous narrow pieces, each of which is sewed separately to a strong linen or duck belt, which covers the body from the arm-pits to below the hips. The pieces of cork are distributed in two rows, one above, the other below the waist, and the belt is secured closely about the body by means of strings passed round the waist, between the two rows of cork. It is further secured by other strings, crossed over the shoulders. By this arrangement the trunk of the body is enveloped in cork, attached so as to be quite flexible, and to allow of the usual movements of the body without inconvenience, while it protects the body against injury from blows, and is a warm covering in cold weather.

Various forms of buoyant mattresses have been contrived by Mr. Laurie and others. As manufactured by Mr. Silver, numerous waterproof tubes are partly distended with horse-hair, woolen flocks, or cocoa-nut fibres, so that, should one or more of the tubes fail, the others may suffice to sustain the required weight on the water. The tubes are made up into mattresses, pillows, and floats—the last to be placed under the thwarts of boats. A mattress weighing 17 lbs. sustains in the water 284 lbs. A pillow sustains 28 lbs. A mattress for emigrant vessels, sold at 9s., was proved at the Great Exhibition. It sustained 96 lbs. in the water during 5 days, without being injured. Floating mattresses are also made, filled with cork shavings. In the Great Exhibition, Mr. Rhind had various models of deck seats and benches for steamers, so constructed as to be readily formed into rafts, each of which was capable of sustaining 8 persons.

For the second object which is desirable to a ship in distress, that of obtaining a safe communication with the shore, it has been usual of late years to rely principally on the humane exertions of persons who may be on the coast, and who may have made preparations for this purpose; and with this view, some instructions for properly co-operating in the measures to be

adopted with Captain Manby's apparatus have been liberally distributed to all ships when they received their papers from some of the British custom-houses. There are, however, some simple expedients which may be adopted for this purpose by persons on board of the ship; for example, the making a kite with a pocket-handkerchief stretched over a hoop, and causing it to carry a cord to the lee shore, by means of which a stronger line, and at last a hawser, may be drawn by persons standing on the beach. A line may also sometimes be carried on shore by a cask, allowed to drift before the wind; and a bag has been recommended to be attached to such a cask, or to a buoy, in order to act as a sail, and to insure its crossing the surf. Mr. Cleghorn was also rewarded, in 1814, by the Society of Arts, for the invention of a buoyant line, having a heart of cork, to obviate the inconvenience which would arise from its sinking and being dragged on the stones under the breakers; but he observes, that in heavy storms there is generally a current along shore which renders the method almost impracticable. (*Transactions*, xxxii., p. 181.) A Mr. Wheatley assures us, in Captain Manby's *Essay*, that his own life, and those of 8 other persons, were saved, in 1791, by a lead line, which was carried on shore by a Newfoundland dog that he happened to have on board, when two good swimmers had been drowned in the attempt to swim on shore. It had occurred to Lieutenant Bell, in 1791, that a rope might be thrown from a ship which had struck, by means of a mortar carrying a heavy shot, and upon the principle of the gun harpoon; and he showed the practicability of the suggestion by an actual experiment, in which a deep-sea line was carried to a distance of about 400 yards. (*Trans. Soc. Arts*, xxv., p. 186.) He recommended that every ship should be provided with a mortar capable of carrying such a shot, and observed that it might be placed on a coil of rope to be fired, instead of a carriage. The line was to be coiled on handspikes, which were to be drawn out before the mortar was fired. In 1792 he received a premium of 50 guineas from the Society of Arts (*Transactions*, xiv., p. 204); and he obtained his promotion in the Ordnance as an acknowledgment of his merits. The shot was to weigh about 60 lbs. or more, and the mortar 5 or 6 cwt. The experiments of the French artillery at Lafere were subsequent to those of Mr. Bell, though they have sometimes been quoted as the first of the kind.

It has, however, generally been thought impracticable to manage a mortar with effect under the circumstances of actual shipwreck; and Mr. Trengrouse has preferred a rocket, as more easily fired, and as having a smaller initial velocity than a shot, so that the rope would be less in danger of being broken by the impulse. He found that a rocket of 8 oz. carried a mackerel line 180 yards, and a 1 lb. rocket 212; and in some experiments made under the inspection of the Society of Arts, a rocket $1\frac{1}{2}$ inch in diameter carried a cord across the Serpentine River in Hyde Park. The musket is provided with a valve, to prevent the escape of the materials of the rocket; and it is to be fired with a little powder, without wadding. The whole apparatus is packed in a chest, containing from 8 to 12 rockets, the musket, a life-spencer, a chair to traverse on a rope, a canvas bag, and a ball of wood to throw to a person swimming. Mr. Trengrouse was complimented with a medal from the Society of Arts in 1820. (*Vol. xxxviii.*, p. 161.)

External Means of Escape from Shipwreck.—The means to be employed by persons on shore, in cases of shipwreck, depend either in projecting a line over the ship, or on the use of a life-boat. Mr. Bell had cursorily observed that a line might be carried over a ship from the shore by means of his mortar; but for the actual execution of this proposal, in a variety of cases, we are indebted to the meritorious exertions of

Captain G. W. Manby, whose apparatus, according to the report of a committee of the House of Commons, dated in March 1810, appears "to be admirably adapted to its purpose, and to have been attended with the fullest success in almost every instance." In consequence of this report, Captain Manby was thought worthy of a parliamentary reward; and he afterward published a description of his inventions, under the title of "An Essay on the Preservation of Shipwrecked Persons," 8vo, London, 1812. He had previously received a gold medal from the Society of Arts in 1808 (*Transactions*, xxvii., p. 209). His success makes it expedient to extract from his essay a detailed description of the apparatus; and it will be easy to make it somewhat more intelligible by a slight alteration of the order of arrangement: "The method of affixing a rope to a shot, for the purpose of affecting communication, when projected from a piece of ordnance over a stranded vessel, was at length succeeded in, by introducing a jagged piece of iron, with an eye at the top, into a shell, and securing it by filling the hollow sphere with boiling lead; and in another way, by drilling a hole through a solid ball, and passing a piece of iron with an eye to it, as before described, to the bottom, where it should be well secured by riveting. To produce the means of connecting a rope to a shot, and prevent its being burnt, and rendering it 'irresistible' to the powerful inflammation of gunpowder, was the labor of infinite time, and the number of experiments to accomplish it were numerous. Chains in every variety of form, and great strength, breaking, proved that it required not only an elastic, but a closer connected body. At length, some stout platted hide (fig. 2), woven extremely close to the eye of the shot, about two feet in length beyond the muzzle of the piece, and with a loop at the end to receive the rope, happily effected it." (fig. 2) Fig. 1.

"This method is certainly desirable, as a rope may immediately [as] it is required, be affixed to the loop, and applied in service. The form of the platted hide may likewise be woven by twisting it in the manner that the lashes of whips or rope are spun. There is another method, by passing the rope through a case of leather, taking the greatest care that it is so well secured at the eye of the shot as to leave no room for the slightest play, as is represented by the annexed barbed shot (fig. 2).



Fig. 2.

When the crew of the distressed vessel are incapable of availing themselves of the benefits arising from communication, they having previously lashed themselves in the rigging to prevent being swept away by the sea, which is repeatedly breaking over them, and when, from long fatigue and the severity of the storm (on which occasions it too frequently occurs), they totally lose the use of their limbs, and are rendered incapable of assisting themselves in the slightest degree—the advantages of this shot are, that, on its being projected over the vessel, and the people of the shore hauling it in, it firmly secures itself on some part of the wreck or rigging, by which a boat can be hauled to the relief of the distressed objects; and by the counterbarbs it is rendered impossible [that it should] give up its hold, or slip, while that part of the wreck remains to which it has secured itself.

"Among the many that have been saved by this shot, the following are testimonials of a few of the cases: 'We, the crew of the brig *Nancy* of Sunderland, do hereby certify that we were on board the said vessel when she was stranded on the beach of Yarmouth, on Friday morning, the 15th of December, 1809, and compelled to secure ourselves in the rigging to prevent being swept away, the sea running so high over the vessel. And we do further declare and certify that Captain Manby, firing a rope with a hooked shot, securely holding on to the wreck, enabled a boat to be hauled from the shore over the surf to our relief, otherwise we must inevitably have perished.' This certificate is attested by six signatures.

"Facilitating communication is at all times of importance; but when the stranded vessel is in momentary danger of going to pieces, this point becomes a consideration of extreme urgency. I feel a persuasion that this particular service can only be carried into effect by a small and light piece of ordnance, the range of which is consequently very inconsiderable, when compared with that of a large and heavier piece, as it is weight alone that conveys the rope. In order, therefore, to increase the powers of shot projected from a small mortar, its natural form must be varied, so as to give it additional 'preponderance.' The annexed shape, in the form of a pear (fig. 3), has been used with the greatest success; for, by the increased weight, the shot's momentum and power over the line is in consequence considerably augmented in its range; and when made to fit the piece as close as possible, a great increase of velocity is likewise produced from the decrease of windage.



Fig. 3.

"Portability in the construction of a piece or ordnance (as just described) is the very essence of this service; and communication with the stranded vessel or wreck may be effected with a cord, by which cord a rope can be conveyed, and by that rope a hawser or cable sent to the distressed vessel; for this purpose the annexed was constructed (fig. 4). A person completely equipped with every necessary apparatus to effect communication with a vessel driven on a lee-shore * * * the horseman, fully equipped, traveled a mile and a half, the howitzer was dismounted, and the line projected 153 yards, in six minutes.

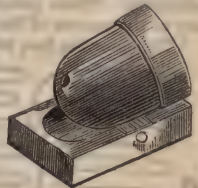


Fig. 4.

"The application of a small piece of ordnance likewise offers particular advantages, capable of being employed from a boat to go to the assistance of a vessel grounded on a bar when running for a harbor, the necessity of which repeatedly occurs, and was twice witnessed at Blakeney, on the 10th of November, 1810, when boats endeavored to go to their relief, and were enabled to get out of the harbor on the ebb tide, within 20 yards of the vessel; but it was found impossible to approach them nearer. Had such boats been provided with a piece of this description, and the same firmly secured on a stout piece of plank, by the holes left at each corner of the iron bed, they might have projected a small rope, coiled in a crate or basket, made to the form of the bow of the boat; and the persons in the boat, so provided, would not have remained the distressed spectators of the untimely end of their fellow-creatures, without being able to afford them the smallest relief, although so little was then wanting for that desirable purpose.

"Although advantages have been pointed out in the use of these small mortars, it is necessary to be kept in remembrance that they are produced for particular services; as the nature of the coast, and circumstances attending the distressed vessels, will direct what piece is best adapted to the undertaking. To enable

the mind to form a judgment of what can be effected by other pieces, the following are the minutes of experiments made with a $5\frac{1}{2}$ -inch brass mortar, stating the quantity of powder used, and distance the ropes were projected against a strong wind, at the angle of 17° (elevation): weight of the mortar and bed about 300 lbs.:

Ounces of powder.	Yards of inch and half rope.	Yards of deep-sea line.
4	184	148
6	159	182
8	184	215
10	207	249
12	235	290
14	250	310

"With a short 8-inch mortar, the weight of which, and bed, was supposed to be about 700 lbs; the angles of elevation uncertain:

Ounces of powder.	Yards of deep-sea line.	Yards of two-inch patent Sunderland rope, capable of hauling the largest boat from a beach.
82	439	..
32	479	..
82	..	886

"Directions for using the Apparatus.—When the rope (which should be pliant and well stretched) is brought on the beach or cliff opposite to the stranded vessel, the most even spot, and free from projecting stones, should be selected to lay it on, and great care be taken that no two parts of it whatever overlay or even touch each other; nor must it be laid in longer lengths than of two yards. But to project a small line or cord, it will be necessary, if it is required to contract the faker to half a yard at most, to avoid the jerk received at the end of each right line. The best method, with such a description of cord, is to lay it on the ground in the most short and irregular windings, to relieve it from the powerful impulse. To prove the effect of the impulse on a rope, if it is faked in lengths of 10 or 15 yards, it will break each time, as it then becomes a most powerful pendulum. These precautions are absolutely necessary to the success of the service.

"The following has, after various trials, been found a certain method of laying the rope, and placing it into compartments." (*French Faking, fig. 5*)

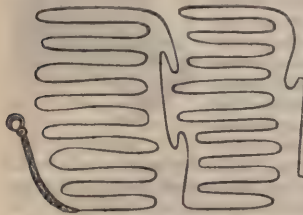


Fig. 5.

removed that might otherwise obstruct its rapid flight. Its advantages are, that it will allow the eye rapidly (yet correctly, just before firing, which is absolutely necessary) to pass over the different compartments, and at once discover if any fake has been displaced by the storm, or by any other casualty or accident come in contact with another part, which would destroy its application by the rope breaking.

"It may likewise be coiled in the manner used in the whale fishery, *whale lair* (fig. 6); and in the method called *chain faking* (fig. 7).

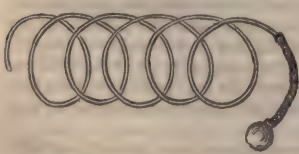


Fig. 6.

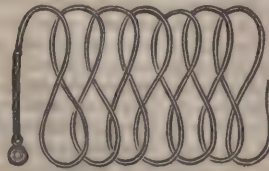


Fig. 7.

It is, however, necessary to add, that great attention is required in laying it agreeably to the two latter methods, arising not only from the arm being liable to get under certain parts of the rope, and thereby dis-

place it, but from the great anxiety of mind natural on these occasions, where the lives of fellow-creatures are literally dependent on the correctness with which the rope is laid; it is therefore extremely difficult, in a moment of agitation, to determine whether any overlay has taken place, an error that would infallibly destroy every endeavor, and occasion even the fates of those whose lives we might be exerting ourselves to preserve. Could persons in the performance of this service be always collected, the two latter methods would have a decided advantage over the first mode of faking, they being laid in a much less space of time.

"As all these methods of laying the rope occupy time to place it with the care necessary; and as it has repeatedly happened that a vessel very soon after grounding, has gone to pieces, and all hands perished; it was necessary to produce a method of arranging the rope, so that it could be immediately projected as soon as it arrived at the spot; and none proved so effectual as when brought ready in a basket (fig. 8.) In this

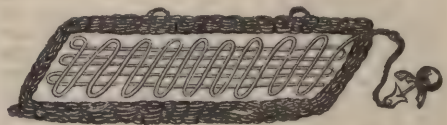
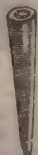


Fig. 8.

case, the rope should be most carefully laid in alternate tiers or fakes, no part of it overlaying; and it should be well secured down, that in traveling it be not displaced; but, above all, no mistake must happen in placing the basket properly. For example, that the end of the basket, from which the shot hangs in the above figure, should be previously marked, and must be placed toward the sea or wreck, that the rope be delivered freely, and without any chance of entanglement. It will be scarcely necessary to add, there will be several tiers of the rope when laid. The utmost care and attention are required in laying the rope in tiers with strict regularity, to prevent entanglement.

"The next is the application of the mortar. If the wind is sideways to the shore, it must be pointed sufficiently to windward to allow for the slack of the rope lighting on the object, as the rope will, of course, be considerably borne to leeward by the effect of a strong wind, and by its being laid at a low elevation insures the rope falling against the weathermost part of the rigging. While this service is performing, great care should be taken to keep the mortar dry; nor should it be loaded until every thing is ready; when that is done, it should be primed; but as it would be impossible to do it with loose powder in a storm, a tube is constructed in the simplest manner of common writing paper (the outer edge being cemented with a little gum) in this form (fig. 9). It is filled with meal gunpowder, made into paste with spirit of wine; when in a state of drying, run a needle through the centre, and take care the hole is left open, for, on the tube being inflamed, a stream of fire darts through the aperture with such force as to perforate the cartridge. The mortar should then instantly be fired; Fig. 9.



and in order to lessen a difficulty that has often occurred in performing this service, a pistol may be used, having a tin box over the lock, to exclude the effect of wind or rain on the priming; and the muzzle being cut [obliquely], dilates the inflammation, so as to require but little exactness in the direction of the aim.

"We will suppose the communication to be secured, although it is scarcely necessary to offer any other assistance than that of a rope, as the inventive genius

of a sailor will supply every thing else; yet I could expect the people on shore to get a boat ready for meeting the vessel when driven on a beach: it is the promptest and most certain method of relief, as well as the most easy to be accomplished; for by hauling her off with the rope projected, the boat's head is kept to the waves, and not only insures safety by rising to the surge, but prevents her upsetting. When the rope attached to the shot (not having barbs to it), is fired over the vessel and lodges, let it be secured by those on board, and made fast to some firm part of the rigging or wreck, that they may haul off a boat by it; but should there not be any boat, then haul on board by the projected rope a larger one and a tailed block, through which a smaller rope is rove. Let the large rope be made fast at the mast-head, between the cap and the top of one of the lower masts, and the tailed block a little distance below it; but, if the mast should have been cut or carried away, then it must be made fast to the loftiest remaining part of the wreck. When this is done, there will be supplied from the shore a cot, hammock, netting, basket, hoop, or any of the numerous resources of seamen, which will run on the larger rope, and be worked by the people on shore. If a cot be used, the men may be so securely fastened to it as to preclude all possibility of falling out, and then be brought from the wreck, one by one, in perfect safety.

"While communication is gaining, 3 stakes should be driven into the ground in a triangular position, so as to meet close at the heads to support each other. As soon as communication has been effected by the crew of the vessel, and they have secured the line attached to the shot, made fast to these stakes, the crew will haul on board by it a large rope and a tailed block, through which a smaller rope is to be rove, both ends of which (the smaller rope) are to be kept on shore. When they have secured these on board, and the larger rope is rove through the rollers, let a gun-tackle purchase be lashed to it, then lash the purchase to the stakes. By the means of the purchase the larger rope may be kept at a fit degree of tension; for, if care be taken to slacken the purchase as the ship rolls out to sea, the danger of the rope being broken will be guarded against; and on the other hand, if the purchase be gathered in as the ship rolls toward the shore, the slackness of the rope, which would prevent the cot (fig. 10) traversing as it ought to do, and plunge it in the water more than it otherwise would, will be avoided.

"Supposing neither boat nor cot apparatus at hand, first cast off the shot from the projected rope, and with a close hitch, let it be put over the head and shoulders of the person to be saved, bringing it close under

seize every moment for respiration, after each surf has passed over the body. If circumstances compel recourse to this method, care must be taken to free the rope from any part of the wreck, and to jump clear away; but should there be more than one on board, each man should make himself fast in the same way, about 4 four feet from the other, and join hands, all attending to the same directions.

"For giving Relief to Vessels Stranded on a Lee Shore in a Dark and Tempestuous Night.—It will be requisite, first, to devise the means of discovering precisely where the distressed vessel lies, when the crew are not able to make their situation known by luminous signals; secondly, to produce a method of laying the mortar for the object, with as much accuracy as in the light; thirdly, to render the flight of the rope perfectly distinguishable to those who project it, and to the crew on board of the vessel, so that they can not fail of seeing on what part of the rigging it lodges, and consequently have no difficulty in securing it. To attain the first object, a hollow ball was made to the size of the piece, composed of layers of pasted cartridge paper of the thickness of half an inch, having a lid on the top to contain a fuse (fig. 11), and it was then filled with about 50 luminous balls of star composition, and a sufficient quantity of gunpowder to burst the ball and inflame the stars. The fuse fixed in the ball was graduated, to set fire to the bursting powder at the height of 300 yards. Through the head of the fuse were drilled holes, at equal [distances], to pass through them strands of quick match, to prevent the possibility of any accident from the match falling out, or from its not firing the fuse. On the stars being released, they continued their splendor, while falling, for near one minute, which allows ample time to discover the situation of the distressed vessel. During the period of the light,



Fig. 11.

a stand, with two upright sticks (fig. 12), (painted white to render them more discernible in the dark), was ready at hand, and pointed in a direct line to the vessel.

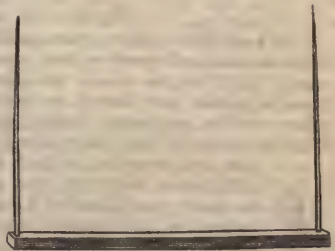


Fig. 12.

"A shell

affixed to the rope, having four holes in it to receive a like number of fuses (headed as before described), and filled with the fiercest and most glaring composition, which, when inflamed at the discharge of the piece, displayed so splendid an illumination of the rope, that its flight could not be mistaken.

"To get a Boat from a Beach over the Surf.

—The importance of going to the relief of ships in distress at a distance from the land, or for taking off pilots, was viewed as of the highest consequence by the elder brethren of the Trinity House, and offered to my particular attention by several distinguished characters. After numerous experiments to accomplish it in various ways, the mode following was most approved:—About 40 fathoms of 2½-inch rope, made fast to 2 moving anchors, was laid out parallel with the shore, at a distance beyond the sweep of the surf; to the centre of this rope was made fast a buoy, of sufficient power to suspend the great rope, and prevent it from chafing on the sand, rock, or stones, as well as embedding, a circumstance that has rendered it impossible, on a sandy or shingly coast, to heave out an anchor with a

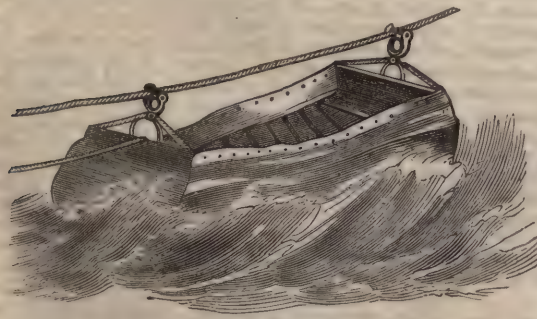


Fig. 10.

each arm, drawing it tight, observing particularly the knot is on the breastbone; for, by having the knot in that position, on the people of the shore hauling the person from the wreck, he will naturally be on his back, consequently, the face will be uppermost to

tre of this rope was made fast a buoy, of sufficient power to suspend the great rope, and prevent it from chafing on the sand, rock, or stones, as well as embedding, a circumstance that has rendered it impossible, on a sandy or shingly coast, to heave out an anchor with a

rope to it from the shore. As this service should be performed in fair weather (to be prepared for the storm), it may be regulated with the greatest exactness, and should take place at the top of high-water, that the upper part of the buoy may be at the full stretch of its power, and only seen at that time. Should the shore be extremely flat, it will be desirable to place another set at a sufficient distance beyond the first, to insure the operation of this method in any state of the tide.

"The royal mortar being brought to the spot, is to be pointed in the direction for the buoy, and should be laid at a very low elevation, but such as to insure the range; for the more it is depressed, the less slack of rope there will be from the parabola formed in the shot's flight; the basket with the rope ready laid (having a barbed shot to it) is to be placed in the front of the mortar; on its being fixed, instantly haul the slack of the rope in, to prevent the effect produced on it by a strong tide; which being done, let the remainder be gently hauled in, to insure the shot's grappling with the great rope; when that is caught and hooked, a power will be acquired fully adequate to the service.



Fig. 13.

"As a cast-iron anchor appears particularly adapted to this method, and would be much cheaper than hammered, fig. 13 is a plan of one which the British Navy Board approved, and allowed me to cast at their expense, for the purpose of making the experiment.

When a vessel is in that extreme and perilous situation, driven under a rugged and inaccessible cliff, and in danger of going soon to pieces, the most prompt method I should suggest is, by lowering to the crew a rope with stiff loops spliced into it (fig. 14), at the distance of a foot and a half from each loop, of sufficient size to contain the foot, by which they can ascend as a ladder. This rope-ladder is capable of being projected; and one of an inch and a half rope was thrown from a mortar 194 yards. It might also, from the simplicity of its structure, be extremely useful in escaping from a house on fire. By making one end fast to the leg of a bed or a table, the person would come down from the window in safety, and with much less difficulty, and quicker, than with the common rope-ladder, which is heavier and more unwieldy. It has great advantages when employed in saving shipwrecked men in situations just described, when, from extreme cold, and almost benumbed limbs, it would be impossible for them to climb up a rock, or ascend it even by the aid of a common rope. The holds, thus spliced in, will support both hands and feet."

Fig. 14.

The Report of a Committee of the House of Commons contains also a paper of instructions for the managers of Captain Manby's apparatus on shore, which are somewhat more minute than the directions published in his Essay. For example:—"If the wind be sideways to the shore, the mortar must be pointed sufficiently to windward to allow for the slack of the

rope lighting on the object, as the rope will, of course, be borne considerably to leeward by the effect of a strong wind. The distance your judgment decides the vessel to be from the shore should regulate the charge of powder as stated in the scale, taking just a sufficient quantity to clear the object; an attention to this will be more certain of your effecting communication, and guarding against the danger of the rope breaking, or any other circumstance that might prevent the successful performance of the service. The elevation of 15° is to be preferred, particularly if the wind is sideways, pointing the mortar sufficiently to windward, as the rope would then fall against the weather-most part of the rigging of the stranded vessel. When a vessel is driven on shore in the night, you will flash gunpowder as often as convenient on your way; this will animate the crew, and denote to them you are coming to their assistance. On getting to the spot where you have reason to suspect the vessel lies, as you are not able to discover her from the extreme darkness, and if the people on board can not [make known] their situation by luminous signals, or noises (which they will be directed to make if possible), you will lay the mortar at a very high elevation, and fire a light ball. Just before you fire (the rope) it would be advisable to let off a blue light to put the crew on their guard, to look out, and be ready to secure the rope. The service can be performed with a carronade."

In the report we have a copy of directions to persons on board vessels stranded on a lee-shore, proposed to be delivered to the masters at the custom-house. It is observed, that even snapping a pistol, when the powder is wet, may sometimes afford a signal visible on shore, from the sparks of the steel alone. The other parts of the directions will be supplied by those who understand the principles of the proposed mode of relief.

Rockets have of late years been much employed instead of the mortar, in Manby's apparatus for throwing a line to a ship in distress. "Dennett's Rocket Apparatus" is supplied to many stations along the coast. The only advantage which the rocket has over the mortar is its greater portability; for, being much lighter, it can be used with greater facility among rocky cliffs, and in positions difficult of access. The disadvantages of rockets are, that they are somewhat uncertain, sometimes exploding as soon as ignited, to the danger of the bystanders; and they are also liable to deteriorate from the effects of damp or of age. Moreover, being expensive, they can not be often employed in trials, so as to keep up the practice of the people employed in using them. The range of a shot from a 24-lb. mortar, which is the ordinary size, is about the same as that of a 12-lb. rocket, which is the largest in use. As the management of the mortar and rocket apparatus is much better understood by the officers and men of the coast-guard service than by ordinary boatmen and fishermen, it has been almost entirely left in their hands, and is provided by the Board of Customs. There are in England 132 mortar and rocket stations; in Scotland, 15; in Ireland, 22. Several inventions, or variations, in the Manby apparatus may be just glanced at. M. G. Delvigne uses a howitzer instead of a mortar, while a portion of the line to be carried is contained in the projectile. Mr. Greener has a method of discharging a rocket, with a line attached, from a light harpoon gun. When discharged, the rocket ignites, and is said to prolong the range to a greater distance than if the gun or the rocket were alone employed. Captain Jerningham, R.N., has an anchor of a particular form, which he proposes to fire from a Manby's mortar, in sufficient numbers to afford the means of hauling a life-boat through the surf. Mr. A. G. Carte employs a war-rocket instead of a Dennett's rocket.

Life-boats.—The last description of the inventions

to be considered, with regard to the preservation of lives in cases of shipwreck, is that of life-boats, which are of such a construction as to be incapable of sinking, even when filled with water. The occasional adaptation of the common boats of the ship to such purposes, by means of empty casks, has been already noticed. But the boats now in question are supposed to be kept on shore at proper stations; and manned by active persons, who are in the habit of exerting themselves for the relief of seamen in distress. Mr. Henry Greathead of South Shields, received a gold medal and fifty guineas from the Society of Arts, in 1802, and a parliamentary reward of £1200, besides further remunerations from the Trinity House and from Lloyd's Coffee-house, for his invention of a life-boat, which is described in the *Transactions of the Society*, vol. xx., p. 283. The length of this boat is 30 feet, its breadth, 10, and its greatest depth about 3; besides a general curvature, which nearly doubles the depth, as reckoned from the ends; the convexity below being intended to give it a greater facility of turning, and a greater power of mounting on the waves without submersion of the bow, which would increase the resistance; though it would not sink the boat; the breadth is also continued further than usual fore and aft, in order to contribute to the same property. The gunwale projects some inches; and the sides below it are eased with pieces of cork, amounting in the whole to seven cwt., which are secured by plates of copper. There are ten short oars of fir, fixed on pins to the gunwales, and a longer oar for steering at each end, both ends of the boat being alike. It is painted white, in order to be more conspicuous; and a carriage is provided, for conveying it overland when required. The description is accompanied by documents of the preservation of 200 or 300 men by the boats of South Shields and North Shields, which were built in 1789 and 1798 respectively.

Mr. Christopher Wilson received a gold medal in 1807, for a life-boat with air gunwales, which was tried at Newhaven, and was said to be lighter and more manageable than Mr. Greathead's. (*Transactions*, xxv. 55.) "Little is required," says Captain Manby, "to establish the importance and advantages that will result from giving every boat the properties of a life-boat, particularly when taken into consideration that it can be produced at a very trifling expense." To illustrate the method of giving the properties of preservation to any boat—a man-of-war's jolly-boat, for example—we quote the description of the one which was fitted up to make experiments thereon, by permission of the Honorable Commissioners of the Navy Board. "To give it buoyancy, empty casks were well lashed and secured in it. For the advantage of keeping it in an upright position, launching from a flat shore, beaching, and to resist upsetting, it had billage boards of equal depth with the keel, and when a good sized piece of iron or lead was let into or made fast to the keel, if any accident did upset the boat, it immediately regained its original posture." A stout projecting rope, with swellings upon it to increase its elasticity, surrounded the gunwale, served as a fender, and prevented it being stove in lowering down, or when driven in contact with the vessel it might be going to relieve. The boat thus described had the plug out, and was filled with water until it ran over the gunwale, when a crew of four, with myself, tried it in every way, and found from the buoyant property of the casks, it kept the boat so much above the water's edge, that it was rowed with the greatest ease, and was capable of performing any service required."

Mr. J. Boyce, in 1814, obtained a medal for his life-boat and safety-buoy, consisting of hollow cylinders made of canvas, painted and varnished, and connected with each other. "It was tried on a river, and carried a man with safety (*Trans.*, xxxii., 177); but surely it could not be trusted among breakers on a lee shore.

In 1818 Mr. Gabriel Bray obtained a silver medal for his invention of a boat filled with air-boxes under the seats and along the sides. (*Vol.* xxxv., p. 172.)

Of late years the subject of life-boats has attracted considerable attention, from the circumstance of the increasing number of wrecks, consequent on the rocky nature of many shores, and the vast and increasing amount of our commerce. The exertions, too, of the National Life-Boat Institution have had a powerful influence in directing attention to this subject. This society, founded in 1824, is under the patronage of her majesty; and the presidency of his grace the Duke of Northumberland. The object is to assist every wrecked person in the kingdom, by such means as the establishment of life-boats and rocket-mortars at all the dangerous parts of the coast; to assist in the formation of local committees at the chief ports; to confer rewards in the form of medals, votes of thanks, or pecuniary remuneration to all persons risking their lives for the sake of others; and also to encourage the invention of new or improved life-boats, belts, rocket apparatus, buoys, and other means of saving life. This admirable society is dependent on voluntary subscriptions for its existence and support. That the society has worked with some success, may be judged of from the fact, that since its establishment it has been instrumental in saving the lives of 9682 persons; it has granted 79 gold medallions, and 556 silver medals, besides pecuniary rewards, amounting to £9681. The attention of the public is also kept alive by the publication of a journal entitled *The Life-Boat*, which, in addition to statistical returns of shipwrecks, contains information on every subject connected with the preservation of life from shipwreck. One of the publications of the society is a *Wreck Chart of the British Islands*, originally published by the Admiralty. A vessel wrecked on their coast is indicated by a black spot ●, while a vessel so seriously damaged as to require to discharge her cargo is indicated by †; and the number of such marks at any one spot indicates the annual average of wrecks, which may be large because the coast is dangerous, or because the traffic is great. Thus, the mouth of the Tyne shows a larger number of black dots and crosses than any other place; the mouth of the Tees and the mouth of the Weir occupy the next places of distinction in this dismal chart; these three rivers being the outlets of the district by which London is supplied by sea with 3,000,000 tons of coal every year, giving employment to several thousand collier ships, which sail to and fro, and greatly add to the otherwise large trade of the Northumberland and Durham ports. The coast of these two counties indicates per annum 180 wrecks, sinkings, and serious collisions. The mouth of the Humber, the coast of Suffolk between Yarmouth and Southwold, the sandy shoals off the mouth of the Thames, the Goodwin Sands, the Scilly Isles, Barnstable Bay, and Liverpool, rank as the next dangerous portions of the English coast. The Welsh coast is also dangerous, especially Glamorgan, Pembroke, and Anglesea. Scotland, except near the Firth of Forth, is comparatively free from wrecks, the western coast remarkably so, probably from being less exposed to the winds, which tend to drive ships ashore on the eastern coast. In Ireland, the east and south coasts present about an equal number of wrecks, the smaller number being on the northern and western. In the year 1855 no less than 1141 wrecks occurred on the coasts of the United Kingdom—about one half of that number belonging to the east coasts of Great Britain. The loss of life from shipwreck during that year was comparatively small, being only 469, or less than one third of the loss of the preceding year, the average loss per annum being between 600 and 700 lives.

Passing over a great variety of proposals for life-boats, we proceed to notice the boat which the Life-boat Institution recommends and supplies to its sta-

tions. Its history is interesting. A few years ago, a lamentable accident occurred to a South Shields life-boat, whereby twenty pilots were drowned. This induced the Duke of Northumberland to offer a reward for the best model of a life-boat. This offer was responded to by boat-builders and others from various parts of the kingdom, as well as from France, Holland, Germany, and America, so that 280 models and plans were sent in. About 50 of the best of these were exhibited by his Grace in the Great Exhibition of 1851; and he expressed the intention of placing the best life-boats, with their subsidiary apparatus, on all the exposed points of the coast of Northumberland. He also caused a report to be prepared, accompanied by plans and drawings, with a view to elicit the best form of life-boat; for although the prize of £100 was assigned to Mr. Beeching of Great Yarmouth, it was considered that a better boat might still be produced. Accordingly, Mr. James Peake, assistant master-shipwright in her majesty's dockyard at Woolwich, and a member of the Life-boat Committee appointed by the Duke of Northumberland, was requested to furnish a design for a life-boat which might combine as many as possible of the advantages, and have as few as possible of the defects, of the best of the models examined by the committee. A boat was accordingly designed by Mr. Peake, and built at the public expense in Woolwich dockyard. Some modifications were from time to time made in her, in consequence of various experi-

ments, and a trial of her capabilities made in a gale of wind at Brighton. The boat, with others of the same design, built at the cost of the Duke of Northumberland, was placed on the Northumberland coast in the autumn of 1852. In the course of the following winter, these boats were taken afloat on trial by the Society's inspector of life-boats, some of them in heavy seas and gales of wind, and the result of the trials was considered to be highly satisfactory. Other boats were therefore built on the same plan, and we may therefore consider this as the model life-boat. These boats have been, for the most part, of two sizes, viz., 27 and 30 feet in length, with $7\frac{1}{2}$ to 8 feet beam, and rowing from 8 to 12 oars, double-banked—their weight averaging two tons. But as such boats have been found too heavy to be managed in some localities, where boatmen are few, boats of less beam and weight, rowing six oars single-banked, but on the same design in other respects, have been built under the denomination of second-class life-boats. The former class of boats has also been somewhat modified since the description of the boat was first published, so as to be reduced somewhat in beam, and to have less height, and greater sharpness of bow and stern, to enable them to be rowed with greater speed against a head gale and a heavy sea. They are also built of fir, upon the diagonal principle of double planking without timbers, whereas the earlier boats were of elm, and clenched, or clinker-built.

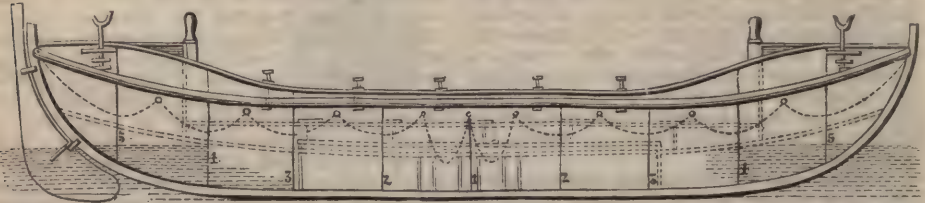


Fig. 15.

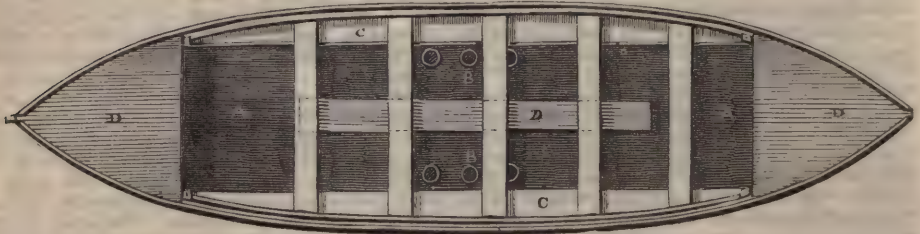


Fig. 16.

The accompanying figures show the general form and the nature of the fittings of the air-chambers of one of these boats, 30 feet in length, and 7 feet 6 inches in breadth. In figs. 15 and 16, corresponding to the elevation and deck-plans, the general exterior form of the boat is seen, showing the sheer of gunwale, length of keel, and rake, or slope of stem and stern posts. The dotted lines of fig. 15 show the position and dimensions of the air-chambers within the board, and of the relieving tubes. A represents the deck, B the relieving tubes,

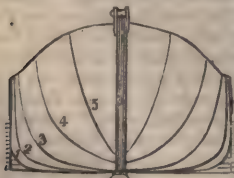


Fig. 17.

six inches in diameter, C the side air-cases, D the end air-chambers. In fig. 17 the exterior form of transverse sections, at different distances, from stem to stern, is shown. Fig. 18 represents a midship transverse section, A a

ing sections of the side air-cases, B the relieving tubes, bored through solid massive chocks of wood, of the same depth as the space between the deck and the boat's floor; C C are spaces beneath the deck filled up, over six feet in length, at the mid-ship part of the boat, with solid chocks of light wood, or boxes of cork, forming a portion of the ballast; D is a section of a tier below the deck, with a movable hatch or lid, in which the boat's cable is stowed, and into which all leakage beneath the deck is drained through small holes with valves fixed in them. In some of the later boats a small draining tier only is placed, having a pump in it, by which any leakage can be pumped out by one of the crew while afloat. The festooned lines in fig. 15 represent exterior life-lines,



Fig. 18.

attached round the entire length of the boat, to which persons in the water may cling until they can be got into the boat; the two central lines are festooned lower than the others, to be used as stirrups, so that a person in the water, by stepping on them, may climb into the boat.

The chief peculiarity of a life-boat is its incapability of being sunk, in consequence of its being fitted with water-tight air-cases, or compartments. One of the difficulties of life-boats has been to decide as to the amount and distribution of such air-cases. The necessary space for rowing and working the boat, and for the stowage of shipwrecked persons being secured, the space along the sides within-board should be entirely occupied by buoyant cases, or compartments, because, on the boat's shipping a sea, the water, until got rid of, is confined to the midship parts of the boat, where it serves to a great extent as ballast, instead of falling over to the lee-side, and destroying the equilibrium of the boat. Hence, barrels or casks, which do not conform in shape to the sides of the boat, are not well adapted to serve as air-cases. In Mr. Peake's life-boat there is a water-tight deck at the load-water-line, and detached air-boxes along the sides, closely conforming to their shape from the thwarts to the deck. Extra buoyancy is also derived from large air-cases, built across the bow and stern, and occupying from 3 feet to 4½ feet in length, from the stem and stern posts to the gunwale height. These cases are chiefly intended to provide self-righting power; but in the event of the boat being stove in, and the space below the deck being filled with water, these air-cases alone have sufficient buoyancy to float the boat.

The second peculiarity of a life-boat is its power of discharging, in a few seconds, any water which may be shipped by the breaking over of the sea, or by the boat being suddenly thrown on her beam-ends. This property does not belong to all life-boats, for, in certain cases (the Norfolk life-boats, for example) the plugs which stop certain holes in the floors are taken out during a gale of wind, or a heavy sea, so as to let the water into them until it is at the level of the sea. The water thus let in is confined by the wide sea-cases to the midships of the boat, where it serves as a loose ballast, and the boatmen consider that it is safest to go off under sail with the boat deeply immersed. The Liverpool life-boats have no relieving holes, so that when filled by a sea, the water must be got rid of by bailing. In Mr. Peake's boat there is a water-tight deck at the load-water-line, and a number of large open tubes, opening at the surface of the deck, and passing through the space between the deck and the floor; the bottom orifices being furnished with self-acting valves opening downward, so as to allow any water shipped to escape through them. The deck being placed at or above the load-water-line, any water which is above it will be above the outside level of the sea, so that the water escapes from the deck by its own weight, and disappears in a few seconds. As a life-boat has very great buoyant power, it is important to her stability and safety to attend to the ballasting. The Greathead life-boats have usually no ballast, their great breadth of beam being relied on for stability; but some of them have a tank in the midships beneath the deck, which can be filled with water. Beeching's life-boats are similarly ballasted; but accidents, with loss of life, have arisen from a difficulty in filling the tanks, and preventing the escape of the water when full; hence solid ballast is to be preferred. Mr. Peake's life-boats are ballasted with heavy iron keels, and with solid wood and cork ballast, stowed under the decks; and should these be stove in, and the space beneath be filled with water, the wood and the cork would supply extra buoyancy.

A life-boat ought to be self-righting if upset, a property which, however, belongs only to Mr. Peake's and Mr. Beeching's boats, some boat-builders considering

that stability is sacrificed thereby. The fact, however, has been established in the *Life-boat Journal*, that the means employed to produce self-righting add to the stability of a boat, and improve her in other respects. The self-righting power is thus attained: 1. The boat is built with considerable sheer of gunwale, the bow and stern being from 1 foot 6 inches to 2 feet higher than the sides of the boat at her centre, and the space within the boat at either extremity, to the distance of from 3 to 4½ feet from the stem and stern posts to gunwale height, is then inclosed by a sectional bulk-head and a ceiling, and so converted into a water-tight air-chamber, the cubical contents of which, from the thwarts upward, are sufficient to bear the whole weight of the boat when she is placed in the water in an inverted position, or keel upward. 2. A heavy iron keel (from 4 to 8 cwt.) is attached, and a nearly equal weight of light wood or cork ballast is stowed between the boat's floor on the deck. No other measures are necessary to be taken in order to effect the self-righting power. When the boat is forcibly placed in the water with her keel upward, she is floated unsteadily on the two air-chambers at bow and stern; while the heavy iron keel and other ballast being then carried above the centre of gravity, an unstable equilibrium is at once effected, and the weight of the iron keel falling over on one side, immediately restores the boat to her proper position; in other words, she self-rights."—*The Life-boat*, No. 22. Lateral stability or stiffness, being the tendency to preserve an upright position in the water, with proportionate resistance to upsetting, is obtained by breadth of beam or by ballast—as in Mr. Peake's boats, by an iron keel and other solid ballast, and by flatness and length of floor, with moderate beam only. The other qualities to be required in a good life-boat are speed, strength, and stowage-room, all of which seem to have been well considered in Mr. Peake's boats.

A new description of life-boat, invented by the Rev. E. L. Berthon, M.A., of Fareham, and known as the Fareham Life-boat, has been made the subject of a patent. Its novel feature is, that it is collapsible, so that it combines the property of the life-boat, with facility of stowage in a small space. Hence, it is well adapted for the use of ships, especially large steamers, emigrant vessels, and troop-ships. Its frame-work is of wood, all the timbers extending the whole length of the boat, there being no transverse timbers or ribs. The timbers, four on each side of the stem and keel-piece, are thin, flat, and deep, something like a thin slice of melon; they are made without scarfing, by bending plank over plank till the required thickness is attained. They are jointed together at their ends, and to the tops of the stem and stern posts by a kind of chain hinge. When the boat is collapsed, these timbers stand side by side in vertical planes, like the leaves of a closed book; but when expanded, they stand apart in radial planes, somewhat like the segments of an orange. Attached to the edges of all the timbers are water-proof coverings, of which there are two, the outer skin being secured to the outer edges, and the inner skin to the inner edges of the timbers, by which means the whole body of the boat is divided into eight separate longitudinal cells or compartments, which become filled with air on expanding the boat. This is effected and maintained by the bottom boards and thwarts, which being jointed along the middle line, are made to stand up at an acute angle when the boat is collapsed, and fall down to straight lines when open. The inventor compares the principle of extension to that of a carriage-head, the frame of which may be compared to the boat's timbers, and the joints to the thwarts and stretchers of the bottom boards; and as the leathern covering of the carriage shuts in when the head is down, so the coverings of the boat shut in between the timbers. The boat has rather a deep keel, besides two bilge pieces on each side, and

in every other salient point the covering is protected by wood or copper. The boat is lowered by the following contrivance: Inside the bulwarks is a large, flat, deeply-grooved sheave about 2 feet 6 inches in diameter; it has two deep, narrow grooves cut nearly to its axis, and in these are wound separately the ends of the two falls. From this sheave is a projection on which a friction-strap with a powerful lever is made to work. This being placed flat against the bulwarks, the falls are brought to it fore and aft by small sheaves set in the top-rail; thus the friction of the strap, when the boat is up, is enough to prevent motion; but by slacking the lanyard by which the leather is secured, it may be allowed to descend rapidly or slowly, according to the pressure applied to the break. Raising and falling derricks are substituted for davits. The average size of the Fareham life-boat is 32 by 10 feet; it has 8 thwarts, besides seats round the stern, and will pull, if required, 12 oars, double-banked.

Captain Manby's proposal for throwing ropes from ship to ship in cases of accidents may easily be understood from the methods which he employs for saving lives in shipwrecks. The life-buoy by Lieutenant Cook, R.N. F.R.S., Professor of Fortification at Ad-discombe College, is related to the same class of inventions; its object is to preserve the life of a person falling overboard in the night, by means of a floating light; and it obtained him a gold medal from the Society of Arts, in 1818.—*Transactions*, xxxvi. He observes that a ship may often have to run half a mile before she can get about and lower a boat, so that it becomes highly desirable to afford a temporary support to the sufferer. The machine consists of two copper spherical air-vessels, with a square tapering tube through each, made water-tight, and united together by a cross-piece of wood, in which are two brass conducting tubes through which is fixed a perpendicular tubular-staff, with a brass ferule at each end, and a copper sliding-rod, nearly its own length, within it. Attached to the lower end of the rod is a flat circular balance-weight, bearing a chain by which the life-buoy is suspended, and a link which, when hooked to a stud in the lower ferule, bears up the rod and the balance-weight, but which, when unhooked, allows the weight to draw the rod about two thirds-out of the staff. To the head of the perpendicular staff is attached at night a fuse, on a brass fuse-plate, the shank of which is secured in a socket by a thumb-screw. The buoy is secured to the ship by the chain only, the ring of which hangs on the hook of the sheave of the trigger-plate. Attached to the stern of the vessel are two iron rods cased with copper tubing, together with the screw-bolts, from which they are suspended; just above the forked stay which keeps the rods parallel, at a proper distance from the stern, is the trigger-plate, and the brass fuse-case which covers and protects the fuse on the head of the staff. There is also a brass case for the lock or percussion-hammer, placed so as to communicate with the fuse-case, by means of the horizontal tube; all these, together with the pulleys and guard-iron, are firmly attached to the stern of the vessel, inside of which, immediately opposite to the pulleys, are fixed the cups and handles, the one for firing the lock and lighting the fuse, the other for raising the trigger-bolt and disengaging the buoy from the ship. As soon as the trigger-bolt is raised, the sheave revolves, the stop turns round, and the life-buoy slides off the rods into the water, bearing on the head of the staff a brilliant flame. The balance-weight, when no longer held up by the chain, drops upward of three feet below the cross-piece, prevents the buoy from upsetting, and affords a place for the man to stand on. This apparatus admits of being lighted and let down into the water in the short space of five seconds. Lieutenant Cook is also the inventor of a plan for converting boats used for ordinary purposes into life-boats at pleasure.

Mr. Miller's safety-poles for skaters, and Mr. Prior's mode of preventing accidents in descending mines, are mentioned in the *Transactions of the Society of Arts* (vols. xxxii., xxxvi.) Apparatus of the latter kind has been introduced at different times with various modifications. In coal-pits, or coal and iron pits, where the men are raised and lowered in a rectangular iron frame, called a cage, the rope or chain may break, or the cage may be overwound by drawing it over the framing at the pit's mouth. Mr. Robert Blee of Redruth, has introduced what he calls a safety-bucket, and Messrs. White and Grant of Glasgow, have a safety-cage. These inventions depend upon some such arrangements as the following: Two pairs of eccentrics are attached to the ends of two parallel shafts, which extend across the top of the cage; the edges of the eccentrics are toothed, and when the cage is in motion they are free of the vertical wooden rails which steady the cage in its motion up and down the pit. Should the rope break, two volute springs bring round the thick sides of the eccentrics to bear against the guides, and hold the cage securely. To prevent overwinding, the holdfast which connects the rope to the cage is secured by a curved bolt, kept in place by a strong spring; this bolt moves on a fulcrum, and is continued as a lever beyond the holdfast; across the framing at the mouth of the pit is a bar so arranged that, when the lever comes in contact with it, the bolt becomes disengaged, the cage, by the action of the eccentrics, becomes fixed, and the rope only is drawn up over the pulley. In Mr. Blee's safety-cage the catches allow it to move freely so long as there is a vertical strain on them; but should this cease by the breaking of the rope, the catches become liberated, and attached to the iron staves of the ladders placed on either side of the shaft.

A sketch of the expedients which have been recommended for the preservation of mariners, published in a work entitled *Shipwrecks and Disasters at Sea* (vol. iii., Edinburgh, 1822), contains a few further historical details relating to some of the inventions which have been described.—E. B.

Francis's life-boats are very generally used on our American coast, and below we give a short description of them. Many of them are also used in Great Britain. The structure of the boats, and of the wagons may be briefly described. A sheet of galvanized iron or copper of the full size of one half of the boat, from stem to stern, but not thicker than a sixpence, is placed between two dies of the requisite form, and then subjected to enormous hydraulic pressure. The dies require great care, labor, and expense, in their preparation, two being required for each form and size of boat—one for the starboard, and one for the larboard section. The plate of metal is thus pressed into the shape of the half boat, receiving at the same time certain longitudinal, or fore-and-aft corrugations of a peculiar character. The two halves are then riveted together, and the boat is complete.

It is to the corrugations that the boat owes its enormous strength, for it has no frame-work, no ribs, no timbers. A plate of plain metal was exhibited; it was laid on two blocks of wood a yard apart, and was too weak even to bear its own weight. Another plate of metal of the same thickness, but corrugated, was placed on the block, and bore the weight of a man without bending; and would have borne four men. Boats of all sizes may be thus constructed, from the smallest gig to the largest man-of-war's cutter or launch. The great majority of the American steamers have, for some years, carried Francis's boats. In an experiment to test the strength of these boats, one of them was subjected to most violent treatment. It was pitched from a height on stone pavement; it was rolled and bruised upon it, and several men used their utmost endeavors, with heavy hammers, to damage it, but all in vain. It was then set afloat, and four strong men,

pulling with might and main, ran it, stem on, at full speed, to the stone wharf, again and again; but at the close of the experiments, which would have utterly annihilated a wooden boat, it was found to have suffered no damage beyond a few dents and bruises, which a hammar set to rights in five minutes.

The wagons were also experimented upon. The wagon was first placed in the water, with the whole of its running-gear attached, including the pole, the weight, 17 cwt. 16 men then got in, their weight amounting to 25 cwt., and brought the wagon to about one foot from the top. Attempts were then made to upset it in the water, by the whole of the men bearing down, first on one side, and then on the other, but all in vain; the upper edge of the wagon could not be brought below the water. Many other severe experiments were tried. The advantages possessed by an army marching with these wagons, are manifold and self-evident. The cumbrous pontoon and bridge train may be dispensed with, the ordinary wagons which must accompany an army supplying their place. On approaching a river, these wagons, full of men, may at once be driven across the water; or if the stream be full and rapid, the wagon-bodies may be taken off their running-gear, and used as boats, propelled by oars, or dragged by ropes from the opposite bank. Two wagon-bodies put together will float a field-piece, with its limber and ammunition ready for instant action. Four of the bodies make a valuable raft. A succession of them may be anchored across the river, planks laid over them, and a bridge for all arms is at once established. For a more extended account of the losses on the coast of the United States, see WRECKES.

Lighter, a large open flat-bottomed vessel, generally managed with oars, and employed to carry goods to, or from a ship, when she is to be laden or delivered. There are also some lighters furnished with a deck throughout their whole length, in order to inclose such merchandise as would be damaged by rainy weather. These are usually called close lighters.

Light-houses. Light-house, and sea-light, are terms which, although not strictly synonymous, are indifferently employed to denote the same thing. A *Sea-light* may be defined as a *light so modified and directed as to present to the mariner an appearance which shall at once enable him to judge of his position during the night, in the same manner as the sight of a landmark would do during the day.* The early history of light-houses is very uncertain; and many ingenious antiquaries, finding the want of authentic records, have endeavored to supply the deficiency by conjectures founded on casual and obscure allusions in ancient writers, and have invented many vague and unsatisfactory hypotheses on the subject, drawn from the heathen mythology. Some writers have gone so far as to imagine that the Cyclops were the keepers of light-houses; while others have actually maintained that Cyclops was intended, by a bold *prosopopœia*, to represent a light-house itself. A notion so fanciful deserves little consideration; and in order to show how ill it accords with that mythology of which it is intended to be an exposition, it seems enough to quote the lines from the ninth *Odyssey*, where Homer, after describing the darkness of the night, informs us that the fleet of Ulysses actually struck the shore of the Cyclopean island before it could be seen.

Ἐνθ' οὐτις τὴν ἡσσαν ἐσέδρακεν ὀφθαλμοῖσιν
 Οὐτ' οἶν κύματα μακρὰ κυλινδόμενα ποτὶ χέρσων
 Ἐισίδομεν πρὶν ἡῶς εὐσέλμους ἐκτελεσθαι,
Odys., ix., 146.

There does not appear any better reason for supposing, that under the history of Tithonus, Chiron, or any other personage of antiquity, the idea of a light-house was conveyed; for such suppositions, however reconcilable they may appear with some parts of the mythology, involve obvious inconsistencies with

others. Nor does it seem at all probable, that in those early times, when navigation was so little practiced, the advantages of beacon-lights were so generally known and acknowledged as to render them the objects of mythological allegory.

Colossus of Rhodes.—About 800 years before the Christian era, Chares, the disciple of Lysippus, constructed the celebrated brazen statue, called the Colossus of Rhodes, whose height was upward of 100 feet, which stood at the entrance to the harbor. There is considerable probability in the idea that this figure served the purposes of a light-house; but we do not remember any passage in ancient writers, where this use of the Colossus is expressly mentioned. There is much inconsistency in the account of this fabric by early writers, who, in describing distant objects which could be seen from it, appear to have forgotten the height which they assign to the figure. It was partly demolished by an earthquake, about 80 years after its completion; and so late as the year 672 of our era, the brass of which it was composed was sold by the Saracens to a Jewish merchant of Edessa, for a sum, it is said, equal to \$180,000.

Pharos.—Little is known with certainty regarding the Pharos of Alexandria, which was regarded by the ancients as one of the seven wonders of the world. It was built by Ptolemy Philadelphus, about 300 years before Christ; and it is recorded by Strabo, that the architect Sostratus, the son of Dexiphanes, having first secretly cut his own name on the solid walls of the building, covered the words with plaster, and, in obedience to Ptolemy's command made the following inscription on the plaster—"King Ptolemy to the gods, the saviours, for the benefit of sailors." What truth there may be in this account of the fraud of Sostratus there is now no means of determining; and the story is only now interesting, in so far as it shows the object of the royal founder and the use of the tower. The accounts which have reached us of the dimensions of this remarkable edifice are exceedingly various; and many of the statements regarding the distance at which it could be seen are clearly fabulous. Josephus approaches nearest to probability, and informs us, that the fire which was kept constantly burning on the top, was visible by seamen at a distance of about 40 miles. If the reports of some writers are to be believed, this tower must have far exceeded in size the great pyramid itself; but the fact that a building of comparatively so late a date should have so completely disappeared, while the pyramid remains almost unchanged, is a sufficient reason for rejecting, as erroneous, the dimensions which have been assigned by most writers to the Pharos of Alexandria. Some have pretended that large mirrors were employed to direct the rays of the beacon-light on its top, in the most advantageous direction; but there is nothing like respectable evidence in favor of this supposition. Others, with greater probability, have imagined that this celebrated beacon was known to mariners, simply by the uncertain and rude light afforded by a common fire. In speaking of the Pharos, the poet Lucan, on most occasions sufficiently fond of the marvelous, takes no notice of the gigantic mirrors which it is said to have contained.

Septima nox, Zephyro nunquam laxante rudentes,
 Ostendit Pharis Ægyptia littora flammis.
 Sed prius orta dies nocturnam lampada textit,
 Quam tutas intraret aquas. *Pharsal.*, ix., 1004.

It is true that, by using the word "*lampada*," which can only with propriety be applied to a more perfect mode of illumination than an open fire, he appears to indicate that the "*flamma*," of which he speaks, were not so produced. The word *lampada* may, however, be used metaphorically; and *flammis* would, in this case, not improperly describe the irregular appearance of a common fire. Those who are desirous of knowing all that occurs in ancient authors on the subject of the

Pharos of Alexandria, may consult PLINY, l. xxxvi., c. 12; l. v., c. 13, and l. xiii., c. 11. STRABO, l. xvii., p. 791, *et seq.* CÆSAR, *Comment. de Bell. Civil.*, l. iii., Pompon. MELA, l. ii., c. 7. AMMIAN. MARCELLIN, l. xxii., c. 16. JOSEPH. *de Bell. Judic.*, l. vi. NICHOLAS LLOYD's *Lexicon Geographicum*, and the *Notitia Orbis Antiqui*, of Celarius, l. iv., c. 1, p. 13.

Coruña.—Mr. Moore, in his *History of Ireland* (vol. i., p. 16), speaks of the Tower of Coruña, which, he says, is mentioned in the traditionary history of that country as a light-house erected for the use of the Irish in their frequent early intercourse with Spain. In confirmation of this opinion, he cites a somewhat obscure passage from Æthicus, the cosmographer. This in all probability is the tower which Humboldt mentions in his Narrative under the name of the *Iron Tower*, which was built as a light-house by Caius Sævius Lupus, an architect of the city of Aqua Flavia, the modern Chaves. A light-house has lately been established on this headland, for which dioptric apparatus was supplied from the workshop of M. Létourneau of Paris. See also a curious account of the traditions about this tower in SOUTHEY'S *Letters from Spain and Portugal*, p. 17. There is also a record in Strabo, of a magnificent light-house of stone at Capio, or Apio, near the harbor of Menestheus (the modern Mesa Asta, or Puerto de Sta. Maria), built on a rock nearly surrounded by the sea, as a guide for the shallows at the mouth of the Guadalquivir, which he describes in terms almost identical with those used by him in speaking of the Pharos of Alexandria. I am not aware of any other notice of this great work, for such it seems to have been, to have deserved the praises of Strabo. In Camden's *Britannia* a passing notice is taken of the ruins called *Cæsar's Altar*, at Dover, and of the *Tour d'Ordre*, at Boulogne, on the opposite coast; both of which are conjectured, on somewhat doubtful grounds, to have been ancient light-houses. Pennant describes the remains of a Roman Pharos near Holywell, but cites no authorities for his opinion as to its use. There were likewise remains of a similar structure at Flamborough-head. A very meagre and unintelligible account is also given of a light-house at St. Edmund's Chapel, on the coast of Norfolk, in Gough's additions to Camden, by which it might seem that the light-house was erected in 1272.—GOUGH'S CAMDEN'S *Britannia*, vol. i., p. 318, and vol. ii., p. 198. Batcheller, in his *Dover Guide* (1845, p. 111), says, that the Dover Pharos was built "during the lieutenantancy of Aulus Plautius and Ostorius Scapula, the latter of whom left Britain A. D. 53" (PENNANT'S *History of Whiteford and Holywell*, p. 112).

Modern History.—Such seems to be the sum of our knowledge of the ancient history of light-houses, which, it must be admitted, is neither accurate nor extensive. Our information regarding modern light-houses is of course more minute in its details, and more worthy of credit, as the greater part of it is drawn from authentic sources, or is the result of the actual observation of the writer of this article, who has visited the most important light-houses of Europe. It seems sufficient here to notice briefly the most remarkable establishments of the kind now in existence; reserving, for the latter part of the article, the more appropriate and important topics of the methods of illumination, and the systems of management. The first light-house of modern days which merits attention is the Tour de Corduan, which, in point of architectural grandeur, is unquestionably the noblest edifice of the kind in the world. It is situate on an extensive reef at the mouth of the River Garonne, and serves as a guide to the shipping of Bordeaux and the Languedoc Canal, and, indeed, of all that part of the Bay of Biscay. It was founded in the year 1584, and was not completed till 1610, under Henri IV. It is minutely described in Belidor's *Architecture Hydraulique*. The building is

197 feet in height, and is shown in the accompanying woodcut, fig. 1. Round the base is a wall of circumvallation, 134 feet in diameter, in which the light-



FIG. 1. TOUR DE CORDUAN.

keeper's apartments are formed, somewhat in the style of casemates. The first light exhibited in the Tour de Corduan was obtained by burning billets of oak wood, in a chaffier at the top of the tower; and the use of coal instead of wood was the first improvement which the light received. A rude reflector, in the form of an inverted cone, was afterwards added, to prevent the loss of light which escaped upward. About the year 1780, M. Lenoir was employed to substitute reflectors and lamps; and in 1822 the light received its last improvement, by the introduction of the dioptric instruments of M. Fresnel.—*History of Celebrated Light-houses*.

Eddystone.—The history of the celebrated light-house on the Eddystone rocks, is well known to the general reader, from the narrative of Mr. Smeaton the engineer. These rocks are $9\frac{1}{2}$ miles from the Ram-head, on the coast of Cornwall; and from the small extent of the surface of the chief rock, and its exposed situation, the construction of the light-house was a work of very great difficulty. The first erection was of timber, designed by Mr. Winstanley, and was commenced in 1696. The light was exhibited in November, 1698. It was soon found, however, that the sea rose upon this tower to a much greater height than had been anticipated, so much so, it is said, as to "bury under the water" the lantern, which was 60 feet above the rock; and Mr. Winstanley was therefore afterward under the necessity of enlarging the tower, and carrying it to the height of 120 feet. In Novem-

ber, 1708, some considerable repairs were required, and Mr. Winstanley, accompanied by his workmen, went to the light-house to attend to their execution; but the storm of the 26th of that month carried away the whole erection, when the engineer and all his assistants unhappily perished.

The want of a light on the Eddystone soon led to a fatal accident; for, not long after the destruction of Mr. Winstanley's light-house, the *Winchelsea* man-of-war was wrecked on the Eddystone rocks, and most of her crew were lost. Three years, however, elapsed after this melancholy proof of the necessity of a light before the Trinity House of London could obtain a new act to extend their powers; and it was not till the month of July, 1706, that the construction of a new light-house was begun, under the direction of Mr. John Rudyerd of London. On the 28th of July, 1708, the new light was first shown, and continued to be regularly exhibited till the year 1755, when the whole fabric was destroyed by accidental fire, after standing 47 years. But for this circumstance, it is impossible to tell how long the light-house might, with occasional repair, have lasted, as Mr. Rudyerd seems to have executed his task with much judgment, carefully rejecting all architectural decoration, as unsuitable for such a situation, and directing his attention to the formation of a tower which should offer the least resistance to the waves. The height of the tower, which was of a circular form, and constructed of timber, was, including the lantern, 92 feet, and the diameter at the base, which was a little above the level of high water, was 23.



Fig. 2. EDDYSTONE LIGHT, CORNWALL.

The advantages of a light on the Eddystone having been so long known and acknowledged by seamen, no time was permitted to elapse before active measures were taken for its restoration; and Mr. Smeaton, to whom application was made for advice on the subject, recommended the exclusive use of stone as the material, which, both from its weight and other qualities, he considered most suitable for the situation. On the 5th of April, 1756, Mr. Smeaton first landed on the rock, and made arrangements for erecting a light-house of stone, and preparing the foundations, by cutting

the surface of the rock into regular horizontal benches, into which the stones were carefully dovetailed or notched. The first stone was laid on 12th June, 1757, and the last on the 24th of August, 1759. The tower measures 68 feet in height, and 26 feet in diameter at the level of the first entire course, and the diameter under the cornice is 15 feet. The first 12 feet of the tower form a solid mass of masonry, and the stones are united by means of stone joggles, dovetailed joints, and oak treenails. It is remarkable that Mr. Smeaton should have adopted an arched form for the floors of his building, instead of employing these floors as tie-walls formed of dovetailed stones. To counteract the injurious tendency of the outward thrust of the arched floors, Mr. Smeaton had recourse to the ingenious expedient of laying, in circular trenches or beds in the stones which form the outside casing, sets of chains, which were heated by means of an application of hot lead, and became tight in cooling. The light was exhibited on the 16th October, 1759; but such was the state of the light-room apparatus in Britain at this period, that a feeble light from tallow candles was all that decorated this noble structure. In 1807, when the property of this light-house again came into the hands of the Trinity House, on the expiry of a long lease, Argand burners, and parabolic reflectors of silvered copper, were substituted for the chandelier of candles. Figure 2 shows a section of the Eddystone light-house, as executed according to Mr. Smeaton's design.

Bell-Rock.—The dangerous reef called the Inch Cape, or Bell-Rock, so long a terror to mariners, was well known to the earliest navigators of Scotland. Its dangers were so generally acknowledged, that the Abbots of Aberbrothick, from which the rock is distant about 12 miles, caused a float to be fixed upon the rock, with a bell attached to it, which, being swung by the motion of the waves, served by its tolling to warn the mariner of his approach to the reef. Among the many losses which occurred on the Bell-Rock in modern times, one of the most remarkable is that of the *York*, 74, with all her crew, part of the wreck having been afterward found on the rock, and part having come ashore on the neighboring coast. During the survey of the rock also, many instances were discovered of the extent of loss which this reef had occasioned, and many articles of ships' furnishings were picked up on it, as well as various coins, a bayonet, a silver shoe-buckle, and many other small objects. Impressed with the great importance of some guide for the Bell-Rock, Captain Brodie, R.N., set a small subscription on foot, and erected a beacon on spars on the rock, which, however, was soon destroyed by the sea. He afterward constructed a second beacon, which soon shared the same fate. It was not, however, until 1802, when the Commissioners of Northern Lights brought a bill into Parliament for power to erect a light-house on it, that any efficient measures were contemplated for the protection of seamen from this rock, which, being covered at every spring-tide to the depth of 12 feet, and lying right in the fareway to the Firths of Forth and Tay, had been the occasion of much loss both of property and life. In 1806 the bill passed into a law, and various ingenious plans were suggested for overcoming the difficulties which were apprehended, in erecting a light-house on a rock 12 miles from land, and covered to the depth of 12 feet by the tide. But the suggestion of Mr. Robert Stevenson, the engineer to the Light-house Board, after being submitted to the late Mr. Rennie, was at length adopted; and it was determined to construct a tower of masonry, on the principle of the Eddystone. On the 17th of August, 1807, Mr. Stevenson accordingly landed with his workmen, and commenced the work by preparing the rock to receive the supports of a temporary wooden pyramid, on which a barrack-house, for the reception of the workmen, was to be placed; and during

this operation much hazard was often incurred in transporting the men from the rock, which was only dry for a few hours at spring-tides, to the vessel which lay moored off it. The lowest floor of this temporary erection, in which the mortar for the building was prepared, was often broken up and removed by the force of the sea. The foundation having been excavated, the first stone was laid on the 10th July, 1808, at the depth of 16 feet below the high-water of spring-tides, and at the end of the second season, the building was 5 feet 6 inches above the lowest part of the foundation. The third season's operations terminated by finishing the solid part of the structure, which is 30 feet in height; and the whole of the masonry was completed in October, 1810. The light was first exhibited to the public on the night of the 1st of February, 1811. The difficulties and hazards of this work were chiefly caused by the short time during which the rock was accessible between the ebbing and flowing tides; and among the many eventful incidents which rendered the history of this work interesting, was the narrow escape which the engineer and 31 persons made from being drowned, by the rising of the tide upon the rock, before a boat came to their assistance, the attending vessel having broken adrift. This circumstance occurred before the barrack-house was erected, and is narrated by Mr. Stevenson in his account of the work, published at the expense of the Light-house Board in 1824, to which we may refer for more minute information on the subject of this work, and the other lights of the coast of Scotland.

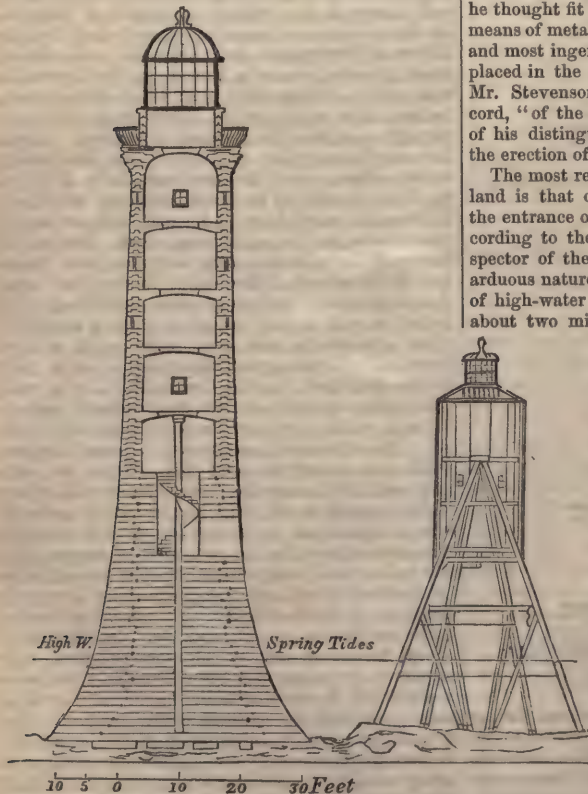


Fig. 8. BELL-ROCK LIGHT, SCOTLAND.

The Bell-Rock tower is 100 feet in height, 42 feet in diameter at the base, and 15 at the top. The door is 30 feet from the base, and the ascent is by a massive copper ladder. The apartments, including the light-room, are six in number. The light is a revolving

red and white light, and is produced by the revolution of a frame containing 20 Argand lamps, placed in the foci of parabolic mirrors, arranged on a quadrangular frame, whose alternate faces have shades of red glass placed before the reflectors, so that a red and white light is shown successively. The machinery, which causes the revolution of the frame containing the lamps, is also applied to tolling two large bells, to give warning to the mariner of his approach to the rock in foggy weather. Fig. 3 shows a section of the Bell-Rock Light-house, and of the temporary barrack-house, which was removed on the completion of the work. The entire cost of the light-house was over £61,331. The great merit of Mr. Stevenson, as architect of the Bell-Rock Light-house, lies in his bold conception and unshaken belief in the possibility of erecting a tower of masonry on a reef 12 miles from the nearest land, and covered by every tide—a situation, undoubtedly, much more difficult than that of the Eddystone. But his mechanical skill in carrying on the work is also deserving of high praise. Not only did he conceive the plan of the *movable jib and balance cranes*, which he afterward used with much advantage in building the tower; but his zeal, ever alive to the possibility of improving on the conceptions of his great master Smeaton, led him to introduce several beneficial changes into the arrangements of the masonry. In particular, he converted the stone floors of the apartments, which in the Eddystone exert an *outward*, and in its tendency disruptive, thrust, into bonds of union and efficient sources of stability. This thrust was by Smeaton himself considered so disadvantageous, that he thought fit to counteract it, as already noticed, by means of metallic *girders*, concealed in the stone-work, and most ingeniously applied. The Light-house Board placed in the upper apartment of the tower a bust of Mr. Stevenson, "in testimony," as the minutes record, "of the sense entertained by the Commissioners of his distinguished talent and indefatigable zeal in the erection of the Light-house."

The most remarkable light-house on the coast of Ireland is that of Carlingford, near Cranfield Point, at the entrance of Carlingford Lough. It was built according to the design of Mr. George Halpin, the Inspector of the Irish Lights; and was a work of an arduous nature, being founded 12 feet below the level of high-water on the Hawlbowl Rock, which lies about two miles off Cranfield Point. The figure is that of a frustum of a cone, 111 feet in height, and 48 feet in diameter at the base. The light, which is fixed, is from oil burned in Argand lamps placed in the foci of parabolic mirrors. It was first exhibited on the night of the 20th December, 1830.

Skerryvore Rocks.—The Skerryvore Rocks, which lie about 12 miles W.S.W. of the seaward point of the Isle of Tyree, in Argyleshire, were long known as a terror to mariners, owing to the numerous shipwrecks, fatal alike to the vessels and the crews, which had occurred in the neighborhood. A list, confessedly incomplete, enumerates 30 vessels lost in the 40 years preceding 1844; but how many others, which during that period had been reported as "foundered at sea," or as to whose fate not even an opinion has been hazarded, may have been wrecked on this dangerous reef, which lies so much in the track of the shipping of Liverpool and the Clyde, it would be vain to conjecture. The Commissioners of the Northern Light-houses had for many years entertained the project of erecting a light-house on the Skerryvore; and with this object had visited it, more especially in the year 1814, in company with

Sir Walter Scott, who, in his diary, gives a graphic description of its inhospitable aspect. The great difficulty of landing on the rock, which is worn smooth by the continual beat of Atlantic waves, which rise with undiminished power from the deep water near it, held out no cheering prospect; and it was not until the year 1884, when a minute survey of the reef was ordered by the Board, that the idea of commencing this formidable work was seriously embraced.

cutting of the foundation for the tower in this irregular flinty mass occupied nearly two summers; and the blasting of the rock, in so narrow a space, without any shelter from the risk of flying splinters, was attended with much hazard.

The design for the Skerryvore Light-house was given by Mr. Alan Stevenson, and is an adaptation of Smeaton's Eddystone Tower to the peculiar situation and the circumstances of the case at the Skerryvore, with such modifications in the general arrangements and dimensions of the building as the enlarged views of the importance of light-houses which prevail in the present day seemed to call for.

The tower is 138 feet 6 inches high, and 42 feet in diameter at the base, and 16 feet at the top. It contains a mass of stone-work of about 58,580 cubic

feet, or more than *double* that of the Bell-Rock, and not much less than *five times* that of the Eddystone. The lower part of the tower was built by means of *jib-cranes*, and the upper part with *shear-poles*, *needles*, and a *balance-crane*. The shear-poles were similar to those used by Smeaton at the Eddystone; and the *jib-crane* and *balance-crane* were the same as those which were designed and first employed by Mr. Robert Stevenson in the erection of the Bell-Rock Light-house. The mortar used was compounded of equal parts of limestone (from the Halkin Mountain, near Holywell, in North Wales), burnt and ground at the works, and of Pozzolano earth. The light of Skerryvore is revolving, and reaches its brightest state *once every minute*. It is produced by the revolution of eight great annular lenses around a central lamp with four wicks, and belongs to the first order of dioptric lights in the system of Fresnel. The light may be seen from a vessel's deck at the distance of 18 miles. The entire cost of the light-house, including the purchase of the steam-vessel, and the building of the harbor at Hynish for the reception of the small vessel which now attends the light-house, was £86,977, 17s. 7d.

"In such a situation as the Skerryvore," says the engineer, "innumerable delays and disappointments were to be expected by those engaged in the work; and the entire loss of the fruit of the first season's labor in the course of a few hours was a good lesson in the school of patience, and of trust in something better than an arm of flesh. During our progress, also, cranes and other materials were swept away by the waves; vessels were driven by sudden gales to seek shelter at a distance from the rocky shores of Mull and Tyree; and the workmen were left on the rock desponding and idle, and destitute of many of the comforts with which a more roomy and sheltered dwelling, and the neighborhood of friends, are generally connected. Daily risks were run in landing on the

rock in a heavy surf, in blasting the splintery gneiss, or by the falling of heavy bodies from the tower on the narrow space below, to which so many persons were necessarily confined. Yet had we not any loss of either life or limb; and although our labors were prolonged

from dawn to night, and our provisions were chiefly salt, the health of the people, with the exception of a few slight cases of dysentery, was generally good throughout the six successive summers of our sojourn on the rock. The close of the work was welcomed with thankfulness by all engaged in it; and our remarkable preservation was viewed, even by many of the most thoughtless, as, in a peculiar manner, the gracious work of Him by whom 'the very hairs of our heads are all numbered.'"

There can be little doubt that, down to a very late pe-

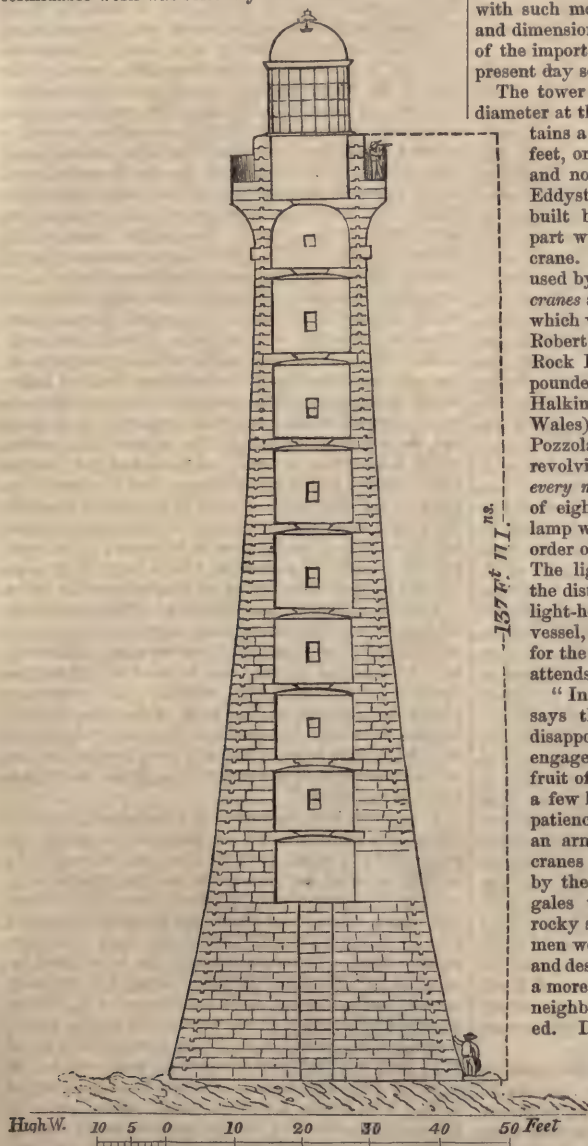


Fig. 4. SKERRYVORE LIGHT.

The reef is composed of numerous rocks, stretching over a surface of nearly eight miles from W.S.W. to E.N.E. The main *nucleus*, which alone presents sufficient surface for the base of a light-house, is nearly three miles from the seaward end of the cluster. It is composed of a very compact *gneiss* worn smooth as glass by the incessant play of the waters, and is so small that at high-water little remains around the base of the tower but a narrow band of a few feet in width, and some rugged humps of rock, separated by gullies, through which the sea plays almost incessantly. The

riod, the only mode of illumination adopted in the light-houses, even of the most civilized nations of Europe, was the combustion of wood or coal in a chauffer on the top of a high tower. It is needless to enlarge upon the evils of such a method; they need only be named to be understood; for it is difficult to conceive how an efficient system of lighting a coast could be managed under such disadvantages. The uncertainty caused by the effects of wind and rain, and the impossibility of rendering one light distinguishable from another, must have at all times rendered the early light-houses in a great measure useless to the mariner.

Catoptric System.—M. Teulère, a member of the Royal Corps of Engineers of Bridges and Roads in France, is, by some, considered the first who hinted at the advantages of parabolic reflectors; and he is said, in a memoir dated the 26th June, 1783, to have proposed their combination with Argand lamps, ranged on a revolving frame, for the Corduan Light-house. Whatever foundation there may be for the claim of M. Teulère, certain it is, that this plan was actually carried into effect at Corduan under the directions of the Chevalier Borda, and to him is generally awarded the merit of having conceived the idea of applying parabolic mirrors to light-houses. These were prodigious steps in the improvement of light-houses, as not only the power of the lights was thus greatly increased, but the introduction of a revolving frame proved a valuable source of distinction among the lights, and has since been the means of greatly extending their utility. The exact date of the change on the light of the Corduan is not known; but as it was made by Lenoir, the same young artist to whom Borda, about the year 1780, intrusted the construction of his reflecting circle, it has been conjectured by some that the improvement was made about the same time. If this conjecture be correct, the claim of M. Teulère must of course fall to the ground. The reflectors were formed of sheet copper, plated with silver, and had a double ordinate of 31 French inches. It was not long before these improvements were adopted in England by the Trinity House of London, who sent a deputation to France to inquire into their nature. In Scotland, one of the first acts of the Northern Lights Board, in 1786, was to substitute reflectors in the room of coal lights, then in use at the Isle of May in the Firth of Forth, and the Cumbrae Isle in the Firth of Clyde, which had, till that period, been the only beacons on the Scotch coast. The reflectors employed were formed of facets of mirror glass, placed in hollow parabolical molds of plaster, according to the designs of the late Mr. Thomas Smith, the Engineer of the Board, who, as appears from the article REFLECTOR in the Supplement to the 8d edition of the *Encyclopædia Britannica*, was not aware of what had been done in France, and had himself conceived the idea of this combination. The system of Borda was also adopted in Ireland; and, in time, variously modified, it became general wherever light-houses were known.

Paraboloidal Mirrors.—The property of the parabola, by which all lines incident on its surface from the focus make with normals to the curve at the points of incidence, angles equal to the inclination of these same normals respectively to lines drawn parallel to the axis of the curve, is that which fits it for the purposes of a light-house. A hollow mirror, formed by the revolution of a portion of a parabola about its axis, has, in consequence of this property, the power of projecting the repeated images of a luminous point placed in its focus, in directions parallel to the axis of the generating curve; so that, when the mirror is placed with its axis parallel to the horizon, a cylindrical beam of light is thereby sent forward in a horizontal direction. When such mirrors are placed side by side, with their axis parallel on the faces of a quadrangular frame which revolves about a vertical axis, a distant ob-

server receives the successive impressions which result from the passage of each face of the frame, over a line drawn between the observer's eye and the centre of the revolving frame. This arrangement constitutes what is called a revolving light. A fixed light is produced by placing, side by side, round a circular frame, a number of reflectors, with their axes inclined to each other, so as to be radii containing equal arcs of the frame on which they are placed. It is obvious that a perfect parabolic figure, and a luminous point mathematically true, would render the illumination of the whole horizon by means of a fixed light impossible; and it is only from the aberration caused by the size of the flame which is substituted for the point, that we are enabled to render even revolving lights practically useful. But for this aberration, even the slowest revolution in a revolving light, which would be consistent with a continued observable series, such as the practical seaman could follow, would render the flashes of a revolving light greatly too transient for any useful purpose; while fixed lights, being visible in the azimuths only in which the mirrors are placed, would, over the greater part of the distant horizon, be altogether invisible. The size of the flame, therefore, which is placed in the focus of a parabolic mirror, when taken in connection with the form of the mirror itself, leads to those important modifications in the paths of the rays, and the form of the resultant beam of light, which have rendered the catoptric system of lights so great a benefit to the benighted seaman. It is obvious, from a consideration of the nature of the action which takes place in this combination of the paraboloidal mirrors with Argand lamps, that the revolving light is not only more perfect in its nature than the fixed light, but that it possesses the advantage of being susceptible of an increase of its power, by increasing the number of reflectors, which have their axes parallel to each other, so as to concentrate the effect of several mirrors in one direction. The perfect parallelism of the axes of separate mirrors, it is true, is unattainable, but approaches may be made sufficiently near for practical results; and in order to prolong the duration of the flash, the reflectors are sometimes placed on a frame, having each of its sides slightly convex, by which arrangement the outer reflectors of each face of the frame have their axes less inclined inwards from the radii of the revolving frame which pass through their foci.

Proportions and Divergence of Paraboloidal Mirrors.

—The best proportions for the paraboloidal mirrors depend upon the object to which they are to be applied; as mirrors which are intended to produce great divergence in the form of the resultant beam should have one form; while those which are designed to cause a near approach to parallelism of the rays will have another form. These objects may also be attained by variations of the size of the flame applied in the same mirror; but it is much more advantageous to produce the effect by a change in the form of the mirror, as any increase of the flame beyond the size which is found to be most advantageous in other respects can not be regarded otherwise than as a wasteful expenditure of light. The details into which a full investigation of this matter would lead us are quite beyond the scope of this article, and it therefore seems sufficient to give the formulæ which express the relations which exist between the size of the flame, the reflecting surface, and the corresponding divergence of the reflected ray. If Δ represent the inclination of any reflected ray to the axis of a paraboloidal mirror, e the distance of the focus from the point of reflection, and d the distance from the edge of the flame to the focus in the

plane of reflection, we shall have $\sin \Delta = \frac{d}{e}$; and when the flame in the given plane of reflection is circular, or has its opposite sides equidistant from the focus of

the mirror, we shall, by putting Δ' for the effective divergence of the mirror have in the given plane, $\Delta' = 2\Delta$. When, therefore, great divergence, as in the case of the fixed lights, is required, the prolate form of the curve is to be preferred; and the oblate is conversely more suited to revolving lights.

Power of Paraboloidal Mirrors.—The power of the reflectors ordinarily employed in light-houses is generally equal to about 360 times the effect of the unassisted flame which is placed in the focus. This value, however, is strictly applicable only at the distances at which the observations have been made, as the proportional value of the reflected beam must necessarily vary with the distance of the observer, agreeably to some law dependent upon the unequal distribution of the light in the luminous cone which proceeds from it. The ordinary burners used in light-houses are one inch in diameter, and the focal distance generally adopted is 4 inches, so that the effective divergence of the mirror in the horizontal plane may be estimated at about $14^\circ 22'$. In arranging reflectors on the frame of a fixed light, however, it would be advisable to calculate upon less effective divergence, for beyond 11° the light is feeble; but the difficulty of placing many mirrors on one frame, and the great expense of oil required for so many lamps, have generally led to the adoption of the first valuation of the divergence.

Manufacture and testing of Reflectors.—The reflectors used in the best light-houses are made of sheet copper plated, in the proportion of 6 oz. of silver to 16 oz. of copper. They are molded to the paraboloidal form by a delicate and laborious process of beating with mallets and hammers, of various forms and materials, and are frequently tested during the operation by the application of a carefully-formed mold. After being brought to the curve, they are stiffened by means of a strong beazle, and a strap of brass, which is attached to it for the purpose of preventing any accidental alteration of its figure. Polishing powders are then applied, and the instrument receives its last finish. Two gauges of brass are applied to test the form of the reflector. One is for the back, and is used by the workmen during the process of hammering, and the other is applied to the concave face as a test, while the mirror is receiving its final polish. It is then tested, by trying a burner in the focus, and measuring the intensity of the light at various points of the reflected conical beam. Another test may also be applied successively to various points in the surface, by masking the rest of the mirror. Having placed a screen in the line of the axis of the mirror at some given distance from it, it is easy to find whether the image of a very small object placed in the conjugate focus, which is due to the distance of the screen, be reflected at any distance from that point on the centre of the screen through which the prolongation of the axis of the mirror would pass, and thus to obtain a measure of the error of the instrument. For this purpose it is necessary to find the position of the conjugate focus, which corresponds to the distance of the screen. If b be the distance which the object should be removed outward from the principal focus of the mirror, d the distance from the focus to the screen, and r the distance from the focus to the point of the

mirror which is to be tested, we shall have $b = \frac{r^2}{d}$ as

the distance which the object must be removed outward from the true focus on the line of the axis.

Argand Lamps.—The flame generally used in reflectors is from an Argand fountain-lamp, whose wick is an inch in diameter. Much care is bestowed upon the manufacture of these lamps for the Northern Light-houses, which have their burners tipped with silver, to prevent wasting by the great heat which is evolved. These burners are also fitted with a slide apparatus, accurately formed, by which the burner

may be removed from the interior of the mirror at the time of cleaning it, and returned exactly to the same place, and locked by means of a key. This arrangement, which is shown

in figures 5, 6, and 7, is very important, as it insures the burner always being in the focus, and does not require the reflector to be lifted out of its place every time it is cleaned; so that, when once carefully set and screwed down to the frame, it is never altered. In these figs. *aaa* represents one of the reflectors, *b* is the lamp, *c* is a cylindric fountain, which contains 24 oz. of oil. The oil-pipe and fountain of the former is connected with

the rectangular frame *d*, and is movable in a vertical direction upon the guide-rods *e* and *f*, by which it can be let down and taken out of the reflector by simply turning the handle *g*, as will be more fully understood by examining fig. 6.

An aperture of an elliptical form, measuring about 2 inches by 3, is cut in the upper and lower part of the reflector, the lower serving for the free egress and ingress of the lamp, and the upper, to which the copper tube *h* is attached, serving for ventilation; *i* shows a cross section of the main bar of the chandelier or frame, on which the reflectors are ranged, each being made to rest on knobs of brass, one of which is seen at *kk*, and which are soldered on the brass band *l*, that clasps the exterior of the reflector.

Fig. 5 is a section of the reflector *aa*, showing the position of the burner *b*, with the glass chimney *b'*, and oil-cup *l*, which receives any oil that may drop from the lamp.

Fig. 6 shows the apparatus for moving the lamp up and down, so as to remove it from the reflector at the time of cleaning it. In the diagram, *c*, the fountain is moved partly down; *dd*

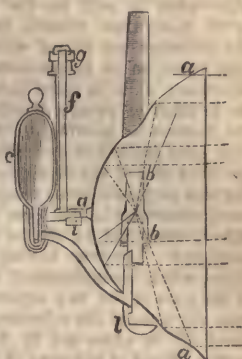


Fig. 5.

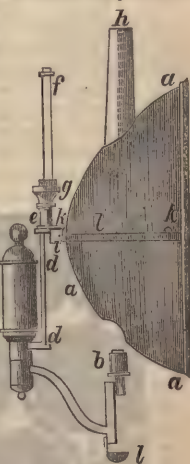


Fig. 6.

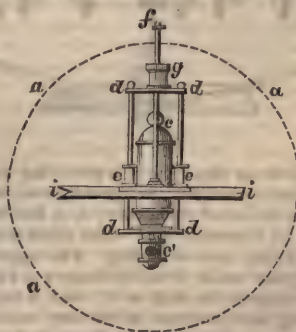


Fig. 7.

shows the rectangular frame on which the burner is mounted, *e*, the elongated socket-guides, *f* the rectangular guide-rod, connected with the perforated sockets on which the checking-handle *g* slides.

Arrangement of Reflectors on the frame.—The modes of arranging the reflectors in the frames are shown in figs. 8, 9, and 10. It seems quite unnecessary, after what is said on the subject of divergence, to do more than remark, that in revolving lights the reflectors are placed with their axes parallel to each other, so as to concentrate their power in one direction; while in fixed lights it is necessary, in order to effect as equal a distribution of the light over the horizon as possible, to place the reflectors, with their axes inclined to each other at an angle somewhat less than that of the divergence of the reflected cone. For this purpose a brass guage, composed of two long arms, somewhat in the form of a pair of common dividers, connected by means of a graduated limb, is employed. The arms having been first placed at the angle, which is supplemental to that of the inclination of the axes of the two adjacent mirrors, are made to span the faces of the reflectors, one of which is moved about till its edges are in close contact with the flat surface of one of the arms of the guage. The different arrangements of the reflectors will be more fully understood by referring to the figures.



Fig. 8.

Fig. 8 shows an elevation of a revolving apparatus on the catoptric principle. In these figures, *nm*, shows the reflector frame or chandelier; *o, o*, the reflectors with their oil-fountains, *p, p*. The whole is attached to the revolving axis or shaft *q*. The copper tubes, *r, r*, convey the smoke from the lamps; *s, s* are cross bars which support the shaft at *tt*; *un* is a copper pan for receiving any moisture which may accidentally enter at the central ventilator in the roof of the light-room; *l* is a cast-iron bracket, which supports the pivot on the shaft; *m, m* are beveled wheels, which convey motion from the machine to the shaft. Fig. 9 shows a plan of one tier of reflectors arranged in the manner employed in a fixed catoptric light; *nm* shows the

chandelier, *q* the fixed shaft in the centre, which supports the whole, *o, o* the reflectors, and *p, p* the fountains of their lamps.

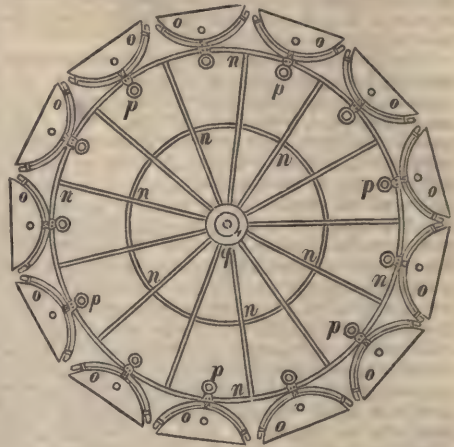


Fig. 9.

To the Dutch belongs the honor of having first, after the French, embraced the system of Fresnel in their lights. The Commissioners of the N. British Lights followed in the train of improvement, and, in 1834, sent Mr. Alan Stevenson on a mission to Paris, with full power to take such steps for acquiring a perfect knowledge of the dioptric system, and forming an opinion on its merits, as he should find necessary. The singular liberality with which he was received by M. Léonor Fresnel, brother of the late illustrious inventor of the system, and his successor as the Secretary of the Light-house Commission of France, afforded Mr. A. Stevenson the means of making such a report on his return as induced the Commissioners to authorize him to remove the reflecting apparatus of the revolving light at Inchkeith, and substitute dioptric instruments in its place. This change was completed, and the light exhibited on the evening of 1st October, 1835; and so great was the satisfaction which the change produced, that the Commissioners immediately instructed Mr. Stevenson to make a similar change at the fixed light of the Isle of May, where the new light was exhibited on the 22d September, 1836. The Trinity House of London followed next in adopting the improved system, and employed Mr. A. Stevenson to superintend the construction of a revolving dioptric light of the first order, which was afterward erected at Start Point in Devonshire. Other countries followed, and the *Report of the Light-house Board of America*, published in 1852, which recommends (see page 1229 of this article) the adoption of Fresnel's dioptric system, and the holophotal improvements, is a very full body of information on light-house subjects, extending over about 750 pages. Even Turkey has followed in the train of improvement, and we believe that a light on the dioptric principle will shortly be exhibited (if it be not already completed) from the Isle of Serpents. Fresnel, who is already classed with the greatest of those inventive minds which extend the boundaries of human knowledge, will thus, at the same time, receive a place among those benefactors of the species who have consecrated their genius to the common good of mankind; and, wherever maritime intercourse prevails, the solid advantages which his labors have procured will be felt and acknowledged.

When, however, this system was in its infancy, there were several objections raised to its adoption, which appeared to be of very considerable importance, though the experience of years has proved that they are not insurmountable. The first, and probably the

most important, was the liability of the lamp to be extinguished from the failure of the leather work of the oil-pumps—a most serious objection, inasmuch as, from there being only one lamp, its failure implies the extinction of the light. The means adopted to remedy this have been already described (*vide* “mechanical lamp”), and an experience of 21 years in the Northern Light-houses has proved them to be sufficient for the purpose; for during the whole of that time (although it has on several occasions been necessary to light the spare lamp), the light has only on one occasion been totally extinguished, a casualty which was caused by the keeper sleeping on his watch.

The only other objection worthy of mention is the short duration of the flash in revolving lights, owing to the small divergence ($5^{\circ} 9'$) of the annular lens. This has been corrected by setting the inclined mirrors, or holophotal prisms, a little in advance of the great lenses, so that they precede, and consequently prolong, the principal flash. M. Degrand has also proposed to cut the whole apparatus by a horizontal plane passing through the focus, and to set one portion a few degrees in advance of the other, a plan which has considerable advantages, as all the portions of the beam are more nearly of equal intensity.

Spherico-Cylindric Lenses.—Mr. T. Stevenson, moreover, suggests an ingenious method of remedying this evil, by constructing lenses whose aberration in the vertical plane is corrected, while that in the horizontal plane may be adjusted to any determinate amount. In the application of this method of construction to the annular lenses they would be ground on the external surface as before; but the internal surface would be a portion of a vertical cylinder of suitable radius. Thus each vertical section would be similar to that of a plano-convex lens as at present, and would refract the rays accordingly, while the horizontal sections would be of a meniscus form, and would act only by the excess of their convexity over their concavity. Thus, by varying the radius of the cylinder, any amount of horizontal divergence may be obtained, and this without much increasing the thickness of the glass, at least in the case of revolving lights, in which a curve of long radius might be applied.

Fuel of Light-houses.—The oil, until lately, most generally employed in the light-houses of the United Kingdom, was the sperm oil of commerce, which is obtained from the South Sea whale (*Physeter macrocephalus*). In France, the colza oil, which is expressed from the seed of a species of wild cabbage (*Brassica oleracea colza*), and the olive oil, are chiefly used; and a species of the former has now been successfully introduced into the British light-houses. The advantages of the colza oil are thus stated by the engineer of the Scottish Light-house Board:—“It appears from pretty careful photometrical measurements of various kinds, that the light derived from the colza oil is, in point of intensity, a little superior to that derived from the spermaceti oil, being in the ratio of 1.056 to 1. The colza oil burns both in the Fresnel lamp and the single Argand burner with a thick wick during 17 hours, without requiring any coaling of the wick or any adjustment of the damper; and the flame seems to be more steady and freer from flickering than that derived from spermaceti oil. There seems (most probably owing to the greater steadiness of the flame), to be less breakage of glass chimneys with the colza than with the spermaceti oil. The consumption of oil seems in the Fresnel lamp to be 121 for colza, and 114 for spermaceti; while in the common Argand, the consumption appears to be 910 for colza, and 902 for spermaceti; and if we assume the means of these numbers, 515 for colza, and 508 for spermaceti, as representing the relative expenditure of these oils; and if the price of colza be 8s. 9d., while that of spermaceti is 6s. 9d. per imperial gallon; we shall have a saving in the ratio of 1 to 1.755, which, at the present

rate of supply for the Northern Lights, would give a saving of about £3266 per annum.”

Gas.—In a few light-houses which are near towns, the gas of pit coal has been used, and there are certain advantages, more especially in dioptric lights, where there is only one large central flame, which would render the use of gas desirable. The form of the flame, which is an object of considerable importance, would thus be rendered less variable, and could be more easily regulated, and the inconvenience of the clock-work of the lamp would be wholly avoided. But it is obvious that gas is by no means suitable for the majority of light-houses, their distant situation, and generally difficult access, rendering the transport of large quantities of coal expensive and uncertain; while in many of them there is no means of erecting the apparatus necessary for manufacturing gas. There are other considerations which must induce us to pause before adopting gas as the fuel of light-houses; for, however much the risk of accident may be diminished in the present day, it still forms a question which ought not to be hastily decided, how far we should be justified in running even the most remote risk of explosion in establishments such as light-houses, the sudden failure of which might involve consequences of the most fatal description, and the situation of which is often such that their re-establishment must be a work of great expense and time.

Drummond and Voltaic Lights.—The application of the Drummond and Voltaic lights to light-house purposes is, owing to their prodigious intensity, a very desirable consummation; but it is surrounded by so many practical difficulties, that it may, in the present state of our knowledge, be pronounced unattainable. The uncertainty which attends the exhibition of both these lights is of itself a sufficient reason for coming to this conclusion. But other reasons, unhappily, are not wanting. The smallness of the flame renders those lights wholly inapplicable to dioptric instruments, which require a great body of flame, in order to produce a degree of divergence sufficient to render the duration of the flash in revolving lights long enough to answer the purpose of the mariner. M. Fresnel made some experiments on the application of the Drummond light to dioptric instruments, which completely demonstrate their unsuitability for this combination. He found that the light obtained by placing it in the focus of a great annular lens was much more intense than that produced by the great lamp and lens of Corduan; but the divergence did not exceed $30'$; so that, in a revolution like that of Corduan, the flashes would last only $1\frac{1}{2}$ second, and would not, therefore, be seen in such a manner as to suit the practical purposes of a revolving light. The great cylindric refractor, used in fixed lights of the first order, was also tried with the Drummond light in its focus; but it gave colored spectra at the top and bottom, and only a small bar of white light was transmitted from the centre of the instrument. The same deficiency of divergence completely unfits the combination of the Drummond light with the reflector for the purposes of a fixed light, and even if this cause did not operate against its application in revolving lights on the catoptric plan, the supply of the gases, which is attended with almost insurmountable difficulties, would, in any case, render the maintenance of the light precarious and uncertain in the last degree.

There are many questions of much interest regarding light-houses which appear to open an extensive field of inquiry; and it may be doubted whether some of them have received that degree of consideration to which their importance entitles them. Among these we may rank the numerous questions which may be raised regarding the most effective kind of distinctions for lights. Those distinctions may be naturally expected to be of the most effective kind which strike an observer by their appearance alone. Thus a red and

white light, a revolving and a fixed light, offer *appearances* which are calculated to produce upon the observer a stronger sense of their difference than the same observer would receive from lights the sole difference of which lies in their revolutions being performed in greater or less intervals of time. On the other hand, the distinctions derived from time, if the intervals on which they depend do not approach too closely to each other, appear to afford very suitable means for characterizing lights; and the number of distinctions which may be founded upon time alone are pretty numerous. Colored media have the great disadvantage of absorbing light, and the only color which has hitherto been found useful in practice is red, all others at even moderate distances, serving merely to enfeeble, without characterizing lights. In the system of Fresnel, as already explained, all the distinctions are based upon time alone. Mr. Robert Stevenson, the engineer of the Northern Light-houses, has invented two distinctions, which, although they are produced by variations of the time, possess characteristic *appearances*, sufficiently marked to enable an observer to distinguish a light without counting time. The one is called a *flashing* light, in which the flashes and eclipses succeed each other so rapidly as to give the appearance of a succession of brilliant scintillations; and the other has been called *intermittent*, from its consisting of a fixed light, which is suddenly and totally eclipsed, and again as suddenly revealed to view. The effect of this light is entirely different from that of any revolving light, both from the great inequality of the intervals of light and darkness, and also from the contrast which is produced by its sudden disappearance and reappearance, which is completely different from the gradual diminution and increase of the light in revolving lights, more especially in those on the catoptric principle. The great and still increasing number of lights renders the means of distinguishing them one of the most important considerations connected with light-houses.

Lights on the Coast.—Not less important, and very nearly allied to the subject of distinction, is that of the arrangement of lights on a line of coast. The choice of the most suitable places, and the assigning to each the characteristic appearances which are most likely to distinguish it from all the neighboring lights, are points requiring much consideration; and it ought never to be forgotten, that the indiscriminate erection of light-houses soon leads to confusion, and that the needless exhibition of a light, by involving the loss of a distinction, may afterward prove inconvenient in the case of some future light, which time and the growing wants of trade may call for on the same line of coast. To enter at length upon this topic, or even to lay down the general principles which ought to regulate the distribution of lights, would exceed the limits of this article; but in connection with this it may be observed, that the superintendence of light-houses should be committed to one general body, and ought not to be left to local trusts, whose operations are too often conducted on narrow principles, without reference to general interests. The inconveniences arising from interference between the distinctions of the lights under one trust, and those of the lights under another, are thereby avoided; and the full advantage is obtained of the means of distinction at the disposal of both.

The considerations which enter into the choice of the position and character of the lights on a line of coast are either, on the one hand, so simple and self-evident as scarcely to admit of being stated in a general form, without becoming mere truisms; or are, on the other hand, so very numerous, and often so complicated, as scarcely to be susceptible of compression into any general laws. We shall not, therefore, do more than very briefly notice, in the form of distinct propositions, a few of the chief considerations which should guide us in the selection of the sites and characteristic appearance of the light-houses to be placed

on a line of coast. For further information on this subject, see works mentioned at the end of this article.

1. The most prominent points of a line of coast, or those first made on *over-sea* voyages, should first be lighted; and the most powerful lights should be adapted to them, so that they may be discovered by the mariner as long as possible before his reaching land.
2. So far as is consistent with a due attention to distinction, revolving lights of some description, which are necessarily more powerful than fixed lights, should be employed at the outposts on a line of coast.
3. Lights of precisely identical character and appearance should not, if possible, occur within a less distance than 100 miles of each other on the same line of coast, which is made by *over-sea* vessels.
4. In all cases, the distinction of color should never be adopted except from absolute necessity.
5. Fixed lights, and others of less power, may be more readily adopted in narrow seas, because the range of the lights in such situations is generally less than that of open sea-lights.
6. In narrow seas, also, the distance between lights of the same appearance may often be safely reduced within much lower limits than is desirable for the greater sea-lights. Thus there are many instances in which the distance separating lights of the same character need not exceed 50 miles; and peculiar cases occur in which even a much less separation between similar lights may be sufficient.
7. Lights intended to guard vessels from reefs, shoals, or other dangers, should, in every case where it is practicable, be placed *seaward* of the danger itself, as it is desirable that seamen be enabled to make the lights with confidence.
8. Views of economy in the first cost of a light-house should never be permitted to interfere with placing it in the best possible position; and, when funds are deficient, it will generally be found that the wise course is to delay the work until a sum shall have been obtained sufficient for the erection of the light-house on the best site.
9. The elevation of the lantern above the sea should not, if possible, for sea-lights, exceed 200 feet; and about 150 feet is sufficient, under almost any circumstances, to give the range which is required. Lights placed on high headlands are subject to be frequently wrapped in fog, and are often thereby rendered useless at times when lights on a lower level might be perfectly efficient. But this rule must not, and indeed can not, be strictly followed, especially on a coast where there are many projecting cliffs, which, while they subject the lights placed on them to occasional obscuration by fog, would also entirely and permanently hide from view lights placed on the lower land adjoining them. In such cases, all that can be done is carefully to weigh all the circumstances of the locality, and choose that site for the light-house which seems to afford the greatest balance of advantage to navigation. As might be expected, in questions of this kind, the opinions of the most experienced persons are often very conflicting, according to the value which is set on the various elements which enter into the inquiry.
10. The best position for a sea-light ought rarely to be neglected for the sake of the more immediate benefit of some neighboring port, however important or influential; and the interests of navigation, as well as the true welfare of the port itself, will generally be much better served by placing the sea-light *where it ought to be*, and adding, on a smaller scale, such subsidiary lights as the channel leading to the entrance of the port may require.
11. It may be held as a general maxim, that the fewer lights that can be employed in the illumination of a coast the better, not only on the score of economy, but also of real efficiency. Every light needlessly erected may, in certain circumstances, become a source of confusion to the mariner; and, in the event of another light being required in the neighborhood, it becomes a *deduction* from the means of distinguishing it from the lights which existed previous to its establishment. By the

needless erection of a new light-house, therefore, we not only expend public treasure, but waste the means of distinction among the neighboring lights. 12. Distinctions of lights, founded upon the minute estimation of intervals of time between flashes, and especially on the measurement of the duration of light and dark periods, are less satisfactory to the great majority of coasting seamen, and more liable to derangement by atmospheric changes, than those distinctions which are founded on what may more properly be called the characteristic appearance of the lights, in which the times for the recurrence of certain appearances differ so widely from each other as not to require for their detection any very minute observation in a stormy night. Thus, for example, flashing lights of five seconds' interval, and revolving lights of half a minute, one minute, and two minutes, are much more characteristic than those which are distinguished from each other by intervals varying according to a slower series of 5'', 10'', 20'', 40'', etc. 13. Harbor and local lights, which have a circumscribed range, should generally be fixed, instead of revolving; and may often, for the same reason, be safely distinguished by colored media. In many cases, also, where they are to serve as guides into a narrow channel, the leading lights which are used should, at the same time, be so arranged as to serve for a distinction from any neighboring lights. 14. Floating lights, which are very expensive, and more or less uncertain, from their liability to drift from their moorings, as well as defective in power, should never be employed to indicate a turning-point in navigation in any situation where the conjunction of lights on the shore can be applied at a reasonable expense.

British and Irish Lights.—English lights are placed under the Corporation of Trinity House of Deptford, Stroud; the Scottish lights are under the management of the Commissioners of Northern Lights; and the Irish lights are under the care of the corporation for preserving and improving the port of Dublin, commonly called the Ballast Board.

The last act of Parliament on the subject of light-houses forms part of one the general title of which is, "An act to amend various laws relating to merchant shipping." It passed 20th August, 1853. The chief provisions which affect light-houses are the following: 1. The light dues of the United Kingdom are to form one *imperial* fund, under the control of the Board of Trade. 2. From this fund all expenses of erecting and maintaining the lights of the United Kingdom are to be defrayed. 3. The three boards which manage the light-houses in England, Scotland, and Ireland, are to render account of their expenditure to the Board of Trade. 4. The Trinity House, or English board, is to exercise a certain control over the boards in Scotland and Ireland, and is to judge of all their proposals to erect new lights, or to change existing ones; but in every case the sanction of the Board of Trade must precede the acts of each of the three boards.—E. B.

Comparison of the Systems of Lighting in the United States, France, Great Britain, etc.—To make this comparison intelligible, will require a brief notice of the light-house systems of France and Great Britain, with some remarks on the systems of other countries, before giving an extended notice of the systems of the United States' light-houses.

France.—The administrative matters relating to light-houses, though hardly such as it would be possible for us to follow, are, nevertheless, regulated with a system of order worthy of all commendation. As with us, no light dues are exacted from shipping, but the light-houses are a direct charge upon the treasury, and supported by annual appropriations. The question, shall there be a light-house at a particular point, is decided by a board consisting of naval officers, government engineers, and scientific civilians. The first decision settles that inquiry is desirable. The

civil engineer of the Department where the work is to be placed, reports his views, with plans and estimates for it, which are laid before the board by their secretary. If it now appears that the work should go on in the manner proposed, the details of construction and the estimates pass to the general council of government engineers (Bridges and Roads—"Ponts et Chaussées"), and when approved are constructed by contract, under the supervision of the government engineers of the Department. These engineers also superintend all repairs of light-houses. In some cases local boards are required, first, to examine and report upon the necessity for a proposed light, before the subject is examined by the light-house board. The administrative details are in the Department of State, ministry of public works, under which the different persons referred to, serve. The general arrangement of sea-coast lights, adopted on the report of Rear Admiral Rossel to the light-house board in 1825, is based upon two principles: that one light of the brightest class shall not be lost sight of until another is visible; and that such distinction shall be presented by the light, that a vessel on nearing the coast, without very gross error in the knowledge of her position, can not mistake one light for another. 21 nautical miles was adopted as the distance of visibility of the brightest lights, and three classes of distinction were admitted, viz.: fixed lights, revolving lights showing a bright light, and an eclipse at intervals of a minute and at half a minute. By placing the fixed light midway between the two revolving ones, of the different kinds, and at a distance of 42 nautical miles from each other, the essential conditions of the system would be fulfilled. In applying this practically, it was, of course, so modified as to conform to the general features of the coast, and to the wants of navigation. Between these brightest sea-coast lights, others of inferior power were arranged as required.

Every light is placed under the inspection of a person called a *conductor*, who visits it at least once a month, by night as well as by day, and is provided with keys of the building and of the watch-room, so that he can enter at all times, without summoning a keeper. The resident engineer of the Department inspects all the lights in his Department at least once a quarter, and the chief engineer of the Department once a year, and the secretary of the Department makes an inspection at least once in three years. The light-house keepers are furnished with books, ruled, and with appropriate headings to the columns, to record the observations required of them. Detailed instructions for light-houses and beacons are distributed, which direct minutely their duty.

Prior to 1822, Argand lamps with reflectors were used in the French light-houses. In that year, Augustin Fresnel put up the first lens light of his invention, in the tower of Cordouan, at the mouth of the Gironde. In 1825 the general adoption of the lens system was determined upon. In 1845 there were on the coast of France, not including the colonies, 151 lens lights and 47 reflector lights; and nearly all of the latter were merely *beacon-lights*.

According to Mr. Reynaud's statement, not one reflector light will be left in 1852, in the class of lights of the first and second order. Experience, then, has led to the substitution of lens lights for the others, except as small harbor beacon-lights, requiring a small arc of the horizon to be illuminated. The mechanical lamp used with the lens light was the joint invention of Arago and Fresnel, combining the idea of Rumford, of a number of concentric wicks, according to the intensity and volume required for the flame, and the idea of Carcel of keeping the wick from burning rapidly, by making the oil overflow about it, by raising it with a pump, moved by clock-work. Several kinds of mechanical lamps have, from time to time, been presented for examination and trial, an-

swering, generally, satisfactorily; those used in some of the recent lights are called the "moderator lamp." The repair of 28 lamps of the first order lights, 4 of the second, and 13 of the third, amounted, in 1850, only to \$183 56.

Mr. Fresnel suggests that if it be apprehended, that, on account of the distance of a light-house from the workshops, there may be difficulties in regard to the repairs of the mechanical lamp, the appointment of a mechanic as light-house keeper, and the supplying him with the necessary tools, will be a very simple remedy. In the refracting light the diverging rays from the lamp are rendered nearly parallel, by passing through a glass lens. Several such lenses, forming the sides of a prism, surround the lamp, the light from which is thus refracted into a number of beams corresponding to the number of the faces of the prism, separated by dark angles. If this prism be made to revolve slowly about a vertical axis, there will be alternations of light and darkness, as the beam from the face of the prism reaches the eye, or it is in the dark angle between the beams. The increase of the light to its greatest brightness, and the decrease again, will be gradual. A prism of eight sides, thus revolving in eight minutes, would show bright flashes at intervals of a minute, and eclipses at the same interval.

The lens is made of a number of pieces of glass, ground to the same curve, and fitted closely together. The building up of a lens in this way, of separate pieces, has been carried to very great perfection, and the separate pieces composing it are of beautiful clearness, polish, and precision of form. A drum of glass, cylindrical in its horizontal sections, and lens-shaped in the vertical direction, placed about a lamp which occupies its centre, will diffuse all around the horizon the rays falling horizontally upon it, bending toward the horizon those coming above or below the horizontal line from the lamp, furnishing a fixed light of equal brilliancy in every direction. A panel of glass, lens-shaped in the horizontal direction, being made to revolve about this, would give a bright flash as the axis of the lens passed any particular point; and several of these thus made to revolve, constitute a fixed light, varied by flashes.

When the whole of the horizon is not to be illuminated, a reflector is substituted for the lens behind the lamp, so as to throw to the front the light which would otherwise be lost. Not to lose the light thrown upward by the lamp, a series of glass prisms is so arranged as to receive the rays at the angle at which they are reflected, to throw them downward to the horizon. Similar prisms below the lamp, serve to prevent the waste of the light which falls below the lens. This application of totally reflecting prisms, is claimed by Mr. Alan Stevenson, of Edinburg. There are four orders of lights, according to the range of visibility, determined by the volume and brilliancy of the flame; the first order corresponding to the greatest range. The number of wicks of the lamps, and the dimensions of the whole apparatus, vary, accordingly, in the different orders. The third and fourth orders are subdivided into two classes, corresponding to the larger and smaller size of the apparatus. The dimensions of the lantern of the several orders, the number of wicks of the lamps, and other details, will be found in the table annexed.

Fixed and revolving white lights are used to give six characteristic combinations: the simple fixed light; the fixed light, varied by bright flashes every four, three, or two minutes; the revolving light, with intervals between the flashes, or between the eclipses, of a minute or half a minute. By introducing a red fixed light, alternate red and white flashes, and a fixed white light with red flashes, these combinations are extended to eight. Two fixed white lights, in separate towers, are used in a few cases for the sake of distinction.

The loss of light by a deep-red glass, is stated by Mr. Stevenson to be as high as 80 per cent. of the whole. A pink French glass absorbed but 57 per cent., but the color of the burner was not very decided. All parts of the illuminating apparatus for light-houses are supplied from a dépôt and workshops under the immediate direction of the secretary of the light-house board. The distance to which a light may be seen, its range of visibility (called sometimes simply its range), depends upon the brightness (intensity) of the light, its elevation above the general surface, and the greater or less transparency of the atmosphere. Some persons, too, can distinguish lights at a much greater distance than others. The range of a light, then, is not a sure test for comparing it with other lights.

The value (useful effect) of a light depends on its brightness and the extent of the horizon which it will illuminate. The brightness can be ascertained by experiment with the photometer, in terms of the light of a standard lamp as a unit; the extent of horizon illuminated, by simple measurement in degrees, minutes, and fractions. Hence the value of a light can be expressed in numbers: so many units of the standard lamp, multiplied by so many degrees on the horizon. If the light is not spread uniformly over the horizon, it is necessary to estimate its brightness at different parts, and the space over which it extends. The value for each portion being thus found, the whole value is easily deduced.

Theory will show how much of a light from a lamp can be thrown by a given lens, or mirror, in a particular direction; but as the degree of perfection of these instruments would vary the result considerably, recourse is to be had to experiment in comparing different kinds of illuminating apparatus. Very careful and often-repeated experiments have been made by M. Léonor Fresnel, late secretary of the light-house board of France, for the purpose of comparing the reflector and lens lights used in France. To appreciate them fully, it is necessary to follow the very minute details entered into, by measuring the brilliancy of the light in the various divisions of the horizon, and finding its total value (useful effect) in estimating the value from different parts of the apparatus, and the allowance to be made for loss of light from the construction of the lantern, etc. Without such a scrutiny, however, the character of their author, as an experimentalist, is a guaranty for the accuracy of the results. They show the following comparison for lens lights of the different orders, and equivalent systems of reflector lights:

4th order, 2d class; economy $2\frac{1}{2}$ to 1 in favor of the lens light.

3d order, 1st class; economy $3\frac{1}{2}$ to 1 in favor of the lens light.

2d order, fixed; economy $3\frac{1}{2}$ to 1 in favor of the lens light.

2d order, revolving; economy 4 to 1 in favor of the lens light.

1st order, fixed, economy 4 to 1 in favor of the lens light.

The combination of reflectors, to be equivalent to the first order lens, is such as has never been made. The average economy of the light itself is about $3\frac{1}{2}$ to 1 in favor of the lens system.

To render these deductions strictly applicable to practice, they should be made under the precise circumstances in which the apparatus is used; but as they would then be made in conditions unfavorable to accuracy, it is usual to assume that, in practice, the lamp is burning in the best way, and thus to make the comparisons. To render them strictly applicable to the lights of the United States, the oil, too, should be the same, and the manner of burning it the same; or, if different oils were used, each oil should be burned under the most favorable circumstances for it. These remarks, however, touch only the refine-

ments of the case, and show the desirableness of experiments made with the actual reflectors, lamps, and oil in use in the United States, with the lenses and their lamps, the oil being the same.

The question of the relative economy of the lens and reflector lights, depends upon the relative cost of the light-house adapted to them; of the illuminating apparatus; of the repairs of the building and apparatus; salaries of the keepers; cost of the oil, and incidental expenses. In France two keepers have always been employed for the larger lights; one or the other being required to be constantly on duty, so as never to leave the lights without attendance in the lantern or watch-room. With the new apparatus for the first order lights, in ordinary cases, three keepers are allowed, increasing the expense for salaries about one fourth. With those of the other orders, there has been no increase—two keepers being allowed to those of the second order, and third order, first class, using the mechanical lamp; and one to the third order, second class, and to the fourth order lights, using the ordinary fountain lamps with Argand burners. The light-house buildings are of the same cost, except that an additional room must be provided for the third keeper of the lens lights of the first order. The first cost of the lens apparatus is somewhat greater than that of the mirrors; but the great economy in consumption of oil, turns the scale entirely in favor of the lens lights—giving, according to the calculations of M. Fresnel, made upon the prices in France, for a small light, an economy of nearly 2 to 1 in favor of the lens; and for a large light (revolving light, second order), an economy of more than $1\frac{1}{2}$ to 1. The interest on the first cost of apparatus, and the additional salaries, must make a large increase to counterbalance the large economy in the consumption of oil, which, in France, we have seen to be more than 3 to 1 in favor of the lens lights. The same grade of intelligence and education is stated by M. Fresnel to be required in the keepers of the two kinds of lights. The care of the mechanical lamp, however, requires more mechanical tact than that of a common lamp; while the cleansing of the lens apparatus requires less time and care than the others.

The additional keeper of the large lights, and the providing of a second lamp in case of accident, is supposed to guard against the danger of the total extinguishment, for any considerable time, of the single lights, which is the weak point of the lens system. A very simple alarm is also provided, which, as soon as the overflow in the lamp ceases, rings a bell, giving notice of any derangement in the machinery, etc., for raising the oil. Mr. Stevenson causes this apparatus to keep a bell constantly sounding, and to stop when the machinery becomes deranged; believing that he better secures the watchfulness of the keeper thereby. On this question M. Fresnel gives this very decided opinion—after an experience of 22 years, sustained by the daily results of more than 100 lenticular lights of the first 3 orders—"that they have been distinguished by the regularity of their service." The metallic parts of the lantern are made of gun-metal (bronze), the astragals being inclined to the vertical. The ventilation of the lanterns is carefully attended to. The domes are of copper, painted white inside. There is a lightning-conductor, of copper wire strands, twisted like a rope, to each tower. The keeper's house, and the cellars for oil, are generally detached from the light-house, when practicable. The construction of light-house towers offers nothing for special remark, except that, as might be expected from the care used in obtaining plans for them, they are substantial and convenient, dry and well ventilated.

Oil of colza (rape-seed), expressed from the seeds of a kind of wild cabbage (*brassica oleracea*), is the only oil used in the French light-houses. The colza gives a very white light, and the oil does not readily

thicken by cold. M. Reynaud, secretary to the light-house board of France, speaks of the results of comparative experiments on olive oil, mineral oil from bituminous schiste, hydrogen, and mixtures of oxygen and hydrogen, as having been unfavorable. The oil is tested before being received, by burning for 15 or 16 consecutive hours in a mechanical lamp, when, if it burns clearly, and makes little or no crust on the wick, it is received. The oliometer is also used in the inspection. At the principal ports a book is kept, in which masters of vessels may register their complaints in reference to the lights on the coast. Their remarks are examined, and inquiry made by the inspecting engineers.

TABLE OF COMPARISON OF LENS AND REFLECTOR LIGHTS FOR THE EXPERIMENTS OF M. LEONOR FRESNEL.

Order of the lights.	Class and character of lights.	Equivalent system of reflectors.		Value—useful effects.	Economy—economical effects.
		No.	Diameter.		
			Inches.		
Fourth.....	Second class	2	13 $\frac{1}{2}$	2 —1	2 $\frac{1}{2}$ —1
Third.....	First class...	14	11	1 $\frac{1}{4}$ —1	8 $\frac{1}{2}$ —1
Second.....	Fixed	34	20	1 $\frac{1}{2}$ —1	8 $\frac{1}{2}$ —1
Second.....	Revolving...	24	20	....	4 —1
First.....	Fixed	36	24	....	4 —1
					3 $\frac{1}{4}$ —1

For a list of the principal French, Danish, Russian, and other Continental Lights, showing the heights of power and elevation above the level, see the last part of this article.

Great Britain.—The administrative part of the British light-house system is so peculiar, having grown up irregularly with the expansion of commerce, that it does not require to be described in detail. The chief English lights are under the direction of the corporation of Trinity House, Deptford Stroud, London; and the Scottish and Irish lights under commissioners. The expense of the lights is paid by dues collected from vessels of all nations, including England herself.

The British lights are divided, according to their power and position, into three classes—sea-coast, secondary, and harbor lights.

Each district in England has a local inspector, and the members of the Trinity House corporation also inspect from time to time. In Scotland, the engineer of the commissioners has the general superintendence of the lights. Notices in regard to lights are given in several of the daily metropolitan papers, in periodicals perused by nautical men, and are posted at the custom-houses.

The lights of Great Britain are principally still reflecting lights, but the lens light has been introduced in many of the most important positions, and is gradually taking the place of the other.

Trinity House lenses, 1st order, 15; 2d order, 5; 4th order, number not known.

In Scotland, the proportion of lenses to reflectors is greater than under the Trinity House corporation. Mr. Stevenson says: "The Board of Northern Light-houses are, excepting in a few cases, giving up the use of reflectors, and substituting either Fresnel or holophotal lights." (See letter of October 15, 1851.) Quite recently three new lens lights have been established in England, by the Trinity House board; three others, of the first, second, and fourth orders, respectively, have taken the place of reflector lights, and fourth order lenses have been introduced for harbor lights.

The first lens light in Great Britain was established in 1835, at Inchkeith, near Edinburgh, under the charge of Mr. Alan Stevenson; the next at the Isle of May; and now the Scottish lights of the larger classes are gradually being converted into lens lights. The Trinity House, of Deptford Stroud, introduced the first lens light in England, in 1837, at Start Point, in Devonshire. Mr. Herbert says: "The hydraulic lamp is universally in use in the dioptric lights of the corpo-

ration of Trinity House, with one exception (the South Foreland light), where the light is shown from a Carcel lamp, the disadvantage arising from the use of which is the occasional derangement of the machinery." In Scotland, the mechanical lamp is used with the lens lights. When the ventilation of the towers is not complete, the introduction of Professor Faraday's ventilating tubes over the chimneys of the lamps has been found very useful. The consumption of oil is increased, but the light is also increased, and no flickering of the lamp can occur in the highest wind. These tubes are used in all the English light-houses under the Trinity House board. The oil of colza is now exclusively used in all the lights under the Trinity House board. According to Mr. Stevenson, its light is a little more intense than that of spermaceti oil; the consumption for a given quantity of light about the same, whether the two be compared in a mechanical lamp or a common Argand lamp; it remains fluid at temperatures which would thicken spermaceti oil; the flame appears more steady, and hence the breakage of lamp-glasses is less than with spermaceti oil. It is furnished in England at 89 cents per gallon, which is 40 per cent. less than the cost of spermaceti oil there. The supplies of oil, wicks, glasses, etc., are delivered once a year by a vessel belonging to the corporation. There are two distinctive characters given to the reflector lights on the Scotch coast, differing from those already adverted to; in one, by placing the rims of all the mirrors on one side of a revolving light, in one vertical plane, and inclining their axes slightly to the horizon, and causing a rapid rotation of the frame, a flash is produced every 5 seconds, which appears to rise and fall; the bright and dark intervals follow each other rapidly. In the other, an intermittent light is produced by the vertical motion of circular discs in front of the reflectors, eclipsing the light for half a minute, and then permitting it suddenly to show out.

In England, the cost of the lens apparatus for a sea-coast light, lantern, and pedestal, exceeds that of the reflector apparatus nearly one fourth; but this disappears in the cost of towers and apparatus, and the advantage is on the other side when the charge for construction is turned into an annual interest, and the cost of illumination is considered.

No difference is made in the number or salaries of the keepers of the lens lights in England. Two keepers are allowed to all large lights, because one is required always to be on duty in the watch-room.

Comparing the value (useful effect) of the revolving lens light at Skerryvore, Scotland, with the old reflector light at Inchkeith, Mr. Stevenson makes it in the ratio of nearly $8\frac{1}{2}$ to 1, and the economy (economical effect) in the proportion of $3\frac{1}{2}$ to 1. Spermaceti oil was used in these comparisons, the result of which, as to economy, is the same as was obtained in France. In the comparison of fixed lights, Mr. Stevenson makes the economy of the lens light rise to four times that of the reflector. Taking the interest on first cost of erection as an annual charge, and combining it with the cost of maintaining the two kinds of lights, Mr. Stevenson makes the economy of the lens system, for revolving lights of the first order, to be as 1.2 to 1, and for large fixed lights as $1\frac{1}{2}$ to 1.

Argand burners and parabolic reflectors are used in the British light-vessels, both for fixed and revolving lights. The lanterns are of copper, or of gun-metal.

There are from 3 to 11 light-vessels in each of the districts under the charge of the Trinity House board, and in each district a relief light vessel is stationed. A gong is used as a fog-alarm, in the Trinity House corporation light-vessels.

The lens system was early introduced into Holland, where it has been entirely approved; it has also been introduced into Sweden, Denmark, Prussia, and Russia. The colza oil is also in common use. There is

no case where the lens lights have been introduced, in which recurrence has been made to the reflector system.

From these data, we are prepared to make the comparison required by the instructions of the Department, under the heads which it has pointed out, as far as it can be done without further experiments.

The use of these data will be entirely safe, since the systems of reflecting and refracting are compared under the most favorable circumstances for each class.

1. *Useful Effect*.—We have just shown that, by the experiments of Fresnel and Stevenson, the useful effect of a lens light is to that of a reflector light of the same class, on the average, as $3\frac{1}{2}$ to 1; of course, the holo-photal system of saving some of the lost light in the various arrangements, increases this disparity.

2. *Economy—First Cost—Repairs—Durability—Efficiency*.—This branch of the subject has been so elaborated elsewhere in this report, that it is considered only necessary to remark briefly upon it in this place.

Assuming that the lights in the two systems are the best of their kind:

The economy of the third order lens light, in comparison to the reflector light, as nearly equal to it as possible, is as 1 to 2.6. That is, it requires more than two and a half times as much oil, etc., for the reflector light, which is less than one third as useful, as for the lens light.

The economy of the second order lens light, in comparison to the reflector light, as nearly equal to it as it is possible to be made, is as 1 to 4.07. That is, the lens apparatus is four times as advantageous as the reflector light.

The economy of the first order lens light, compared to that of the reflector, is 4.08 to 1; or that the reflector is four times as expensive as the lens, or that the lens is four times as advantageous as the reflector light.

"That if we take into account the first cost of construction and the expense of their maintenance, we will find, in respect to the effect produced, the new system (dioptric) is still from one and a half to twice as advantageous as the old."

The repairs to the mechanical lamps employed in lens lights, amount to a mere nominal sum.

No difficulty can be anticipated in getting proper keepers to attend to the lens lights. Men belonging to the class of ordinary mechanics or laborers, are appointed to take charge of the lamps in France. Eight or ten days will suffice to instruct a light-keeper in the most essential parts of his duty, receiving lessons from an instructor conversant with all the details of the service.

The attendance upon the lamps can no longer be regarded with fear of ill consequences. They have been greatly improved, and are now believed to be nearly perfect.

There is nothing belonging to a mechanical lamp which could not be repaired by a watch-maker, and any person capable of taking charge of a movable light is equally competent to manage a lens light.

While experience has fully proved that the fears which were entertained of the extinction of the single lamp used in the lens lights are illusory, yet, should they still exist in any mind, any greater guaranty be absolutely required than experience gives, it would be easily afforded by furnishing each of the three or four wicks of the mechanical lamp with a separate pump, rendering them thus, in effect, three or four lamps. By subdividing the wicks, this might, if desired, be carried still further, and the expense of the additional pumps would not add two dollars per annum to the cost of each first-class light. The experience in relation to lenses has not been confined to any one country; even in our own, with but three stations, the results are most conclusive in their favor. Every first-class light should have two keepers, as in Great

Britain, etc. Such, however, is not the case in the United States; and in making the comparison of cost, they have deemed it best to allow the salary of an assistant keeper, and the additional cost of his dwelling-rooms, in making comparative estimates of the expense of the lens and reflector lights; but in comparing the actual annual expense of lights per lamp in this and in foreign countries, no credit was given to the foreign light for having additional keepers, and no charge made to our lights for deficiency of keepers. The Congressional Committee on Commerce say:

"It is not believed that dioptric lights of the first order can be required at any points except a few, and those the most important outer sea-stations. The remarks hereinafter made in regard to the comparative efficiency and economy of French and American lights, and the letter of the Auditor, may suggest doubts of the propriety of using any of the first order."

First order lights are, if possible, *more necessary on our coast than on that of any other country, and the Board can not, therefore, conceive what good reason could be given for not introducing them.* It is true, we have no first order lights at present, but many are claimed to be of that class, while they are no better than third-class ones. It is demonstrated elsewhere in this report, that the first order lenses are absolutely necessary; and it is beyond question true, that no combination of the reflectors can produce a first order light equal in power to a first order lens.

Again, the committee say:

"In arranging lights, useful effect and expense should be looked at in one view. An outer or sea-coast light should have a 'portee' or reach of light sufficient to give the approaching vessel, in all weathers, timely notice of danger. Any expense in fitting up lights to produce more effect is useless. A light extending its limit of visibility to the distance of 25 miles, is as efficient and useful as one of greater range. The mariner sees it in ample time to shape his course free from all difficulty." The Board concur in these opinions. *But our lights are not of that character.* The object of a light is to warn the navigator of some hidden danger, or of his approach to land, and to guide him clear of that danger on his way, or into his destined port. It therefore becomes necessary to regulate the power and range of a light, solely with reference to these primary objects. If a light is placed on a "clear coast" merely to warn the mariner of his approach or proximity to a lee-shore, or of his danger of running his vessel on it at night, a power and range must be given with reference to the gradual or irregular soundings in approaching the danger. If it is intended to serve as a guide around a dangerous point or shoal, then it becomes necessary to give it such a range as will insure safety to the vessel outside of these dangers under every circumstance; such, for example, as a sudden storm, or a continued gale blowing on shore for many days.

There are many points along the coast of the United States, with dangerous shoals extending many miles from them. To guide vessels clear of these dangers, lights of the greatest power and range are indispensable. Take as example the Nantucket Shoals, those between Barnegat and Cape May, off Absecum, and those off Capes Hatteras, Lookout, Fear, Romain, etc. The shoals off Cape Fear extend 20 nautical miles from the present light, which can only be seen under favorable circumstances about 12 miles. The necessity for first order lights at all points where sea-coast lights are required, is therefore indisputable. None of the lights named above have a sufficient range to warrant the mariner in running boldly for them. The lights on the Bahama banks are vastly superior to those on the Florida coast. The idea that our lights are injured by the haze, mists, etc., etc., arising from the proximity of our southern coast to the Gulf Stream, is therefore erroneous. That there is nothing in the atmosphere

along our coast calculated to affect the brilliancy and power of good lights, which does not exist on the coasts of England, Ireland, Scotland, France, Holland, Denmark, Norway, Sweden, etc., etc., is abundantly proved by the observations of intelligent individuals, who are acute observers of meteorological phenomena, and who have had their attention drawn to this particular subject in consequence of the great inferiority of our lights, compared to those of the rest of the maritime world.

The proper elevation to be given to first-class lights, is a subject closely allied to, and in some degree dependent upon, the general state of the atmosphere in the vicinity of the particular lights.

Observation by intelligent professional persons, will always enable the light-house engineer to act understandingly and decide correctly in all special cases of this kind.

As a general rule, it is considered by able light-house engineers in Europe, that on coasts where fogs prevail, a light should not have a greater elevation than 200 feet above the mean sea-level; but under other circumstances any elevation, if desirable to afford a greater range to the light, may be given, which is not above the region of clouds.

For a list of the principal British lights, showing the height of tower and elevation above sea-level, see the last part of this article.

No light dues are charged upon shipping in France, as in Great Britain, Holland, Denmark, Norway, and Sweden, etc., but the whole establishment is provided for as in the United States and Russia. The maintenance of the light-house buildings is confided to the departmental or local engineers, and the expenses are defrayed from funds appropriated for the service of the department of public works.

United States, Light-house System in the.—The following account of the condition of the light-houses in the United States, and the proposed changes to be made in the light-house system, is extracted from the Report of the Light-house Board, made in 1851.

"The subject of light-house illumination and improvement, although one of occasional discussion in Congress and in certain circles within the last 12 or 15 years, has not occupied the public mind to any great extent in this country, while in Europe generally, and more especially in France, England, Scotland, and Ireland, the ablest and most distinguished statesmen, philosophers, and philanthropists have devoted themselves for the last 25 or 30 years to this subject, in endeavoring to apply practically the aids which science and the mechanic arts have developed. Experiments to ascertain the truthful practical tests of the relative useful and economical values of illuminating apparatus, combustibles, and their accessories, in the most minute detail, have been made by Fresnel, Faraday, Stevenson, and other distinguished individuals; the results of their investigations have been published to the world, and their conclusions have served for the formation of a system for light-house illumination, approximating to perfection. Legislation, too, has taken a prominent part in this important branch of the public service in Europe. In 1825 the French government adopted definitely the Fresnel system of illumination on the coasts of France, and took, as the basis of their future light-house establishment, the programme proposed by the Board organized for the purpose, at the head of which was Admiral Rossel of the French navy.

"About this time the subject, which Sir David Brewster had foreshadowed in 1811, was revived in England and Scotland, through Colonel Colby of the Royal Engineers, and Mr. Stevenson the engineer to the Northern Lights, and the distinguished architect of the Bell-Rock tower. However, no important step was taken on the English side of the Channel to introduce the Fresnel apparatus until after a more careful and rigid

examination had been made by the light-house engineer of Scotland, and after trials of comparative usefulness and economy with that and the reflector apparatus at the Inchkeith station. In 1834, a new impulse was given to the subject of improvement in light-house illumination by letters from Sir David Brewster, and from the action of the House of Commons' select committee. The light-house boards of Europe seemed to exert themselves to satisfy public opinion by the introduction of the Fresnel lens at a few of the most important points for land lights, and of improved apparatus for floating lights, consisting of the Argand lamps and parabolic reflectors, in general use for land lights prior to the introduction of the Fresnel lens, and movable machinery for converting such fixed floating lights as were necessary into revolving ones.

"Although the lens met with much favor in England, and has been gradually getting into use, until nearly one half the sea-coast lights have been changed since 1837, still Scotland has introduced a larger number, in proportion to extent of coast, than the Trinity House corporation. Notwithstanding these decided improvements in the lights of Great Britain, another select committee on light-houses was raised by the House of Commons in 1845; and of the benefits arising from this last report have been the introduction of a large number of lens apparatus, not only in Great Britain but also into many of the colonies, and the substitution of the colza or rape-seed oil in nearly every light-house in the kingdom, in consequence of its superiority and economy compared to the best sperm oil. Improvements in illuminating apparatus and construction, ventilation, combustibles, etc., have made rapid progress in light-house engineering in Europe; while in this country no attempt has been made to improve the lights, with the exception of the act of Congress approved July 7, 1838, and which was the result of the recommendation of the committee on commerce in the Senate, as follows:

"Sec. 2. *And be it further enacted*, That the Secretary of the Treasury be, and he is hereby directed to cause two sets of dioptric or lenticular apparatus—one of the first, the other of the second class—and also one set, if he deem it expedient, of the reflector apparatus, all of the most improved kinds, to be imported, and cause the said several sets to be set up, and their merits as compared with the apparatus in use, to be tested by full and satisfactory experiments.' Under this authority, a lens apparatus was placed in each of the towers at the highlands of Navesink, and 14 out of the 15 reflectors were placed in the Boston light-house. If 'the said several sets' were 'set up' and 'their merits, as compared with the apparatus in use, tested by full and satisfactory experiment,' in conformity to the act, the results of those experiments have not been made known. With this exception, and the authority of Congress 'to test Mr. Isherwood's plan of discriminating one light from another, and of determining the distance of a vessel from a light,' which resulted in placing a second order lens in the tower at Sankaty Head, Nantucket, and the lights authorized by law to be constructed under the direction of the Topographical Bureau (Brandywine Shoal, Carysford Reef, and Sand Key), no steps have been taken to keep pace in light-house improvements in this country with those of France and Great Britain.

"The board, after examining with a patience and a zeal which they believe this important branch of the public service to demand, the different points to which their attention was specially called by the instructions of the Department, have arrived at the following conclusions, which they feel assured will be found to be fully sustained by the detailed data in this report, and its appendix, upon which they are chiefly based:

"That the light-houses, light-vessels, beacons, and buoys, and their accessories in the United States, are

not as efficient as the interests of commerce, navigation, and humanity demand; and that they do not compare favorably with similar aids to navigation in Europe in general, but especially with those of France and Great Britain, and their dependencies. That the light-house establishment of the United States does not compare favorably in economy with those of Great Britain and France. * * * That while the superiority of European lights to those of the United States (arising from the greater care and attention bestowed upon them, the better and more expensive apparatus employed in them, the larger number of keepers to the lights, the more rigid superintendence and frequent visitations for inspection and for delivery of supplies), render any just comparison of them in annual expense in money impossible, it is shown that the difference for maintenance per lamp per annum is very small, fitted with lens apparatus of equal power to the re- and that not invariably in favor of those of this country. * * * If all our present lights were reflectors now in use, the annual expense for supplies of oil and cleaning materials would cost little more than one fourth as much as is now expended for these articles of supply annually; that is, that the supplies now costing upward of \$152,000, would not exceed \$38,000 to \$42,000, making an annual saving of \$110,000 to \$115,000. That in addition to the great superiority in brilliancy, power, and economy of the lenses, compared to the reflectors, they possess the great advantage of durability to the extent of never requiring to be renewed.

"The light-house system of the United States has grown up from small beginnings—only 8 lights in 1789, and 55 lights in 1820—to the enlarged condition of 331 lights in 1851, and without those helps from organization of which some other countries have had the advantage. Great credit is due to the zeal and faithfulness of the present general superintendent, and to the spirit of economy which he has shown. The systems of lighting, however, which 25 years ago were in general use, have gradually given way to more improved ones—more efficient and more economical. The general condition of our lights is not such as our commerce now requires, and not such as the improvements of the day can supply. In considering the condition of the different parts of the system in their order, these facts will strongly appear, viz.: that waste of light, by imperfect apparatus, is waste of oil, and must be paid for in money. The navigator would be more benefited by a few good and reliable lights than by many imperfect ones; indeed, he would prefer no light at all to a bad one.

"Classification of Lights.—A proper classification of lights has many and obvious advantages; in fact, it forms the basis of the arrangement of lights in a system. In England the shore-lights are classed as sea-coast, secondary, river, and harbor-lights. In France they are divided into six orders, according to the size of the illuminating apparatus. The name of the order of the light in the French system suggests its purpose, the range, the relative brilliancy, the size and character of the parts of the illuminating apparatus, and the particulars of detail. That our own lights have not been classed, will explain the many anomalies in the number of lamps, the forms of the reflectors, and the like. It is an admitted principle, that the degree of divergency given to a light by a reflector for light-house purposes, should depend upon its intended objects, including range, etc., etc.; and yet no such principle has been applied in our light-houses, and a waste of light has been the consequence. Classification is of little avail without other and more important qualities; but it is nevertheless an essential of a system. The following is an assumed classification of the lights of the United States, according to their present value and useful effect, as compared to the lens:

1. One station with a first order fixed and a second

order revolving lens light. This combination renders the light only equal to a second order lens light. 2. One station with a second order flashing light (lens). This light is not fully equal to a second order lens, constructed on the most approved plan, in consequence of the loss of light by metal placed in the focal plane. 3. One station with a third order larger model lens light, constructed on the most approved plan. 4. One station with a revolving light, 21 21-inch reflectors, the nearest approximation to a first order catoptric light on the coast; inferior to a second order lens light. 5. Three stations with 18 21-inch reflectors (fixed light); not better than second order catoptric, or third order dioptric light. 6. One station with 30 18-inch reflectors (two lights in one tower), not better than second order catoptric, or third order lens light (larger model). 7. Four stations with 18 15-inch reflectors; about equal to third order lens light (larger model). 8. Two stations with 17 21-inch reflectors; about equal to third order lens light (larger model). 9. Nine stations, 15 21-inch reflectors; not equal to a third order lens light. 10. Eight stations, 14 21-inch reflectors; inferior to third order lens light. 11. Fourteen stations, 15 15-inch do. 12. Three stations, 16 15-inch do. 13. Eight stations, 14 16-inch do. 14. Eleven stations, 13 14-inch do. 15. Three stations, 12 21-inch do. 16. One station, 12 16-inch do. 17. Four stations, 12 15-inch do. 18. Three stations, 11 21-inch do. 19. Twelve stations, 11 16-inch do. 20. Nine stations, 10 21-inch do. 21. Eighteen stations, 10 15-inch do. 22. Forty stations, 10 14-inch do. 23. Thirty-nine stations, 8 14-inch do. 24. Twenty-eight stations, 8 14-inch do. 25. Two stations, 8 16-inch do. 26. Two stations, 9 21-inch do. 27. Eighteen stations, 7 14-inch do. 28. Fourteen stations, 6 14-inch do. 29. Two stations, 2 16-inch do. 30. Eight stations, 4 14 and 16-inch do. 31. Fourteen stations, 11 14-inch do. 32. Four stations, 1 14-inch do. 33. One station, 8 9-inch do. 34. Eight stations, 5 14-inch do. 35. Four stations, 3 14-inch do. 36. Nine stations, without reflectors.

"Recapitulation.—1 tower with 30 lamps (two lights in one tower); 1 do. 29 do.; 1 do. 21 do.; 7 do. 18 do.; 2 do. 17 do.; 8 do. 16 do.; 23 do. 15 do.; 16 do. 14 do.; 11 do. 13 do.; 8 do. 12 do.; 29 do. 11 do.; 67 do. 10 do.; 2 do. 9 do.; 70 do. 8 do.; 18 do. 7 do.; 14 do. 6 do.; 13 do. 5 do.; 8 do. 4 do.; 5 do. 3 do.; 2 do. 2 do.; 7 do. 1 do.; 5 do. small gas-lights; 4 do. lens lights; 37 towers with 21-inch reflectors; 1 do. 18 do.; 41 do. 16 do.; 51 do. 15 do.; 168 do. 14 do.; 1 do. 9 do.; 9 without reflectors.

"Lens Lights.—One station equal to second order lens light. One station not equal to second order lens light. One station with third order (larger model) lens light.

"Reflector Lights.—12 lights not equal to second order lens light. 61 lights not equal to third order lens light (large size). 35 do. (small size). 121 lights not better than fourth order lens light. 84 lights inferior to the fifth and sixth order lens light.

"It is apparent from this statement that there is not a first-class light of any description on the whole coast of the United States. The nearest approximations are at the Highlands of Navesink, composed of a first and second order light, and the revolving reflector light at Mobile Point, of 21 reflectors. The three next in order are Sandy Hook, Cape Henlopen, and Cape Henry, each fitted with 18 21-inch reflectors, and in towers of a good elevation. The Boston harbor light, fitted with 14 21-inch English reflectors, probably now stands next on this list, although the apparatus is much worn, and has not had the care and attention it deserved. There are 236 fixed lights, 30 revolving lights, 2 fixed and revolving lights, 18 double lights, 2 triple lights.

"Average number of lamps per light-house, in the United States, is now $9\frac{1}{2}$; in England (general coast), 13; in Scotland (do.), $17\frac{1}{2}$; in Ireland (do.), 20; in Ireland harbor, $7\frac{1}{2}$. The 41 light-vessels of the United

States are fitted without lamps (in the ordinary acceptance of the term), and without reflectors. The lights are consequently seen at very short distances, and do not fully subserve the objects for which they were authorized by Congress. Argand lamps, with large parabolic reflectors, are employed in Great Britain in light-vessels. The Admiralty list of Trinity House lights for 1849, shows that there were at that time seven floating lights fitted with revolving apparatus, belonging to that corporation.

"Distinctive Characters.—The distinctive characters of the lights of the United States, are:—1st, fixed lights; 2d, revolving lights; 3d, double lights, or lights in two towers; 4th, lights in three towers; 5th, colored lights. Distinctions have been employed at 10 stations from two fixed lights, and from one fixed light, and one revolving light; and in three towers with two lights, one above the other. There is but one triple light on the coast of the United States. The beacons for ranges are not, of course, included in these numbers. Double and triple lights are among the most wasteful modes of distinction, and, it may be added, the least effective. Very little attention has been paid to distinguishing lights in the United States. At points along the eastern coast, many fixed lights are seen at the same moment, without the means of knowing any of them. The proportion of revolving to fixed lights on the entire coast, is 1 to 9.2. The proportion of all modes of distinction, including multiple and colored lights, is 1 to 5.2.

"On the coast of Maine there are 34 light-stations; of which number, 3 are revolving, 1 two-towers fixed and revolving, 1 two-towers fixed lights, and the remaining 29 are all fixed lights. In New Hampshire there are 3 light-stations: 1 fixed, 1 revolving red and white, and 1 fixed, with 2 lights in 1 tower. In Massachusetts there are 42 light-stations; of which 5 are revolving, 11 fixed and revolving, 1 lens, flashing, 8 double fixed, 1 triple, and the remaining 26 are fixed white lights. In Rhode Island there are 9 stations; 2 are revolving, and 7 are fixed lights. In Connecticut there are 11 stations; 2 are revolving, and 9 fixed lights. In New York there are 41 light-stations; 4 are revolving, and 37 fixed lights. In New Jersey there are 10 light stations; 1 revolving, 1 fixed and revolving, 1 red, and 7 fixed lights. In Pennsylvania there are 4 light-stations, and all fixed lights. In Delaware there are 8 light-stations, and all the lights are fixed. The one on the breakwater is called a red and white light, by the keeper; but as the light can not be seen through the dark red shield-like shades, the white part only is seen. In Maryland there are 14 light-stations; 1 double fixed, and 13 single fixed lights. In Virginia there are 8 light-stations; 2 are revolving, and 6 are fixed lights. In North Carolina there are 11 light stations: 2 are revolving, 2 double fixed lights, and 7 fixed lights. In South Carolina there are 5 light-stations; 1 revolving, 2 double fixed light-beacons, and 2 fixed lights. In Georgia there are 9 light-stations; 2 revolving, 1 two fixed beacons, and 6 fixed lights. In Florida there are 12 light-stations; 6 revolving, and 6 fixed; one of the latter with red shades. In Alabama there are 3 light-stations; 1 revolving, and 2 fixed lights. In Mississippi there are 4 light-stations, and all fixed lights. In Louisiana there are 14 light-stations; 3 revolving, 1 with two lights in one tower, 1 red light, and the remaining 9 are all fixed lights. Of the remaining 49 lights, only two are revolving.

"The foregoing lights are exclusive of the 42 light-vessels distributed along the coast, forming an important part of the light system, all of which are fixed lights. From the Highlands of Navesink to the fixed light on Dry Tortugas, a distance of upward of 1800 miles by the coast, there are only 3 prominent revolving lights; all the rest being single fixed lights. The revolving lights at Cape Charles, at Ocracoke, Sapelo,

and Amélia island, are not included in this estimate, because they are minor lights, and not seen, except by vessels bound into ports near their location. Body's island is so badly placed, and so low, that it is of very little use to navigators. From Dry Tortugas to Cape Canaveral, a distance of nearly 400 miles, there is not a single revolving or other than fixed lights. From Charleston to Cape Canaveral, a distance of 300 miles, all the prominent lights are fixed, with only two minor revolving lights. From Charleston to Navesink, there is but one revolving light which can be of any use to the mariner bound to New York.

"In England the lights are distinguished by fixed, revolving, flashing, colored (red only being used), with combinations of double fixed, fixed and revolving, etc., etc. The English Trinity House corporation have 7 revolving lights on board of light-vessels, out of 25; and the proportion of revolving to fixed lights is 1 to 4.2. Of 40 sea-coast lights, 19 are fixed white, 10 revolving, 4 revolving and fixed, 3 red fixed, and 1 double fixed light; that is, one half are fixed, and the remaining half are revolving, etc. The Scotch have 11 fixed white; 2 revolving red and white; 4 revolving, showing brightest every minute; 4 revolving, and showing white lights every two minutes; 2 double fixed lights; 2 flashing once in every five seconds; 4 intermittent lights, brightest state once in two minutes; 2 fixed and red; 1 double, revolving at the same instant; making only 11 fixed lights, out of 33, on the entire coast of Scotland. In Ireland there are five distinctions employed: fixed white, fixed red, revolving white, revolving red and white, and intermittent lights. Of 23 sea-coast lights, 11 are fixed white, 7 revolving, 1 fixed red, and 1 fixed and revolving.

"In France there are nine principal combinations of lights, possessing distinctive characteristics, viz.: 1. Flashes which succeed each other every minute. 2. Flashes which succeed each other every half minute. 3. Flashes alternate red and white. 4. Fixed lights, varied by flashes every 4 minutes. 5. Fixed lights, varied by flashes every 3 minutes. 6. Fixed lights, varied by flashes every 2 minutes. 7. Fixed white lights, varied by red flashes more or less frequently. 8. Fixed lights. 9. Double fixed lights. To which might be added fixed and revolving, in two towers, as at Navesink. There are, however, very few double lights in France, and are only employed to give a very decided character to a locality, in contradistinction to those nearest. By adopting the principle of Rear Admiral Rossel, as set forth in the programme reported by him for lighting the coasts of France, in 1822, finally adopted by the French administration in 1825, and which has been steadily adhered to since, of placing first order sea-coast lights within the distance of 42 nautical miles of each other, there can be no great difficulty in obtaining a sufficient number of very marked distinctions for sea-coast lights. The present advanced and progressive state of nautical science is also brought in to the aid of the light-house engineer, as it will now seldom happen that a navigator will be 84 miles out of his reckoning. By commencing at one line of the boundary of a country, on a sea-coast where a first order light is required, with a revolving light; then, at the distance of 42 nautical miles, a fixed light; and at the distance of 42 nautical miles further, a flashing light; then an intermittent bright, then a fixed light; then a revolving—and so on along the entire coast—the mariner will find no difficulty in recognizing any well-kept light that he may see. Should it become necessary to employ time as one of the elements, then there can be no better system than that employed in France. An occasional deviation may be found to be necessary, such as the erection of two towers for fixed, revolving, or fixed and revolving lights. This is one of the branches of light-house service which can only be executed properly by competent persons, who have thor-

oughly investigated and studied the subject, both in general and for special cases. Should the very ingenious plan of distinguishing lights by occultations, as proposed by Mr. Charles Babbage, prove, upon experiment, to be practicable, the whole system of characteristic distinctions will be entirely changed and greatly simplified.

"The floating lights of the United States are all fixed, and fitted with common torch lamps, without Argand burners and reflectors. The light-vessels are too small for exposed positions, and the models are not the best for the purposes for which they are designed. They are not provided with moorings such as they require, and there is not sufficient attention paid to placing them in their proper positions. The lights, in consequence of the inferior lamps *without reflectors*, are of very little use to the navigator. The uncertainty of finding the light-vessels in their proper positions, by navigators who have been several months absent from the country, produces a general distrust, which destroys all reliance on them.

"The floating lights of England and Ireland are built upon the best models; are of sufficient tonnage to be safe at the points for which they were built; are constructed in the most substantial manner—of wood generally, but in some cases of iron; are moored with heavy anchors and chains, and long scopes. Those placed to mark channels, as the North-West light-vessel at Liverpool, are moored with long scopes of cable to a swivel, and hove in, so that in swinging they do not change their positions perceptibly. These floating lights are placed in the most exposed positions in the Irish or St. George's Channel, in the British Channel, North Sea, and in the most exposed positions of the English and Irish coasts. It very seldom happens that they break from their moorings, and are never taken away without previously placing a duplicate in the position. The system of relief to the keepers and crews is an admirable one; one that insures a faithful performance of the duties intrusted to them, to the great advantage of navigators.

"The English floating lights are fitted with Argand lamps and parabolic reflectors—fixed, revolving, and double lights. They are distinguished by day by cages of hoop-iron, balls, cones, flags, etc., etc. The name and number of each light-vessel are painted in large letters and figures conspicuously on the sides and stern. These lights from the superior apparatus employed in them, and the great care and attention of inspections and superintendence, under the most rigid instructions in detail (which are printed in large type, and hung in frames in the apartments), are very little inferior to the same class of reflector lights, with equal elevations, on shore. Many of them can be seen from the deck of a merchant vessel 12 to 14 miles, while those in this country can only be seen from 3 to 7 miles. Refractors have been made by Mr. Letourneau, of Paris, for light-vessels, which can not fail to be productive of much benefit, and which are, no doubt, destined to render floating lights much more useful to the navigator than they have hitherto been, even in England, where the best reflecting apparatus has been employed for many years.

"*Mode of ascertaining Places of Light-Houses.*—No systematic mode of determining where there should be a light-house, or boat, seems to have been followed for any period of years, and hence the lights are so numerous on some parts of the coast as to be inconvenient, and on other parts are so few as not to supply, *even moderately*, the demands of navigation. The principle adopted by the French commissioner of light-houses for placing lights on the coast of France, will be found stated in another part of this report: steadily adhered to, it has prevented the wasteful multiplication of lights, and has provided, gradually, those really necessary for facilitating navigation.

"*Plans for Light-Houses, Light-Vessels, etc.*—No sys-

tematic methods appear to have been resorted to to secure plans for light-houses, light-boats, lighting apparatus and other accessories, in the United States. The preparation of plans for light-houses, lighting apparatus, and other accessories, is the business of an engineer. Occasionally architects have been consulted, and the Treasury Department and Congress have sometimes devolved the preparation of plans, etc., upon the officers of the corps of topographical engineers. The uncalled-for variety and the inconvenience and ill-adaptation of the structures visited by the Board, show how much the intervention of knowledge is required. In discussing the details of these works, this fact will constantly appear. Professional skill is essential to efficiency and economy. Ill-contrived light-houses require numerous additions, and do not then answer their purpose. Badly-constructed ones are expensive in repairs, besides injuring the apparatus and stores contained in them. Badly-contrived lamps waste the oil, and answer imperfectly the purpose of lighting. Mirrors badly made, unskillfully arranged, unscientific in their forms and adjustments, cause a loss of light which is paid for in oil. Imperfect ventilation causes a bad light. Unscientific arrangements of the lantern in regard to glazing, painting, etc., cause a waste of light. The proper arrangement of these matters is the study and occupation of a profession. The neglect of the proper conditions is wasteful. Plans of light-houses of different classes, with modifications adapted to different localities, would promote economy by the frequent repetition of the same pieces, which in stonework, brick-work, iron-casting, carpenter's-work, glazier's-work, and the like, is productive always of a decided economy. The important subject of alarm signals has not received the attention which it deserves. In the English light-houses the gong is used instead of the bell, to give signals in case of fogs, and no attempt appears to have been made in this country to compare the value of the two kinds of alarm signals. The fog-whistle, introduced by Mr. Daboll and recommended by the Board, has been found to be far more efficient than the bell. The Board had ample means of forming correct conclusions as to the relative merits of the two modes of warning the mariner in fogs, and found no difficulty in deciding in favor of the whistle for positions where it can be put up.

"Mr. Alexander Gordon, civil engineer, of London, proposed to the select committee of the House of Commons on light-houses, in 1845, that the gong employed on board of light-vessels should be superseded by the use of a shrill scream or whistle, such as the railway whistle, giving it sound by a bellows, and having the sound directed around the horizon by reflectors, similar to those of Bordier Marcet for reflecting light. The reflection of the sound of the air-whistle of Mr. Daboll is believed to be practicable by the means suggested by Mr. Gordon; at any rate, the importance of the subject warrants the small expenditure which would be required to test it experimentally. The discharge of heavy guns has been recommended, and would be effective if there were sufficient force at the light-houses to load and fire them. They would always be expensive, however, every discharge of a 24-pounder gun costing about \$1. The fog-bells examined by the United States' Board were not placed so as to produce the best effect. That at Boston harbor was inclosed in a frame building, the sides of which effectually deadened the sound in two directions. It is time that this subject received full and careful investigation by experiments under the direction of scientific men. Besides this class of signals, those intended to guide vessels entering into *barred* harbors, when (from heavy weather or other causes) pilots can not be had, should be carefully systematized. The system should be adopted of Captain Fenoux, of the French navy, depending upon the positions of a movable triangle fixed to a pole or mast, or to a light-house; and that of Lieutenant John

Rodgers, United States' navy, by a flag, to be used in a boat or on shore. Surf-boats and life-boats should be furnished to certain light-house stations, and the means of readily providing crews for them in time of need, be furnished. They should be planned by, and constructed under the direction of, competent persons, who would study all the details of their use, and make it certain that when required they could be launched and effectively manned. The trustees of the Liverpool Dock Company (England) have, under the admirable management of their very able marine surveyor of that port, a most perfect system for the relief of the shipwrecked.

"There are nine life-boats stationed at different points around the bay and port of Liverpool. The boats are constructed on the most approved principles; kept on carriages in the boat-houses near the shore, and horses provided to enable them to proceed to the most advantageous spot for launching. A gun is placed at each station to summon the crew, besides distress flags placed at each light-house, light-ship, and telegraph station. The arrangements are so perfect that in many instances the life-boat has been manned, launched, and on her way to the wreck in 17 or 18 minutes from the time the distress signal was made. The life-boats are manned by picked boatmen of Liverpool and picked fishermen along the coast, who reside near the boat stations, and who are familiar with the banks, swashways, tides and currents, in Liverpool Bay. The whole of the boatmen are kept on constant and permanent pay, and are regularly mustered and exercised once a month, and no expense has been spared in rendering the boats, their equipments and crews, as perfect as possible. The Liverpool arrangements are well worthy of imitation for many parts of our dangerous coast (especially during the winter months). The necessity can not too strongly be urged for the employment of more efficient means than now exist at the points where life-boats have been authorized by law to be placed.

"*Light-Boats and their Accessories.*—The first cost, large annual expense for maintenance and repairs, and the rapid decay of light-vessels, render this mode of lighting very objectionable, independently of the ineffectual manner in which they subserve the purposes of warning the mariner of danger. That this description of lights has not received the attention in this country due to its importance as a necessary adjunct to a proper system of sea-coast illumination, is very evident to the Board.

"That there are many points on our extended sea-coast requiring to be lighted, which will not admit of any other means, is also evident. It therefore becomes necessary to select those means least objectionable, in an economical point of view, and best adapted to the desired end. The rapid decay of timbers, especially on our southern coast, would seem to suggest the propriety of employing more durable materials. It is stated by the general superintendent of lights that these vessels last from 5 to 10 years. To obviate the necessity for renewing them at such short periods iron vessels might, with great propriety, be substituted. The experiment has been tried in Europe with perfect success. The advantages of iron over wood for the construction of light-vessels are self-evident. Durability, buoyancy, and economy of first cost, are the advantages, without any conceivable disadvantages that could arise from their introduction.

"The inferiority of those vessels seen by the Board, the large sums appropriated annually for their support and repair, and the small amount of usefulness arising from their employment, warrant the Board in recommending a better class of vessels; to be built of iron, and filled with the best parabolic reflectors and Argand lamps, similar to the north-west light-ship at Liverpool and those generally employed by the Trinity House Board and Irish Board. Proper distinguishing

marks by day, as well as the distinctions of the lights at night, should not be neglected, and the Board can not do better than recommend the Liverpool and other English light-vessels as proper models, in every respect worthy of imitation. There are many points on our southern coast, especially in the sounds and bays, where small light-vessels are now placed, at which screw-pile foundations might be substituted with great advantage to the navigator, and in an economical point of view. Structures on screw-piles costing in the aggregate much less than the light-boats, and affording a more powerful and efficient light, would conduce greatly to the efficiency and economy of this branch of the lighting service of the United States. The apparatus of the light-vessels of this country is so far inferior that most intelligent and disinterested persons engaged in commerce and navigation pronounce them useless. The example of the Trinity House corporation, Liverpool lights establishments, etc., etc., in fitting up their light-ships with 21-inch parabolic reflectors and Argand lamps and burners, has not been followed in this country. While the light-vessels of this country are comparatively useless, those of Great Britain are in many instances equal, and in all nearly so, to those placed in towers on the shore. The introduction of movable machinery, with the view to distinguishing these lights, is not of very recent date in Europe, though not known here.

"The removal of light-vessels from dangerous and important points on the coast, without due notice (a source of almost universal complaint by masters of vessels), is an evil that can not be remedied too soon. It has not been many days since the finest steam-frigate in the navy struck on a dangerous shoal, properly laid down on the coast-survey chart, in consequence of the absence of the light-vessel from her position. Light-vessels seldom break away from their moorings in England, and are never taken away from their positions without previously placing a substitute. This branch of the lighting service of the country is probably the most defective. Properly modeled, built, and moored, light-vessels, fitted with the best apparatus, and placed under the charge of competent masters, with ample crews, governed by the most rigid rules and regulations, and subjected to frequent visitation and inspection, can alone subserve the great interests of navigation, in this branch of the lighting service.

"*Manner and Frequency of Inspection.—Persons by whom made.*—All experience shows that frequent inspections of light-houses are essential to maintaining an efficient system. These inspections, by competent persons (engineers of the corps of Ponts et Chaussées) are carefully provided for in France, by members of the Trinity Board in England, and by the engineers of local establishments, such as that of the Port and Bay of Liverpool, and by the engineers and their assistants of the establishments of Scotland and Ireland. The vigilance which is secured by inspections at irregular intervals is of greater value than even the direct results of an examination. Our system, at present is quite deficient in this respect; a single annual visit from the collectors, who are superintendents of lights, and the visit of the employee who delivers supplies to the light-house, etc. (the latter, in some districts, being the only inspection), is obviously insufficient. (See Senate Doc. No. 428, 1st session, 29th Congress.) The evident state of preparation in the light-houses at which the visits of the Board were expected, showed that good effects would flow from a system of inspection. Such a system could be organized with very little, if any, additional expense to the government; which will be discussed in detail in another part of this report. The efficiency which would be gained by thorough inspection would justify additional expenditure, if it could not be reached without it; but it is believed to be clearly demonstrated elsewhere in this report, that the present annual expenditure for com-

mission on purchases, distributing supplies, and nominal inspections, *would be ample*, under the system proposed by the Board, to produce these desirable and beneficial results. *Better have fewer lights and effective, than many without efficiency.* In the district of New York the collector employs an assistant, who is charged with the care of the lights, beacons, buoys, etc., and who has under his charge a small vessel for furnishing supplies, visiting the lights, replacing buoys when displaced, and the like. The zeal of this gentleman has been servicable in the management of this district; and were it guided by good instructions, and sustained by occasional visits of a competent general inspector, would produce still better results.

"*Positions of Beacons, Buoys, etc.*—As a general rule, only seamen familiar with hydrography, and pilots, know what beacons, buoys, and sea-marks are required, and where and how they should be placed. The beacons, buoys, and sea-marks which would suffice for pilots, with their accurate knowledge of natural and artificial objects available for safe navigation, are not always sufficient for mariners generally. Their object is not to dispense with the services of the pilot, but to furnish him with marks, etc., to provide for cases of emergency, when the vessel must enter, and may not be provided with a pilot. Small coasting vessels, carrying freights which do not pay well, can not afford to pay pilotage. The necessity for the beacons, buoys, and sea-marks recently and at present provided for by law, is inquired into and reported upon by the superintendent of the coast survey, on the examination of officers of the work, and by the chief of the Topographical Bureau. They are then usually placed by pilots or seamen, but sometimes by the officers of the coast survey. When required to be removed on account of ice, or for repairs, or when displaced, they are replaced by contract by the year, under the authority of the local superintendent. The duty of replacing buoys driven from their moorings is neither superintended nor executed in a proper manner. The buoys are usually placed by pilots (who contract to perform the service) by compass bearings, ranges, or by guess; and it has been remarked by the surveyors, that in many cases their places are so much changed in different years as to produce error, and even danger. The coast survey officers place them by the known positions of three suitable objects on shore—a method known as the three-point problem, measuring the angles with a sextant. This is the true mode of placing them; and no person should be permitted to put them down who is not competent to use that instrument. When placed, it is indispensable that their position should be verified by a competent officer, that he should report in relation to them to the local or general superintendent, and that he should inspect their positions from time to time, and always when, by accident or design, they have been moved.

"*Coloring and Numbering Buoys.*—Until the passage of the recent law (1850), in regard to coloring buoys, the local superintendents changed the colors at pleasure, often introducing the utmost confusion. No notice of such change being given to the general superintendent, no changes could be made in the charts of the coast, and the worst consequence might have resulted. Wise legislation has checked this; but it is still true, that the examination of positions, colors, and numbers, should be made by competent inspectors, and reported to the Department. Plain as are the directions of the law in regard to coloring and numbering buoys, there is known one important port in which the provisions of the law have been completely misunderstood, so that a navigator running by the buoys must put his vessel, if of considerable draught, on the bar.

"Sufficient care has not been bestowed upon the buoys generally, under the law of 1850. The paint used for coloring has not been, in any single instance that the Board has seen, of the best quality. To carry

out the design of the act of Congress, the red especially should be of the best quality of red lead, the black of the glossiest, and the white of the purest white. Spanish brown and dirty black are difficult to distinguish from each other. Such may be seen almost everywhere along our entire coast. The spar-buoys, being the most common in this country, are inefficient; difficult to give easily distinguished marks or numbers, and from their peculiar shape, size, and improper mooring, are too often at such an angle with the surface of the water as to render them exceedingly difficult to be seen. Can and nun-buoys are employed, but not to a great extent, and those used are much too small. The boat-buoys, used chiefly on the eastern coast are very inefficient. In some of the rivers, barrel-buoys, equal in capacity to about a sixty-gallon cask, are employed. Iron buoys have been authorized, by special act of Congress, for the Columbia River, rivers in Texas, Hatteras Shoals, etc. The moorings of buoys in the United States are, as a general rule, very defective. The weight of the blocks of granite, or sinkers of iron, and size of chains, are not sufficient. For want of proper inspection, buoys frequently sink at their moorings, and part their chains. Too much care can not be taken to guard against these casualties, especially in important channels: in rivers and on sand-bars, lodgments of this kind may destroy a valuable channel. The important duty of raising and replacing buoys should not be left to the discretion of contractors. The kind of buoys required, their material, etc., should all be provided for by competent persons. In regard to distinguishing them, the Board will elsewhere make further remarks. The numbers, as now placed upon the buoys, are very ineffective. The law in regard to coloring and numbering them, however, is deemed all-sufficient.

Notice to Mariners in regard to Changes.—This is a subject which, in the opinion of the Board, requires more attention than has ever been given to it in this country. It is not sufficient to publish changes in a local newspaper. They should be published, as far in advance of the proposed change as possible, in all the leading commercial newspapers, nautical periodicals, and by placards in large type, with conspicuous headings, and distributed at home and abroad, at the custom-houses, and offices of the different consulates. In making changes, they should take place at the precise time designated, and nothing should prevent the perfect fulfillment of the originally published design. Changes of lights in light-houses, removal or placing of light-vessels, should never take place with less than six months' notice: a year's notice would be better. Should a light-vessel break adrift, although replaced within a few days, a notice of both facts should appear together in the same papers, and on the same placards, as the navigator might otherwise see the notice of the breaking adrift, and not the other, and thereby be deceived. This is one of the most important branches of the lighting service, and one that can never be perfectly systematized without a corps of competent and efficient local inspectors. In this respect the Trinity House, Northern Lights, Irish Board, Liverpool Dock Trustees, etc., are good models. Notices of proposed changes of lights, buoys, beacons, and of new lights, are to be found in every part of the globe, and always placed where the navigator is obliged to go before leaving port—the clearance office, and at the office of the consul of his country. The admirable system followed by these independent boards, in all the minute details of the service, for the benefit of commerce and navigation, can not be too highly commended. Those who have been around the world, and visited nearly every principal port it contains, never saw a notice to mariners relating to an American light, except by chance, in some corner of a newspaper, and that probably a merely local one.

“Changes arising from casualties should be pub-

lished widely in the manner prescribed, and at the same time reported by the local inspector to the Department. No changes should be made except on the authority of the Department, which should authorize at least six months' notice, in all cases of lights. The looseness of the system in this country heretofore in these respects is proved by the fact, that although a circular was issued by the general superintendent of lights, etc., directing the collectors, acting as superintendents of lights to report to the superintendent of the coast survey all changes in regard to lights, beacons, buoys, etc., that they might be placed upon the charts, but one collector ever complied with the direction. Changes which otherwise would be improvements, unless known to the mariner, become snares. No list of beacons, buoys, or sea-marks exists; no description of them can be obtained, except by a general visitation and inspection of them along the whole coast. Having failed to obtain the required information, efforts have been made by the Board to procure this important information from the local superintendents, for the purpose of arranging a descriptive list of them. So far only a few returns have been made, and some of these not full enough to carry out the design. European light-house boards do not confine themselves to giving notice to mariners of proposed changes, etc., in their own lights, etc., but they cause those in foreign languages to be translated, and as widely disseminated as their own. The Trinity House corporation of London causes the notices relating to lights, etc., on the French coasts, as well as on their own, to be published in the commercial papers in this country.

Relative Economy of Reflector and Lens Systems.—Now, although the most decided results in favor of economy are to be expected from the reformation of the minor classes of lights, we do not therefore conclude that we should begin with them, because humanity, and the more general interests of commerce, and the safety of our ships-of-war, have their claims. Our ships-of-war, vessels engaged in foreign commerce, all that arrive on our coast from distant voyages, are more liable to suffer from the inferiority of our sea-coast lights, or higher class lights, than are our coasters from the deficiencies of the inferior classes; and, accordingly, it is along our exterior coast line that we find occurring the greater number and the most disastrous shipwrecks during the stormy seasons.

“The minor lights are usually so multiplied, and the localities inside of the general coast line so well known to the navigators of our bays and rivers, that they can not often be at a loss for a secure harbor somewhere in heavy weather; whereas the sea-coast lights, at times comparatively few, and even deficient in number, and at others complicated by their superabundance, occupy positions full of danger to the navigator. It is, therefore, of the first importance to ships arriving on the coast from distant voyages, that the light which they first make should be clearly visible at the greatest distance from the land, and that it should be so distinct in character as not to be confounded with other lights; and it is not less important that we should not delay giving to such lights all the perfection they are capable of receiving; and having accomplished this purpose with respect to the most prominent and important, we should extend the improvement to the lights of inferior classes and of minor importance, although by so doing we were to save at the outset something less than if we were to begin by reforming the minor lights, because in the mean time our foreign commerce and the navy might be suffering to an amount far surpassing that which might be saved to the revenue.

“Mr. Alan Stevenson says: ‘In comparing the fixed dioptric and the fixed catoptric apparatus, the results may be summed up under the following heads:

“1. It is impossible, by means of any practical

combination of paraboloidal reflectors, to distribute round the horizon a zone of light of exactly equal intensity, while this may be easily effected by dioptric means in the manner already described. In other words, the qualities required in fixed lights can not be so fully obtained by reflectors as by refractors.

"2. The average light produced in every azimuth by burning one gallon of oil in Argand lamps with reflectors, is only about one fourth of that produced by burning the same quantity in the dioptric apparatus, and the annual expenditure is £140 3s. 8d. less for the entire dioptric light than for the catoptric light.

"3. The characteristic appearance of the fixed reflecting light in any one azimuth, would not be changed by the adoption of the dioptric method, although its increased mean power would render it visible at a greater distance in every direction.

"4. From the equal distribution of the rays, the dioptric light would be observed at equal distances on every point of the horizon—an effect which can not be fully attained by any practicable combination of paraboloidal reflectors.

"5. The inconveniences arising from the uncertainty which attends the use of the mechanical lamp, are not, perhaps so much felt in a fixed as in a revolving light, because the greater simplicity of the apparatus admits of easier access to it, in case of accident.

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"There can be but little doubt that the more fully the system of Fresnel is understood, the more certainly will it be preferred to the catoptric system of illuminating light-houses, at least in those countries where this important branch of administration is conducted with the care and solicitude which it deserves.

"The expense of fitting up a revolving light with twenty-four reflectors, ranged on three faces, may be estimated at £1298, and the annual maintenance, including the interest of the first cost of the apparatus, may be calculated at £418 8s. 4d. The fitting up of a revolving light with eight lenses, and the diacatoptric accessory apparatus, may be estimated at £1459, and the annual maintenance at £354 10s. 4d. It therefore follows, that to establish, and afterward maintain, a catoptric light of the kind called revolving white, with a frame of three faces, each equal in power to a face of the dioptric light of Cordouan, an annual outlay of £63 18s. more would be required for the reflecting light than for the lens light; while for a light of the kind called revolving red and white, whose frame has four faces, at least 36 reflectors would be required in order to make the light even approach an equality to that of Cordouan; and the catoptric light would, in that case, cost £225 more than the dioptric light."

"Convert these two sums into our currency, and it will be seen that we have a saving in the first case of \$309, and in the second case of \$1089 per annum.

"The effect produced by burning an equal quantity of oil in revolving lights in either system, may be estimated as follows: In a revolving light, like that of Skerryvore, having eight sides, each lighting with its greatest power a horizontal sector of 4° , we have 32° (or units) of the horizon illuminated with the full power of 3200 Argand flames, and consequently an aggregate effect of 102,400 flames produced by burning the oil required for 16 reflectors; while in a catoptric apparatus like that of the old light at Inchkeith, having seven sides of one reflector each, lighting with its greatest power a sector of $4^{\circ} 25'$, we have nearly 81° (or units) of the horizon illuminated with the full power of 400 Argand flames, and consequently an aggregate effect of 12,400 flames as the result of burning the oil required for seven reflectors. Hence the effect of burning the same quantity of oil in revolving lights in either system will be represented respectively by 16.7, 12,400=28,343 for the catoptric, contrasted with 102,400 for the dioptric light; or, in other words, re-

volving lights on the dioptric principle use the oil more economically than those on the catoptric plan, nearly in the ratio of 8.6 to 1.

"Let us, then, take the appropriation for oil for the lights in the United States, deducting the quantity used in the four towers fitted with dioptric apparatus, and divide it by 8.6, the proportion to 1, in favor of the lens apparatus.

"1851-2.—Appropriation for oil (less oil burned in lens lights) \$122,629 55; 1 to 8.6 will give necessary quantity for lens lights of equal power, \$34,063 68: annual saving for oil by this mode of comparison, \$88,565 87. Glass chimneys, wicks, and repairs of lighting apparatus, will be in the proportion of not less than 810 to 8198; that is, 1 to 10. Amount appropriated for these objects, minus the expenses of the same articles, for the four lens lights, \$15,162 30; 1 to 10 will give the necessary expense with lenses, \$1216 23: annual saving by this comparison in these articles, \$13,646 07.

"The oil being the most bulky article of supplies, it may be assumed that the saving in oil will be a fair proportion for the transportation, the more especially as spare lamps, burners, reflectors, and the great wear and tear of the Argand lamps, burners, and reflectors, is not included in the estimate of annual saving.

"Amount appropriated for the transportation and delivery of oil and other annual supplies, 1851-2, \$11,437; 1 to 8.6 will give the necessary expense for this article, \$3176 94: annual saving with lenses, \$8260 06. It may be urged that there would not be so great a saving in transportation by the change; of that, the experiment alone can decide. By the aid of a small steamer, one half of the amount appropriated could be saved in money, while very important additional service would be rendered in the way of inspections, and more frequent visits to the principal sea-coast lights. Taking, then, the savings of this mode of comparison, it will be as follows: for oil in one year, \$88,565 87; for wicks, chimneys, repairs of apparatus, etc., \$13,646 07; for transportation, \$8260 06: total annual saving, \$110,471 70. Making within a fraction the same amount which would be saved annually by the introduction of the lens apparatus by this comparison, that was shown by taking the lights in their regular order of powers, and comparing with orders of as nearly as possible equal powers in the Fresnel system. Nothing therefore can be clearer than the results thus set forth.

"The effect produced by the consumption of a gallon of oil in a fixed light, with 26 reflectors, which is the smallest number that can be properly employed, may be estimated as follows: The mean effect of the light spread over the horizontal sector, substituted by one reflector, as deduced from measurements made at each horizontal degree, by the method of shadows, is equal to 174 unassisted Argand burners. If, then, this quantity be multiplied by 360 degrees, we shall obtain an aggregate effect of 62,640; which, divided by 1,040 (the number of gallons burned during a year in 26 reflectors), would give 60 Argand flames for the effect of the light maintained throughout the year by the combustion of a gallon of oil. On the other hand, the power of a catadioptric light of the first order, like that lately established at Girdleness, may be estimated thus: The mean effect of the light produced by joint effect of both the dioptric and catadioptric parts of a fixed light apparatus, may be valued at 450 Argand flames; which, multiplied by 360 degrees, gives an aggregate of 162,000; and if this quantity be divided by 570 (the number of gallons burned by the great lamp in a year) we shall have about 284 Argand flames for the effect of the light produced by the combustion of a gallon of oil. It would thus appear, that in fixed lights the French apparatus, as lately improved, produces as the average effect of the consumption of the same quantity of oil over the whole horizon,

upward of four times the amount of light that is obtained by the catoptric mode, although in certain directions, opposite the axes of each reflector, the catoptric light is fully 50 per centum more powerful than the dioptric light.

"But the great superiority of the dioptric method rests chiefly upon its perfect fulfilment of an important condition required in a fixed light, by distributing the rays equally in every point of the horizon. Hence, the saving for fixed lights in the same amount of oil, etc., appropriated for as before, will be \$91,971 94; saving on other articles, \$22,226 07: total saving per annum, \$114,198 01.

"It may, and probably will be urged, that a large portion of this annual saving will be absorbed in the wages of additional keepers. In answer to that, it may be stated, that in the comparisons of reflecting and refracting systems in Europe, the same number of keepers is required for both, of equal class or order, and therefore the ascertained saving is a net annual gain.

"In the United States, as a general rule, but one keeper (there being only 14 assistants belonging to an establishment of 801 light-stations, fitted with reflector apparatus) is attached to a light-station. To render the larger, or sea-coast lights efficient and safe, two keepers should be attached to each station having a single tower, and three to those with two towers, whether fitted with reflectors or lenses.

"However, as it may be contended, that inasmuch as our reflector lights in general have only one keeper, and that the change to the lens system would require two to each light of the first or second class or orders, it may not be inappropriate to see how many of the present lights on our coast would be required to be changed, and the increased expense for an additional keeper to each. From the north-eastern boundary to the Rio Grande there are 38 positions which ought to be fitted with the most powerful first order lenses.

"There are points between some of these first order lights, which ought to be fitted with second order lens apparatus, making a total of about 50 lights of the first and second orders. An additional keeper for each, at the rate of \$300 per annum, will be \$15,000.

"If this sum be deducted from the total already shown (which, on the contrary, ought to be added to the present expenditures, to render our lights in that department equal to European lights), there will still be an annual saving of \$95,471 70, or \$99,198 01. If additional evidence were required to prove so plain a proposition, that the reflector system is more expensive than the lens system in the proportion of 3·6 to 1, disregarding the great superiority of the lens system for all the useful purposes of the mariner, it would be found in the action of the Trinity House corporation, of Deptford Stroud, London; Northern Lights commissioners, of Edinburgh; and the Ballast Board, of Dublin, Ireland.

"In 1835 the first lens apparatus was introduced into Scotland.

"In 1837 the first lens was introduced into England, under the Trinity House corporation; and since 1845 the first lens light was lighted in Ireland.

"Now (1851) there are very few lights fitted with reflectors in Scotland; the commissioners having abandoned the use of that apparatus, and substituted for it the Fresnel and holophotal system of Mr. Thomas Stevenson.

The Trinity House (London) has upward of 20 lens lights of the first and second order, besides numerous fourth order harbor lights. Lens lights are also being introduced into Ireland; the precise number, however, now existing there, is not known, as they are not marked in their printed lists, and no information has yet been received from that board.

"It is worthy of remark, that these three light-house boards of Great Britain and Ireland, are close

corporations, deriving their means entirely from light-dues levied upon the shipping of all nations, including that of their own. They derive no pecuniary advantages from the government, and are only under its general control; consequently their acts are independent of Parliamentary legislation.

"If these boards had found the recommendations of the select committee of the House of Commons of 1845, to use less expensive apparatus and combustibles in their lights, with a view to the reduction of light dues, had not been based upon sound principles, they would have had no inducement to follow them; for whether the lights are economically kept or not, good or bad, the same amount of light-money would be collected. It is, therefore, plain that the introduction of the lens apparatus, and the colza oil, into the establishments under the control of these independent corporations, was the result of close examination and trial by those charged with, and most interested in the subject. The introduction after France, first by Holland, and successively by Belgium, Hanover, Prussia, Denmark, Sweden, Norway, Russia, Italy, Spain, Portugal, and Brazil, and the colonies of the respective nations, goes far to counteract any prejudice which may exist in any quarter, of the globe against this inimitable illuminating apparatus for light-houses.

"Notwithstanding the renovations of English, Scotch, and Irish lights, and the erection of new towers, fitted with the lens apparatus, a material reduction has been made of late years in the light-dues levied in Great Britain upon shipping. This may in some degree be attributed to the increased amount of commerce and navigation, and the more frequent and rapid intercourse between nations, by the aid of steam navigation; but, it can not fairly be contended that it is wholly due to that cause.

"These facts are undoubted, and the deductions from them, it is believed, will, upon the closest scrutiny, be found to be correct.

"Mr. Alan Stevenson says, 'It therefore follows, that, by dioptric means, the consumption of oil necessary for between 14 and 16 reflectors, will produce a light as powerful as that which would require the oil of 24 reflectors in the catoptric system of Scotland; and, consequently, that there is an excess of oil equal to that consumed by 10 reflectors; or 400 gallons in the year against the Scotch system. But in order fully to compare the economy of producing two revolving lights of equal power, by those two methods, it will be necessary to take into the calculation the interest of the first outlay in establishing them.'

"It is worthy of remark that the French were followed by the Dutch government in introducing lenses into their light-houses.

"The subject of introducing lenses into the Scotch light-houses was brought before the commissioners of Northern Lights by the Engineer* of that body, at the instance of General Colby, of the Royal Engineers, as early as 1824. The Scotch commissioners directed their engineer to visit France, and report upon the lights of that country. At the close of the year 1834, the board directed lenses to be imported for the purpose of making experiments. These experiments resulted in the recommendation that an important light should be changed from a reflector to a lens apparatus.

"It is believed the powerful and unanswerable arguments contained in the letters of Sir David Brewster, in 1833, to the Bell-Rock committee, in favor of lenses, contributed greatly to the early introduction of them into the lights of Scotland.

"Notwithstanding the numerous experiments from 1825 to 1834, made by the Northern Lights commissioners to test the relative merits of the two systems, it was not until the latter year that decisive steps were taken to decide the question.

* Robert Stevenson.

"In October, 1835, the reflecting apparatus of the revolving light at Inchkeith was removed, and dioptric apparatus substituted.

"So great was the satisfaction which this change produced, that another light was immediately changed to a lens light. The second lens light erected in Scotland was at the Isle of May, in September, 1836.

"The Trinity House, London, fitted the Start Point light with a lens apparatus in 1837.

"The Turkish government employed an English engineer in 1836-7, to make experiments with the Fresnel lenses, Drummond's light, etc., to enable it to decide upon the best illuminating apparatus for the Bosphorus from the Black Sea. The letter upon this subject from William Henry Barlow, Esq., which was read before the Royal Society of London, will be found to contain much valuable information for those interested in the experiments of light-house navigation.—*Vide Philosophical Transactions of the Royal Society of London*, 1837, p. 211.

"*Number of Lenses in the World.*—At the present moment (1851), there are lens lights of the three first orders (first, second, and third orders), 216, and of the smaller classes, 152; making the total number of lenses 368.

"They are found now in England, Scotland, Ireland, France, Belgium, the maritime States of Germany, Denmark, Norway, Sweden, Russia (the Russian government has a French artist established at St. Petersburg, for the manufacture of lenses for their lights), Italy, Spain, Portugal, the Mediterranean, Egypt, Turkey, East and West Indies, Brazil, and, in general, in all the colonial dependencies of the European States. One first, two second, and one third order, are the only lenses at present in the United States.

"The three first named were procured in obedience to special acts of Congress, and the third order was placed on the Brandywine shoal by the Topographical Bureau.

"It is understood that the two light-towers now in the course of erection at Sand Key and Carysfort Reef, under the direction of the Topographical Bureau, are to be fitted with first order lenses.

"Mr. Stevenson pays this merited tribute to the distinguished savan whose system is now almost universally admired and adopted throughout the maritime world: "Fresnel, who is already classed with the greatest of those inventors who extend the boundaries of human knowledge, will thus at the same time receive a place among those benefactors of the species who have consecrated their genius to the common good of mankind; and, wherever maritime intercourse prevails, the solid advantages which his labors have procured will be felt and acknowledged."

"*Illumination.*—On a review of this subject, the adoption is recommended, as early as practicable, of the lens system instead of that of reflectors, as most effective and economical.

"It has been shown that the Fresnel lens is essential for sea or lake-coast lights of the first order; that for those of the second order, or for secondary or beacon lights, including the third, fourth, fifth, and sixth orders, the useful effect of a lens light is from 3.6 to 4 times that of reflector lights of the same class, and that, economically, the reflector lights are 4 times as expensive for oil alone as the lens lights.

"It has been clearly shown, in discussing this matter, that if it were possible to convert in a moment all the present reflector lights of the United States into lens lights as nearly as possible (though, in almost every instance, they would be superior), of equal orders, the annual saving, for oil and other supplies, would be \$112,185 27, taking the appropriations of 1851-52 as the basis of the calculation, with, at the same time, an increase of $\frac{3}{4}$ to 4 times as much light from each lantern as at present.

"If the estimates for 1852-53 be taken as a basis, then the annual saving may be increased \$20,000, which will make the entire saving for one year, with all the advantages to be derived from superior lights, \$132,185.

"Add to this sum \$40,000, the mean of the value of the lamps and reflectors proposed to be taken from the light-houses, to be fitted first with the lens apparatus, and which would be required, under any circumstances of improvement, for the 42 light vessels already existing, and the sum of \$172,185 may be put down as clear profit, with which to purchase lens apparatus for the first year.

"By appropriating this sum, or as much of it as can be economically and judiciously employed in improving the sea-coast lights, there will be an additional gain, at the end of the first year, in the difference in the cost of oil, etc., under the two systems, for all the apparatus procured with this saving. This saving will go on from year to year, on compound interest, at the rate of 30 to 50 per cent., until, in 5 or 6 years, should the appropriations be made as required to carry out gradually the system, we shall have lights equal to those of France and Great Britain in brilliancy, useful effect, and economy, and apparatus that never requires renewing, without, in the aggregate, having spent one cent more than would have been required for the ordinary service under the present system, with inferior lights and enormous sums for annual repairs and renovations.

"These estimates are based upon the assumption that the sperm oil now in use is to be continued. Should it be decided, however, to follow the example of nearly the whole maritime world in introducing the colza or rape-seed oil, a saving of 35 to 40 cents per gallon will be gained, equivalent to \$40,000 to \$45,000 more.

"The price of the first-quality clarified colza oil is, on an average, at the principal markets in France, 72 francs the hectolitre, or for a little more than 26 gallons, which is equal to nearly 55 $\frac{1}{2}$ cents per gallon. Sperm oil, in this country, ranges from \$1.30 to \$1.50 per gallon, and it is doubtful if a fair quality can be furnished at these prices. The supply of the best sperm oil to stand a temperature of 28° Fahrenheit, is not equal to the demand, and no other quality should ever be burnt in a light-house. A few gallons of rape-seed oil have been sent from Havre to the Board, costing about 60 cents per gallon.

"This important agricultural product (rape-seed) only requires to be introduced favorably to the notice of our planters and farmers, to become a boon to the nation of no ordinary value. Adapted to the soils of nearly every portion of this great country, its admirable qualities for domestic illumination would soon bring it into favor, and, by its means, expel from our houses the many dangerous fluids now used for the sake only of economy.

"The experiments made by Fresnel, Faraday, Stevenson, and other distinguished individuals, have proved, beyond all question, that the colza is not only better than the best sperm oil (an article now very difficult to procure), but that it will burn 17 hours without coaling the wicks; that it will remain in a fluid state in a lower temperature than the best sperm oil, and that it is cheaper by nearly one third.

"In this country, the quantity of sperm oil, independently of its high price, has not been sufficient to meet the demands for the various purposes connected with steam machinery, etc., for several years. Lard and other prepared oils have been forced to take the place of it, for these and other purposes for which it is peculiarly adapted.

"The returns from the fishing grounds show that this branch of commerce is becoming more and more uncertain, and less profitable, every year. When those engaged in the whale fisheries find it unprofitable,

they will not pursue it because the government may require a few thousands of gallons annually. We can not go wrong in this matter, in following the example of other countries.

"France introduced the rape-seed oil, from conviction of its superiority. England, Scotland, Ireland, and the northern powers of Europe generally, have followed; first from motives of economy, and continue its use from the conviction that it is not only more economical, but is better for light-house purposes than the best winter-strained sperm oil, the only kind used in most lights. Olive-oil has been introduced into the light-houses of Liverpool, England, at a saving of 40 per cent. over sperm oil.

"In the United States, the oil (two kinds, 'winter and summer,' being used) for our lights, is not of the best quality. It is now nearly 50 per cent. higher in price than it was a few years since; and with the present prospects, it must continue to increase in price so long as the demand is so great for it as at present.

"It has been proposed that the 38 most important sea-coast lights should be fitted, with as little delay as possible, with first order lenses, and that the Argand lamps and reflectors taken from them (or such of them as may, upon examination, be found to be sufficiently good for that purpose) be used for fitting up the 42 light-vessels now existing, which have been pronounced by high authority comparatively useless in their present state. Several years would be required to effect this change, as the new lights authorized by law, amounting to 34, exclusive of those for the coasts of California and Oregon, require illuminating apparatus; and as there are only two establishments from which the lenses could be procured for some time at least, it would not be prudent to demand a larger number at once than could be easily supplied.

"Having fitted the most important sea-coast lights with the best lens apparatus, as well as the newly authorized lights, by changing thereafter such only of the minor lights as now, or hereafter, require new apparatus, would in two or three years place the light-house establishment of this country far in advance of its present state in efficiency and economy.

"To purchase Argand lamps and reflectors for the 42 light-vessels, would be to retrograde in light-house illumination at a first cost of \$40,000 or \$45,000, and an annual waste of \$7560 for oil alone; and of the supplies, to the extent to increase the amount to \$10,000, with apparatus which must be frequently renewed, producing only from one fourth to one sixth the usefulness of the less economical system, which never requires renewing.

"Taking the estimate for 1852-3 for maintaining the lights of this country as a basis, the present system costs annually within a fraction of \$135,000 more than the same lights would under the lens system. But in so important and humane a branch of the public service as this is, upon the efficient and proper management of which depends, in a greater or less degree, the loss of human life and property, in which every individual in the land is to a certain extent interested personally, mere saving of money, which is by no means always true economy, should not be the only guide. The incalculable benefits to the seaman; the merchant, who receives the foreign products to gratify the wants of our citizens; the planter, who ships his cotton, tobacco, grain, breadstuffs, provisions, naval stores, and the thousands of products of our climate, to the best markets, would seem sufficient to show the necessity for this change.

"By those of our citizens along our southern coasts, from the mouth of Delaware Bay to the Rio Grande, who are now and have ever been suffering in consequence of a badly lighted coast, will this additional reason be best understood and appreciated. Their freight lists and heavy insurances speak out truly on this point.

"The \$7,000,000 worth of property sent into Key West, and there adjudicated for salvage, within the six years prior to January, 1850 (lost to our citizens and our government chiefly), speaks trumpet-tongued on this subject. But this is not all. The wreck lists of Nassau and New Providence exceed by far those of Key West.

"Let us light our coasts as France and Great Britain have done theirs, and wreckers will be compelled to turn their attention to other means of livelihood, and the consumers of every class and grade will pay less for their necessities and luxuries, and the planter, farmer, mechanic, will have smaller freight and insurance bills to pay on their exports.

"If we assume the necessity for changing all of the lights on our coast to lens lights, and give to each one of them its proper power and efficiency, we should have about as follows: 36 first order lens lights, costing for apparatus \$244,800; 10 second order lens lights, costing for apparatus \$44,000; 61 third order lens lights, costing for apparatus \$113,460; 206 fourth, fifth, and sixth order lens lights, costing, in the aggregate, about \$92,700; total amount necessary to purchase lens apparatus for all the lights in the United States, \$494,960; deduct value of reflectors and lamps for light-vessels at present existing, and for proposed ones, \$45,000; deduct value of present illuminating apparatus, lamps, reflectors, chandeliers, etc., merely estimating the value of the old silver, copper, and iron, say 2500 lamps and reflectors, and 315 chandeliers, at one fifth their cost, \$50,000; deduct first year's saving on oil and other supplies, \$110,000; total expenditure, \$205,000; leaving at the end of the first year, with lenses, only a balance of \$289,960; saving for four years, \$440,000; making a gain, at the end of the fifth, of \$150,040.

"Thus, at the end of the fifth year the country will have gained \$150,000 in money, including interest, and an annual saving of \$110,000, the interest of which will make it \$117,600, and afford to the mariner lights equal to the best in the world, by which means every consumer and exporter will derive a pecuniary advantage; and those who go to sea, either from pleasure or necessity, will be doubly insured against shipwreck on our inhospitable coast.

"To make the reform in our present light-house system perfect in its illuminating department, it only remains to introduce, in addition to the lenses, the colza or rape-seed oil, which will produce an additional saving, as has already been shown, of about \$10,000 per annum; making the grand total, in five years, of \$200,000. It may be contended that, inasmuch as interest is included in the saving, it is but fair to allow it on the first cost, which will be, at the end of the second year, \$15,397 60; third year, \$8,797 60; fourth year, \$2,197 60; making for interest, \$26,392 80; still leaving a nett gain, at the end of five years, of \$132,647 20, without taking into consideration the saving from the rape-seed oil, if introduced, which would increase it to \$182,647 20 of clear gain at the end of five years, in addition to the annual gain and other advantages already stated.

"But if we continue to employ reflectors, such as we have now in use and are constantly introducing into our lights, we will not only lose the amount annually which has been shown we should gain with lenses, but, in addition to that, these reflectors and lamps will require to be renewed once in 10 to 15 years, at a cost very little short of that of the lenses, which suffer no deterioration from long use, and humanity and commerce will continue to suffer for want of good and efficient lights on our coast.

"Inspection.—Without a rigid system of inspection by competent persons, the light-house system can never be efficient or economical. The whole sea and lake coasts of the United States should be divided into light-house districts, with less regard to geographical

than to local lines. For example, the New York district should embrace all the lights from Watch Hill, including Block Island, Montauk Point, etc., to the Highlands of Navesink, up the bays, including the Raritan, Hackensack, Passaic and North Rivers, to the head of navigation. The Philadelphia or Delaware Bay district should embrace the coast from the Barnegat to near Assateague, and up the Delaware on both sides to the head of navigation. The Baltimore or Chesapeake Bay district should embrace all the coast from Assateague to Cape Henry, Hampton Roads and tributaries, and Chesapeake Bay and tributaries, to the head of navigation. The other districts should be formed upon the same principles. In each of these districts there should be a local inspector, who should be furnished with the necessary means and facilities for regularly inspecting the lights, attending to the wants of the keepers, superintending small repairs, reporting the condition of the establishment, at short intervals of time, to the executive officer or engineer of the Light-House Board, superintending the placing, replacing and renovating buoys, beacons, etc., etc., under the general and special instruction of the Light-House Board, communicated through their executive officer or engineer.

"For this purpose, there would be required on the lakes two inspectors, and on the Atlantic, Gulf, and north-west coasts, including all the adjacent navigable waters, from 10 to 13 inspectors more, making the whole number required from 13 to 15.

"Each of these light-house districts should be placed under the charge of an active and zealous officer of the army or navy, who should receive all his instructions from, and be responsible to the Light-House Board, through their executive officer or engineer, and to whom all reports should be made.

"The facilities for inspectors superintending such repairs, etc., etc., as may be confided to the local inspector, to be furnished by the light-house vessels, revenue cutters, and such other means as the Treasury Department may from time to time authorize.

"By this mode of inspection, very little if any additional expense will be incurred, while there will be secured an independent examination of every light on the coast, say from four to six times per annum, by a competent person, whose duty it will be to inform himself upon all essential matters connected with this service. In addition to the foregoing means, the revenue boarding boats might and would be appropriately put in requisition, as occasion might require, to assist the inspector in his duties in situations where a strict economy would not authorize the employment of a vessel permanently to perform this service.

"Instead of, as now, contracting with persons to keep the buoys in their places for a certain sum per annum, and who seldom, if ever, perform the service faithfully, the inspector would, under proper instructions, be required to examine the bars, channels, etc., etc., of his district, at regular periods, and always immediately after heavy gales of wind to ascertain what buoys are out of position, and to replace them.

"The inspecting officers would occasionally be accompanied by the secretary or engineer to the Light-House Board, or perhaps by both of them; a thorough system would be provided, which would inevitably be less expensive in the aggregate than that at present existing without specific law. In connection with these inspections, dépôts for stores, spare buoys, moorings, etc., etc., are indispensable in each district. These dépôts might in most places be at some place requiring but little annual expense, where the buoys and their moorings could be repaired, painted, etc., and where a spare light-vessel might be kept ready for use. There should be at least one spare light-vessel for every three placed in exposed open sea-positions. Duplicate buoys and moorings should be ready at all times. The Light-House Board should have authority

to cause buoys to be placed on newly-discovered shoals, wrecks, etc., etc., whenever necessary. By the employment of these inspectors, the country would derive the benefit of their services without expense, and have an assurance, from their position and standing, of a faithful execution of their duties. The Board would refer again to the reports of the committee of the Senate and House, already pointed out in this report, on this important branch of the lighting service. In connection with this recommendation, the Board would advise that light-keepers be examined, as naval engineers, midshipmen, and cadets are, in reference to qualifications for their appointments; that they should not be allowed to take charge of the lights without suitable preparation; nor the more important lights without proportionally higher qualifications; that such meteorological and tidal observations be required of them in addition to the keeping of suitable registers of lighting, consumption of supplies daily, etc., as may tend to test the capacity of the keepers, and to elevate the standard of information and practical skill of them as a class.

"*To Guide Legislation in Extending and Improving Our Present System of Construction, Illumination, Inspection, and Superintendence.*—The seventh section of the act making appropriation for light-houses, light-boats, buoys, etc., approved March 3, 1851, provides, 'That hereafter, in all new light-houses, in all light-houses requiring new lighting apparatus, and in all light-houses as yet unsupplied with illuminating apparatus, the lens or Fresnel system shall be adopted, if, in the opinion of the Secretary of the Treasury, the public interest will be subserved thereby.'

"This is a wise provision. There are very few cases, in the opinion of the Board, where the public interest will not be greatly subserved by the substitution of the Fresnel lens for the reflectors now employed in illuminating our light-houses. In positions where the light is only required to illuminate a small arc of the horizon, it may be of questionable propriety; but in all such cases, the capable light-house engineer should decide upon the merits of the two kinds of apparatus. In no case requiring one half or more of the horizon to be illuminated, is it believed reflectors ought to be employed, in preference to the lens. There may be occasionally circumstances of a paramount character, which may render the employment of reflectors preferable.

"The ninth section of the act approved March 3, 1851, provides, 'That the President be, and he is hereby required to cause to be detailed from the engineer corps of the army, from time to time, such officers as may be necessary to superintend the construction and renovation of light-houses.'

"The Board are of opinion that this act is one calculated to produce the most beneficial results, in increasing the durability of light-house structures, and consequently lessening, to some extent, at least, the present large annual appropriations for renovations and repairs; and they recommend that no new structure be erected, and no old ones be repaired, except under the superintendence of a competent officer of the corps of engineers.

"The Board are of opinion that, pending the action of Congress upon the subject of improving our lights, etc., much may be done toward introducing a more efficient and economical administration of the establishment, by a rigid adherence to the provisions of the seventh and ninth sections of the law of 1851.

"*Locating of Sea and Lake-coast Lights.*—The Board have adopted the same principle which has proved so effective in the organization of the French system of lights; namely, to place a sea-coast light of the first order, in general, every 42 nautical miles, so that, as a rule, one light will not be lost sight of until another is above the horizon. If it should be necessary to adopt only two main systems of distinction for these

lights into fixed and revolving, then a fixed light should be placed between two revolving lights, suitably distinguished by flashes, etc., so that no two lights of the same kind should be nearer than 84 miles from each other. Other distinctions, easily described in the published lists, and easily comprehended by navigators, which would render all fear of mistakes arising from the want of proper distinctions illusory (without the use of colored media), can be employed. If, however, Mr. Babbage's system prove to be practicable, and be adopted, all doubt in regard to distinctions of light will be obviated. The Board have adopted an approximate programme, in this report, for the sea and lake-coast lights, the number of which is necessary to a full system. Of these many now exist, though not with the requisite range of visibility. There are many locations where the wants of commerce will not require such lights for many years, though necessarily included in a general programme.

"At a full meeting of the Light-house Board, holden on the 6th of January, 1852, the following resolutions were offered and unanimously adopted:

"*Resolved*, That it is the opinion of this Board, 1. That the lens or Fresnel system of light-house illumination is the best at present known. 2. That the lens or Fresnel system of light-house illumination is, in economy, brilliancy, power, and usefulness, superior to the best reflector system of illumination in the ratio of about 4 to 1; or, in other words, that the lens system is about four times more advantageous than the best reflector system, and at the same time, at an expense, for oil alone, of only one fourth as much as the reflector system. 3. That the lens system of light-house illumination is as well adapted to the coasts of the United States as to those of the rest of the maritime world. 4. That while there is no well-founded objection to introducing the lens system of illumination into this country, there is every reason for doing so as rapidly as possible. 5. That the floating lights of this country are comparatively useless to the mariner, in consequence of the very inferior apparatus employed in them. 6. That the reflector lights of the United States are greatly inferior, in usefulness, power, and range, to the same description of lights in foreign countries generally, but especially to those of Great Britain."

"The object of these notes is to point out certain improvements in the use of existing light-houses, by which it shall become almost impossible—1st, To mistake any casual light, on shore or at sea, for a light-house; 2d, Ever to mistake one light-house for another. The plan requires, in most instances, no change in the optical means at present used for condensing and directing the illumination of light-houses; it adds slightly to the facility of observing them at great distances, and from its simplicity and generality is equally adapted to the use of all countries. Revolving-lights must become fixed; but the mechanism already existing for their rotation may, with little alteration, be employed for the motions required by the new system. The principle by which these objects are to be accomplished, is to make each light-house repeat its own number continually during the whole time it is lighted. This is accomplished by inclosing the upper part of the glass cylinder of the Argand burner by a thin tube of tin or brass, which, when made to descend slowly before the flame, and then allowed suddenly to start back, will cause an occultation and re-appearance of the light.

"Congress having authorized lights to be erected on a few of the most prominent and important points to aid the rapidly increasing commerce along that coast, which it is presumed will be fitted with appropriate lens apparatus, in conformity to the 7th section of the act of 1851, the Board have only added the names of the remaining most prominent points of that coast to this list, leaving the more detailed wants of

this branch of the public service to be developed by the operations of the coast-survey, now in rapid progress for external or sea-coast, and of population and interior communication for local lights.

"*Petit Manan Light-house*.—This is a fixed light, 53 feet above the level of the sea, situated on the south end of Petit Manan Island, Maine, lat. $44^{\circ} 22'$ north, long. $67^{\circ} 52'$ west. This light is fitted with 12 lamps and 15-inch reflectors, to illuminate the whole horizon. If the apparatus belonged to the first class, instead of, as it does, to about the fourth, the greatest distance at which it could be seen, under the most favorable circumstances of weather, would be, from a vessel's deck 15 feet from the sea-level, about 13 miles. If we take into consideration the small size of the reflectors, and the small number of lamps for so large an arc of the horizon, it is fair to presume this light is seldom seen over 10 miles. Distant from this light to the eastward are Seal Islands, 34 miles (two fixed lights), and Gannet Rock (flashing light), 46 miles at the mouth of the Bay of Fundy, belonging to the British government. This light, with a proper elevation, and a lens apparatus, would serve to guide vessels bound to any of the ports on the coast of Maine, from Frenchman's Bay to Passamaquoddy Bay, having the sea-coast lights of Seal Island and Gannet Rock to the eastward, and Mount Desert Rock, distant 27 miles to the southward and westward. [Now become a flashing light (1856).]

"*Mount Desert Rock Light-house*.—This light is on the keeper's dwelling, with an elevation of $56\frac{1}{2}$ feet above the level of the sea; it is fitted with 12 lamps and 21-inch reflectors, to illuminate the whole horizon. Lat. $43^{\circ} 58' 5''$ north, long. $68^{\circ} 08'$ west; it is situated about 20 miles S.S.E. of Mount Desert Island; is 27 miles distant from Petit Manan light and 33 miles from Matinicus light (two fixed lights). This light, with the best illuminating apparatus, could not be seen, under the most favorable circumstances of weather, at a greater distance than 14 miles. The small number of lamps for so great an arc, renders it little better than a fourth order light, while its elevation can only give it the range of a light of that class.

"A much greater elevation is required for this light, with the most powerful lens apparatus that can be constructed. Vessels bound from the eastward into any port from the neighborhood of Mount Desert to Penobscot Bay, would run for it; having made it as a first-class light, it would guide them into the ranges of the different harbor-lights along the coast. From its isolated position at the distance of 14 to 18 miles from the nearest land, it is one of the most important points on the eastern coast for a first-class light.

"*Martinicus Rock Light-house*.—These lights (two fixed), are situated on the rock south of Martinicus Island, at the mouth of Penobscot Bay. They are placed 40 feet apart, N.N.W. and S.S.E. on the keeper's dwelling. Each light has 14 lamps and 21-inch reflectors, at an elevation of $82\frac{1}{2}$ feet above the level of the sea; 33 miles from Mount Desert Rock and 39 miles from Seguin's Island light, lat. $43^{\circ} 46' 30''$ north, long. $68^{\circ} 49'$ west.

"*Seguin Island Light*.—This is a fixed light, 166 feet above the level of the sea, fitted with 15 lamps and 21-inch reflectors. This light is deficient in illuminating apparatus; with 24 lamps and 21-inch parabolic reflectors of the proper shape and finish, it could, under favorable circumstances of weather, be seen 18 to 19 miles. It is 39 miles from Martinicus Rock light, 46 miles from Boone Island light, and 21 miles from Monhegan and Cape Elizabeth lights. Lat. $53^{\circ} 41' 36''$ north, long. $69^{\circ} 44'$ west.

"*Boone Island Light*.—This light is situated on the west part of the small low island bearing its name, off York River, Maine. It is fitted with 12 lamps and 15-inch reflectors (fixed), with an elevation of 70 feet above the level of the sea, in lat. $48^{\circ} 08'$ north, long. $70^{\circ} 29'$ west.

Thatcher's Island Lights.—These two fixed lights are situated about two miles off Cape Ann, fitted with 11 lamps and 21-inch reflectors, each with an elevation of 90 feet; greatest range, 16 miles. Cape Ann forms the northern limit of Massachusetts Bay. Distant from Boone Island light 30 miles, Boston light 24 miles, and from Truro, Cape Cod, 43 miles. Lat. $42^{\circ} 38' 21''$ north, long. $70^{\circ} 34' 48''$ west. This is a very important light-station; and the lights require to be increased in power and range.

Truro, Cape Cod, Light.—This is an important sea-coast light, situated on the highlands outside of Cape Cod. It is 43 miles from Thatcher's Island lights, 45 miles from Sankaty Head light, and 41 miles from Boston light. It is fitted with 15 lamps and 21-inch reflectors (fixed), with an elevation of 180 feet, giving it a range, in good weather, if the apparatus is of the first order, of 20 to 21 miles. A first order lens is required for this tower. Lat. $42^{\circ} 02' 23''$ north, long. $70^{\circ} 03' 55''$ west.

Sankaty Head Light.—This is a second order Fresnel flashing lens light. It is placed on the south-east extremity of the island of Nantucket, with an elevation of about 150 feet above the level of the sea, which gives it a range of about 19 miles in ordinary states of the weather. It has been seen at a much greater distance, and is considered equal to the Highlands of Navesink lights (first and second order lenses).

In consideration of the dangerous navigation around the reefs and shoals off the island of Nantucket, it would have been advisable to have placed a first order lens in this tower; but the superiority of this light to those in its vicinity, renders it of doubtful propriety to propose any change in it.

Gay Head Light.—This light is placed on the west point of Martha's Vineyard. It is a revolving light fitted with 10 lamps and 14-inch reflectors, having an elevation of 172 feet above the level of the sea. This light is deficient in power, and not arranged to subserve the wants of the navigator. At the distance of about 12 miles it is obscured about three-fourths of the time. Its present elevation, with first order apparatus, would give it a range of 19 to 20 miles. Lat. $41^{\circ} 20' 54''$ north, long. $70^{\circ} 50' 26''$ west. Distant from Sankaty Head 39 miles, Montauk Point 38 miles, and Point Judith light 30 miles. This light is not second to any on the eastern coast, and should be fitted, without delay, with a first order illuminating apparatus. A glance at the chart will suffice, to see its great importance.

Montauk Point Light-house.—Lat. $41^{\circ} 04' 10''$ north, long. $71^{\circ} 51' 59''$ west. This is a very important light, especially for navigators bound from Europe to New York. It is fitted now with only 15 lamps and 21-inch reflectors for a fixed light. Its reported elevation is 160 feet above the level of the sea, and with a first order apparatus would be seen under ordinary circumstances about 20 nautical miles. Distant from Gay Head 47 miles; from Fire Island Inlet light 66 miles. By erecting a light in the vicinity of Great West Bay, Long Island, midway between Montauk Point and Fire Island lights, the trade between New York and all ports to the eastward, including the whole of Europe, would be greatly benefited.

Lights near Great West Bay, Long Island, New York.—It is proposed to erect a first-class light on Long Island, midway between Montauk Point and Fire Island Inlet, distant 33 miles, to facilitate navigators going to and coming from the eastward. The letters of packet and other shipmasters in Appendix B, will show conclusively the necessity for a light in this vicinity.

Fire Island Inlet Light-house, Long Island, New York.—This is a most important light to navigators trading to New York. It may be said to mark the eastern entrance to the Bay of New York. It is situated on the south side of Long Island, New York, east

side of Fire Island Inlet, lat. $40^{\circ} 37' 46''$ N., and $73^{\circ} 18' 38''$ W. long.; distant 37 miles from the Highlands of Navesink, which mark the western entrance to the Bay of New York. This tower has an elevation of only 89 feet 3 inches, and has only 14 lamps, and 21-inch reflectors for a revolving light. The range of this light, with its present elevation and the best apparatus that could be procured, would not exceed $14\frac{1}{2}$ nautical miles in ordinary weather. It is, therefore, clearly necessary to increase its height, and place in the tower the most powerful lens apparatus that can be procured.

Highlands of Navesink Lights, New Jersey.—There are two towers and lights at this station; a first order fixed, and a second order revolving lens apparatus. The great importance of the lights on this point renders it highly necessary, in carrying out the proposed plan of improving and increasing the number of sea-coast lights, that the second order apparatus should be changed for a first order one. These lights are now the best on the coast, but are not, when combined, equal to better than a second order lens light. With the present elevations of these lights above the level of the sea, and the substitution of a first order lens for the second order apparatus, navigators would be warranted in running boldly for them, and with the certainty of seeing them, under ordinary circumstances, at the distance of 22 nautical miles.

Barnegat Light-house.—This is a light in point of importance equal to that of Fire Island Inlet. It is situated 37 miles from the Highland lights, on Long Beach New Jersey, on the south side of Barnegat Inlet. At present it is fitted as a fixed light, with 11 lamps and 14-inch reflectors, equal in power to about a fifth order lens light. The numerous wrecks, involving the great loss of life and property, attest the truth of the necessity for making this a first class sea-coast light. The tower is 40 feet high, placed on a low beach, giving it a range of probably $11\frac{1}{2}$ nautical miles. The improvement of the Montauk, Fire Island, and Barnegat lights, and the erection of a first class light near Great West Bay, Long Island, would render the approaches to New York Bay much safer than they are at present, and would save to our government and to our citizens many millions of dollars' worth of property, and prevent the untimely loss of many valuable lives.

Absecum Beach, New Jersey.—A sea-coast light is absolutely necessary in this vicinity to guide vessels, bound north, clear of the Absecum and Brigantine shoals. The coast here is very low, and difficult to distinguish, and the light on Tucker's Beach, near Little Egg Harbor, although fitted with 15 lamps and 15-inch reflectors, showing a fixed red light, from its little elevation ($39\frac{1}{2}$ feet) is not seen further than five to eight miles; in addition to which the woods on the Absecum beach to the southward hide it from the mariner going north. A light should be placed somewhere in this vicinity, west of the inlet, and as nearly midway between Barnegat and Cape May light as possible. An examination of this coast by competent professional persons can alone decide the best site for a sea-coast light.

Cape May Light-house, New Jersey.—The position of this light on the east side of Delaware Bay, and its contiguity to the dangerous bank known to navigators as the Five-fathom Bank, renders it of great importance that it should be of the first order. This is a revolving light, 88 feet above the level of the sea, fitted with 15 lamps and 16-inch reflectors. This light has been shown to be inferior to the third order lens light on Brandywine Shoal, in the proportion of three to one. Its present range, under the most favorable circumstances of weather, is not greater than $14\frac{1}{2}$ nautical miles, and, with the present apparatus, it is doubtful if it can be seen so far by several miles. Make Cape May and Henlopen lights first order lights, with

proper elevations, and navigators will be able to place their vessels in positions for receiving pilots without the risk of shipwreck on the dangerous Five-fathom Bank, distant 16 miles from Cape May, and 20 miles from Cape Henlopen. With bearings from these two lights, seen at the distance of 20 to 25 miles, the navigator could always shape his course by the most direct line into the bay, or for the breakwater. The light vessel authorized by law to be placed on the Five-fathom Bank is so often out of position that it is the more important that these improvements should be made.

"Cape Henlopen Light-house.—This is one of the best reflector fixed lights on the coast, although inferior to the third order lens on Brandywine Shoal in the proportion of one to six. This light has an elevation of 180 feet, and only requires a first order lens apparatus to make it equal to the requirements of commerce and navigation. The large amount of trade from Philadelphia warrants the proposed expenditure, and humanity would seem to dictate it as consistent with true policy and philanthropy.

"Assateague Light-house, Virginia.—This light is situated on Assateague Island, between Capes Henlopen and Charles, in lat. $37^{\circ} 54' 36''$ N., and long. $75^{\circ} 21' 45''$ W.; a fixed light, fitted with only 11 lamps and 14-inch reflectors. The shoals of this low and dangerous coast render the improvement of this light one of paramount importance. By elevating this tower to 150 feet, and placing in it a first order lens apparatus, there will be no great necessity for any other sea-coast light until we reach Cape Charles (Smith's Island). The very dangerous shoals extending along this entire coast, at a considerable distance from the low coast, at distances ranging from five to twelve miles, as shown from the recent surveys by the coast survey, make it the duty of the government to cause this light to be increased in power and range to the rank of a first class sea-coast light, without delay.

"Smith's Island Light-house, Cape Charles.—This light is placed on the north-east of Cape Charles, and at the north entrance of Chesapeake Bay. This very important light has at present only 10 lamps and 21-inch reflectors. The dangers at the entrance to Chesapeake Bay render it extremely important that this light should be increased to a first order one. The tower has an elevation of only 55 feet, placed on a very low coast, giving the light, if in other respects good, a range of, not more than 12 nautical miles, which it can seldom reach in consequence of the very inferior illuminating apparatus. This is one of the lights requiring the earliest attention of the light-house department.

"Cape Henry Light-house, Virginia.—This is one of the best reflector lights on the coast. It is situated on the south side of the entrance of Chesapeake Bay, has an elevation of 120 feet, and is fitted with 18 lamps and 21-inch reflectors. It being a prominent leading mark for vessels bound into Chesapeake Bay, Hampton Roads, and their numerous tributaries, every argument would seem to be in favor of its speedy improvement, to render it equal to the best first class lights of other maritime nations.

"Light-house half way between Cape Henry and Body's Island Light.—The large number of shipwrecks and the vast amount of life and property lost annually on this coast should be a sufficient reason for erecting and maintaining a first class sea-coast light on some eligible site in this vicinity. The Body's Island Light is badly located, and insufficient in power and range to subserve fully the requirements of commerce and navigation. Vessels bound south from the eastward run to make this coast, with the view to avoid the opposing currents of the Gulf Stream, and, at the same time, to avail of the favorable currents within the limits of the cold wall bounding the Gulf Stream. The trend of the coasts on either side of the Chesapeake

Bay renders navigation more dangerous than it would otherwise be; and therefore it becomes the more important to light well the entire coast from Cape Hatteras to Cape Henlopen.

"Body's Island Light-house, North Carolina.—This light has already been referred to. It is of great importance, especially to the coasting trade, and would be of much more if it were increased to a first class light. It is now fitted with 14 lamps and 21-inch reflectors, revolving, with an elevation of $56\frac{1}{2}$ feet, giving it a range of about 12 nautical miles. This, in addition to the proposed sea-coast light between it and Cape Henry, would, if properly fitted, save the life of many a gallant seaman, and millions of dollars' worth of property to the country.

"Cape Hatteras Light-house, North Carolina.—There is perhaps no light on the entire coast of the United States of greater value to the commerce and navigation of the country than this. That it is not such a light as any sea-coast light should be is too apparent to require much argument; while its special requirement, having reference to the Gulf Stream, the currents and counter-currents which sweep past it, and the very dangerous shoals, extending to the distance of 10 nautical miles from the light, all tend to make it one of no ordinary importance. Vessels propelled both by wind and steam run for soundings off this cape; and it is of the first importance to navigators wishing to make quick passages, that they should see this light in going south. At present it is of very little use, in consequence of its limited range. Navigators do not, as a general rule, rely upon it sufficiently to warrant them in running for it. It is fitted with 15 lamps and 21-inch reflectors, having an elevation of about 95 feet, which would give it a range, under favorable circumstances, of $14\frac{1}{2}$ nautical miles, provided the apparatus for illuminating was of the best description. There is no single light on the coast believed to require renovation more than this does. An elevation of 150 feet, and a first class illuminating apparatus, are imperiously demanded, and without any unnecessary delay.

"Cape Lookout Light-house, North Carolina.—This is at present a fixed light, fitted with 13 lamps and 21-inch reflectors, and elevated 95 feet above the level of the sea. In consideration of the manner in which navigators have to follow this low coast, this light becomes, necessarily, one of the important sea-coast lights, and requires to be elevated and improved to that extent. The shoals of this cape are of such a character as to render it a very important light.

"New River Inlet, North Carolina.—The great distance from Cape Lookout to Cape Fear, and the dangerous shoals extending to such a great distance from them, without any prominent mark intervening to guide navigators, render it necessary, in making up a general plan for lighting the entire sea-coast, to include a first class light, to be placed somewhere in the vicinity of New River Inlet. The coast between Capes Hatteras and Fear forms a curve, but not to such a degree as to render a light near this point unnecessary. Although the necessity for this proposed light may not be considered as pressing, yet in a well-devised scheme it can not be entirely omitted.

"Bald Head, Cape Fear, North Carolina.—This light in its present position and with its present apparatus, etc., is comparatively useless. The apparatus, 15 lamps and 21-inch reflectors, is inadequate to the requirements of the service of an ordinary sea-coast light, while this is one of the special cases requiring extraordinary means to insure any amount of good. The tower is nearly 4 miles from the pitch of the cape, and 20 nautical miles from 10 fathoms water, in a direct line on the end of the 'Frying Pan shoals,' which extend continuously from the pitch of the cape. The assumed elevation of the light is 110 feet, which, with good illuminating apparatus, would give a range, un-

der the most favorable circumstances, of 17 to 17½ nautical miles. Careful observation has, however, shown that it is very seldom seen 12 miles; and then only resembling a star of the fifth or sixth magnitude. This light is considered by the pilots as of very little, if indeed of any use at all, for the local purposes of the harbor; while it is perfectly clear that it is of no value to the navigator in guiding him around and clear of these shoals, which, in the opinion of navigators, are only exceeded in importance by those off Nantucket. This light should either be reduced to a mere harbor light, or removed to the pitch of the cape, and given an elevation sufficient to insure a first order light being seen, under ordinary circumstances, outside of the shoals. This light as a first-class sea-coast light, and a first-class light-vessel placed on the shoals, would tend greatly toward increasing the safety of navigation.

"Cape Romain, South Carolina.—The dangerous shoals off this point render this an important light to navigators bound to Charleston, and as far south as St. Augustine. To save the current, and to keep out of the influence of the current of the Gulf Stream, navigators run for soundings off the Cape Romain shoals. A first-class light would tend greatly to lessen the hazards of this navigation. The present light, fitted with only 11 lamps and 21-inch reflectors, at an elevation of only 87 feet, can not be seen with any degree of certainty at a greater distance, under the most favorable circumstances, than about 14 nautical miles, which is by no means far enough to enable navigators to run their vessels with that boldness which is essential to success. This light, in point of power, brilliancy and range, is not superior to a fourth order lens.

"Charleston Light-house, South Carolina.—This important light is fitted with only 12 lamps and 21-inch reflectors; revolving, with an elevation of about 125 feet. Its greatest range about 16 miles. The necessity for a first order lens apparatus for this light is too apparent to require more than a bare reference to the chart. This light should be changed to a fixed light, and the lights on either side of it changed in their characteristic distinctions, for the reason that it is used as a range with the beacon-light for crossing the bar. Revolving lights are not adapted to this purpose, especially where channels are narrow and the eclipses of long duration.

"Hunting Island, Georgia.—This point is one of the positions selected for new lights in carrying out the general programme. Distant 33 miles from Charleston, South Carolina, and about midway between the Charleston and Tybee lights.

"Tybee Light.—This is an important light both in a general and local point of view. For the over-sea voyager along the coast, it is of equal importance to those generally on the coast for local purposes, as the guide to the entrance to Savannah River. This light at present is fitted with 15 lamps and 16-inch reflectors, and has an elevation of 100 feet. This light, in consideration of the sameness in the appearance of the coast, should be well distinguished and improved to the extent of making it a first order light.

"Sapelo Island Light-house.—This light is 46 miles from Tybee light, and comes into the list embracing the general programme. As a sea-coast light, its importance will appear clearly by referring to the chart, and in a local point of view it is the mark to guide vessels into the important inland-waters constituting Doboy Sound. This is at present a light fitted with 15 lamps and 15-inch reflectors, elevated 74 feet above the level of the sea, and is revolving. Its greatest range now, will not exceed 18½ nautical miles. As a sea-coast light, it should be seen clearly and distinctly at the distance of 20 nautical miles.

"Amelia Island Light-house, Florida.—This light, 41 miles from Sapelo light-house, is another of the proposed sea-coast lights. It is at present fitted with

14 lamps and 15-inch reflectors; a revolving light, having an elevation of about 60 feet, and a consequent range for the best description of apparatus, of 13 nautical miles. The tower requires to be elevated, and in other respects improved, to the extent of making it a first-class sea-coast light.

"St. Augustine Light-house.—This light, being 50 miles from the Amelia Island light, is included in the list of sea-coast lights. The present light is one of a merely local character, being fitted with only 10 lamps and small reflectors.

"Mosquito Bar.—A light is proposed to be placed in this vicinity. Although its immediate necessity is not apparent, yet in time it will become necessary to erect a sea-coast light half-way between St. Augustine and Cape Canaveral. This point is 50 miles from St. Augustine, and 43 miles from Cape Canaveral.

"Cape Canaveral.—This is one of the prominent points on the coast, requiring the most powerful sea-coast lights to facilitate navigation. Dangerous shoals extend to a considerable distance off this cape, rendering it still more important that a first order light should be substituted for the present very inefficient one. The present apparatus consists of 15 lamps and 21-inch reflectors, revolving, in a tower of only 55 feet elevation. The present range of this light does not exceed 12 nautical miles, and should be increased to not less than 20 nautical miles.

"Cape Florida.—Between this and Cape Canaveral it is proposed to erect 3 new sea-coast lights of the first order; one near Jupiter Inlet is considered of immediate importance; and the other two at different periods, according to circumstances, and as the expenditures for light-house service on other points may warrant. The Cape Florida light, marking, as it does, a prominent point on a most dangerous coast, should necessarily be of the most powerful illuminating apparatus. The present apparatus is composed of 17 lamps and 21-inch reflectors, with an elevation of 70 feet above the level of the sea, giving a range of not more than 13 nautical miles. The currents and dangerous reefs along the Florida coast, render it of absolute importance that it should be increased to the rank of a first-class sea-coast light.

"Carysfort Reef and Sand Key Lights.—These two important lights are now in course of construction by the officers of the Topographical Engineers, to be fitted with first order lens apparatus.

"Dry Bank.—This position has been selected as an intermediate point for a first-class light midway between Carysfort Reef and Sand Key lights, at the distance of 48 miles from them. It is believed to be of the first importance that the entire Florida coast should be lighted with the lens apparatus of the greatest power, without delay.

"Dry Tortugas.—This is a very important light, especially to those navigators bound to and from the Gulf of Mexico. It is fitted at present with 17 lamps and 21-inch reflectors, with an elevation of 70 feet, giving a range of about 13 nautical miles. This light is 55 miles from Sand Key, which makes it still more important that it should be of the first order.

"Pensacola Light-house.—This light is deficient in power, being fitted with only 10 lamps and 16-inch reflectors. This and the light at Mobile Point, being about 40 miles apart, are both revolving. As an important naval station, Pensacola requires a first-class sea-coast light. The present light is very little better than the ordinary local lights along the coast. The distinction of this light should be changed, as it is liable to be mistaken for the one at Mobile Point. The proposed lights along the Florida coast, from the Keys and Dry Tortugas to Pensacola, etc., although necessary in a general plan, are not deemed to be of present great importance. With the increase of trade and population, the coast must keep pace in its improvements in lighting.

"Mobile Point.—This is believed to be the best reflector-light on the coast; being revolving, and fitted with 21 lamps and 21-inch reflectors. The elevation of this light being only 55 feet, its range is necessarily restricted within the very narrow limits of only 12 nautical miles. This light, from a proper elevation, could be seen at a distance of 18 to 20 miles. This tower should be elevated to at least 125 feet, to render the light of as much importance as the navigation interests of Mobile demand. This light may be easily mistaken for the one at Pensacola, and therefore the characteristic distinction of one of them should be changed. In carrying out the general plan, it may become a question as to whether Mobile Point or Sand Island light should be the principal or sea-coast light.

"Passes of the Mississippi.—These lights should be of the first class, with such elevations as will give them the ranges of at least 20 nautical miles. The present lights are inefficient, and unnecessarily expensive, without any commensurate benefits. These lights are of great importance to the commerce of the Gulf of Mexico, and should be rendered the most efficient in the shortest space of time. The remaining lights along the coast, embraced in the programme, are of minor importance, compared to those already enumerated; but deserve the attention of those who are, or may be, charged with the light-house service. Many of the points along the coast of Texas require lights, especially at the entrances to the ports and bays, at an early day. The prominent points on the Pacific coast should have lights without unnecessary delay, and no sea-coast light should be fitted except with first-class apparatus.

"Lake Coast. Champlain, Ontario, Erie, Huron, Michigan, Superior, and their tributaries or connecting links.—The shores of these inland seas belonging to the United States, are, so far as the number of the lights is concerned, pretty well lighted. There are a few important points which require lights of greater power and range than those now existing; and as commerce and navigation increase there, a few additional small lights may be required, to the extent probably of 6 in Michigan, 1 in Ontario, 3 in Huron, and several in Superior. The most of these lights are mere pier-head beacons. A system arranging the lights into classes, and giving to each one a distinctive characteristic, is necessary. In Lake Huron, the two important lights of Thunder Bay Island and Point aux Barques, distant about 22 miles, and marking the entrance to Saginaw Bay, are both fixed.

"Many of these lake lights have more lamps and reflectors, although only requiring to have short ranges, than many sea-coast lights on the Atlantic and Gulf coasts. Galloo Island, east end of Lake Ontario, near the River St. Lawrence, is fitted with 15 lamps and reflectors; in Lake Superior, Manitou Island, 15 lamps and reflectors; White Fish Point, 13; and Copper Harbor, 13 lamps and reflectors. These principal lights on the lakes should be fitted with third order lenses, of smaller or larger model, according to circumstances, similar to the one recently placed in the Wagooshance Light, built under the direction of the Topographical Bureau. The following may be considered first-class lake lights, and should be of the third order lens apparatus, viz.: Galloo Island, Lake Ontario, fixed; Sodus Bay, Lake Ontario, revolving; Fort Niagara, Lake Ontario, fixed; Dunkirk, Lake Erie, fixed; Presq' Isle, Lake Erie, fixed; Cleveland, Lake Erie, fixed; Western Sister, Lake Erie, fixed; Buffalo, Lake Erie, fixed; Point aux Barques, Lake Huron, fixed; Thunder Bay Island, Lake Huron, fixed; Presq' Isle, Lake Huron, revolving; Point de Tour, Lake Huron, fixed; Wagooshance, Lake Michigan, third order lens; Fox Isles, Lake Michigan, required; South Manitou Island, Lake Michigan, fixed; Milwaukee, Lake Michigan, fixed; Chicago, Lake Michigan, fixed; White Fish Point, Lake Superior,

fixed; Copper Harbor, Lake Superior, fixed; Manitou Island, Lake Superior, fixed.

"Of the 72 lights on the lakes and their tributaries, 68 are fixed and 4 revolving.

"Arrangement into one System in reference to Classification.—The following classification of lights is recommended according to their positions, uses, etc., etc.: 1. Main coast lights for the most prominent points on the coast. 2. Secondary lights for the inferior points on the coasts, and in broad sounds, bays, etc. 3. Minor sounds and bays, and for harbors and river lights. 4. Range, beacon, and pier lights. Also into six classes, according to the dimensions of the lighting apparatus and the range of the lights. All the main sea-coast lights should be of the first order, and the classes to which the secondary, sound, bay, harbor, river, range, beacon, and pier lights should belong, would be determined by the light-house board, according to the locality, objects for which placed, etc., etc. This applies to new lights, and to the gradual replacing of the old ones as they may require renewal. It is believed that many of the present lights might be dispensed with if effective ones were substituted for those now placed on important points, but not of sufficient power and range, which would in the end produce a considerable saving.

"Distinctive Characteristics.—Experiments will throw light on this important subject. The light-houses and vessels, as well as the lights, should be distinguished from each other by sight, as well as, in case of fogs, by sound. Colors should only be used for distinguishing small lights of short range, as river, pier, beacon, or range lights. In employing colored media at all for lights, it is important that the most approved modes, with the best quality of appliances, only be used; a duty which should devolve upon professional men. Mr. Stevens enumerates the number of distinctions of which reflecting lights are susceptible as nine: 1st, fixed; 2d, revolving white; 3d, revolving red and white; 4th, revolving red with two whites; 5th, revolving white with two reds; 6th, flashing; 7th, intermitting; 8th, double fixed light; 9th, double revolving white lights; to which may be added, 10th, double, one fixed and one revolving. Of these, three depend on color and should be discarded, reducing the distinctions to seven. In the Scottish lights, by causing a rapid revolution of the frame, and placing the rims of the mirrors of each side in one vertical plane, while their axes are in a plane inclined to the vertical, flashes are produced every five seconds, which appear to rise and sink. The intermitting light suddenly appears, is steady for a short time, and then disappears suddenly. These changes are produced by the vertical motion of circular shades in front of the reflectors. The different characteristic combinations in the lens system, according to M. L. Fresnel, are nine: 1st, flashing at the interval of a minute; 2d, flashing at the interval of half a minute; 3d, white and red flashes alternating; 4th, fixed lights flashing every five minutes; 5th, flashing every three minutes; 6th, every two minutes; 7th, fixed white lights with red flashes; 8th, fixed white lights; 9th, double fixed lights. These are applied only to the first three orders of lights. In England the lights are classified as sea-coast, secondary, and harbor and river lights. In France they are divided into six orders, according to their range and the size of the lighting apparatus; the first order being the largest, and the second, third and fourth orders being each divided into two classes, the larger and smaller, or first and second classes. The objections to colored lights are, the large absorption of the incident light, and the difficulty of distinguishing the color. Red is admitted to be the best color. A good red light is seen 16 miles, and sometimes 22. Green lights from a powerful apparatus, in Mr. Stevenson's experiments, were seen 7 miles in very clear weather, and blue lights only 5.

"The objections to red are: 1. The great loss of light by absorption. A full red glass used as a chimney of a lamp absorbed 80 per cent. of the whole. A pink French glass absorbed but 57 per cent. of the light, but the light was not characteristic.

"2. White lights grow reddish in a fog. In a revolving light, showing alternately red and white, the red is absorbed at a less distance than the white, and the light may be mistaken for a white light of half the period of revolution. Two lights will appear blended in one, which are not separated by at least $3' 18''$; call H the required distance between the lights in feet, Δ the observer's distance in feet, Θ half of $3' 18''$. Then $H = 2 \Delta \tan. \Theta$. For 1 mile, $H = 5.84$ feet, and for n miles $H = n \times 5.84$. Leading, or range lights, should be nearly on the same elevation, so as to cause them to appear nearly, but not quite in one. The distance between them should not be less than one sixth of the distance at which they are thus to be used.

"In forming a programme for lighting the coast, the following conditions should be realized: 1. The most prominent points should be first lighted. 2. Revolving lights, as more powerful than fixed, should be used, when possible, on the projecting points. 3. Lights identical in appearance should not occur within 80 to 100 miles of each other. 4. Distinctions of color should not be adopted except in cases of absolute necessity. 5. As few lights as possible should be used, not only for the sake of economy, but to avoid confusion. 6. Distinctions of lights depending on the estimations of small differences of time, of appearance and disappearance, should never be resorted to. 7. Harbor or local lights should generally be fixed, and may be distinguished by colors. 8. Floating lights should never be used when fixed lights can be employed.

"The system proposed by Charles Babbage, Esq., of London, and which has been communicated by its distinguished author to the Board, at the request of one of its members, is to distinguish lights by occultations; or, to make each light-house repeat its own number continually during the whole time it is lighted. This is accomplished by inclosing the upper part of the glass cylinder of the Argand burner by a thin tube of tin or brass, which, when made to descend slowly before the flame, and then allowed suddenly to start back, will cause an occultation and reappearance of the light.

"The number belonging to a light-house may be thus indicated to distant vessels. Take, as an example, 243. 1. Let there be two occultations. 2. A short pause. 3. Four occultations. 4. A short pause. 5. Three occultations. 6. A longer interval of time. This system of occultations may be repeated all night by means of proper mechanism.

"The rapidity of the occultations themselves, the length of the pauses between the units and tens and between the tens and hundreds, as well as the duration of the long interval of time which marks the termination of the number, must be made the subject of experiment. A light has been already used as an illustration, in which the occultations occurred at intervals of one second; the pauses occupied four and the long interval ten seconds. The pause was thought to be unnecessarily long, and was diminished. Whatever may be the times ultimately adopted, the experiments already made render it improbable that the average time required by a light-house for repeating its number should amount to one minute. It is by no means necessary that the counting of the number of a light-house should commence with the digit which expresses hundreds. No greater amount of time would have elapsed, if, in the above instance, the observer had commenced with counting the unit's figure. It would then have read thus: (three occultations) long interval; (two occultations) pause; (four occultations) pause. By the long interval denoting the com-

mencement of a number, it is already apparent that the number of the light-house is 243, and not 324. In order still further to prevent mistakes arising from an incidental error in counting the number of occultations, it will be convenient to establish another principle for the purpose of numbering the light-houses. Light-houses must not be numbered in the order of their position; but every light-house must have such a number assigned to it, that no digit occurring in the number denoting the several light-houses nearest to it on either side shall have the same digit in the same places of figures.

"If five adjacent light-houses were thus numbered; 361, 517, 243, 876, 182;

supposing a mistake to have occurred in the first time of counting 243, and that it had been reported to the master of the vessel as 253, he would immediately, on looking at his numerical list of light-houses, perceive that a mistake had been made in the middle figure; because, in any general arrangement, 253 would have been assigned to some light-house on a coast very distant from that on which 243 was placed. In fact, two out of any three figures would always detect the error of the third.

"The occultations would distinguish every light-house from all casual lights, and their number would identify the light. The whole illuminating power would be always employed, undiminished by the interposition of colored glass. These lights would be more readily visible at a distance, because it is known that the eye perceives more readily a faint light which is intermittent than an equal light which is fixed. The Board regard this as the most important proposition for distinguishing lights which has ever been made, and propose to make full experimental trials of it. In fogs, Mr. Babbage proposes to make the pauses between the strokes of the gong take the places of the occultations of the light. To give this plan a full development, all nations should unite in a system of numbering for light-houses. Such a co-operation might reasonably be looked for, if the plan have all the success which is now expected.

"*Best mode of ascertaining the necessity for introducing new Lights, Beacons, etc.*—Legislation is, of course, necessary to the establishment of a new light. The recommendations of the Light-house Board, of officers of the coast survey, of pilots, navigators, and others, all reach the Committees of Commerce of the two Houses of Congress, through different appropriate channels. It does not seem practicable to propose any system of examination of sites which would not be very expensive, while legislation is pending on the subject. A reference to the Light-house Board, in doubtful cases, would secure the committees from recommending appropriations for objects which certainly would not have the approval of professional men. The law of the last session provided for the examination of sites, for which appropriations were made, by the officers of the coast survey, and a report by the superintendent. As this will leave a full knowledge of all the circumstances of the case, and be attended with very little expense, the same plan should be pursued in all future cases.

"*Best mode of supplying new Lights.*—When it has been shown, to the satisfaction of Congress, that new lights are required, and appropriations made for the purpose, the plans and specifications for construction, illuminating apparatus, distinction, etc., should be made by the engineer of the Light-house Board. Should a previous estimate have been made by this engineer, for the information of Congress, generally, there will be required but little more than to fill up the details. The construction having been approved by the Light-house Board, a contract should be entered into, according to law—based entirely upon the plans, drawings, and specifications and estimates of the engineer—and the building should be erected, and the lighting appa-

ratu and accessories be procured, under the inspection of the engineer of the Board, or of such officer of the corps of engineers of the army as may be detailed for the purpose, in conformity to the 9th section of the act approved 3d March, 1851. All the details should be subject to similar inspection.

"Mode of renovating Lights.—Whenever the Light-house Board is satisfied of the necessity for renovating any existing light, by the introduction of better illuminating apparatus, etc., the engineer of the Board should be required to prepare estimates and plans in detail, to be submitted to the board, which should be passed upon, and, if approved, the necessary steps should be taken to make the repairs, etc., according to law; or, in the event of the expense being too great to admit of the works being done, except by a special appropriation, then the necessary estimates, explanations, etc., should be prepared and submitted, through the Secretary of the Treasury, for the consideration of Congress. It should also be the duty of the Board to procure all the necessary information relating to the establishment of new lights, abolishment of old ones, etc.; to be accompanied by estimates of cost, to be submitted, through the Secretary of the Treasury, to Congress, at the commencement of each session.

"Discontinuance of unnecessary Lights.—The steps in regard to the discontinuance of lights should be similar to those necessary in cases of renovation of lights.

"Subjects of Instruction to Employees.—Inspectors and light-keepers should be provided with printed instructions, in the form of manuals of instruction, as well as those necessary to guide them in the police of the establishments, similar to those provided for the inspectors and keepers of light-houses in France and Great Britain. This manual should embrace a detailed account of the modes of executing every part of the duties confined to the inspectors and keepers; a description of the parts of the machinery employed; and the means to be employed, in case of accident to the machinery, etc., until it can be repaired. The instructions for the light-house service of France embrace every point in the most minute detail, and serve not only for the guidance of inspectors and keepers, but also of the engineers and others in any way connected with the service. The instructions for light-houses, light-vessels, etc., of England, are full and explicit; printed in large type, with conspicuous headings; and are kept in the quarters of the keepers, in frames, so that no one can ever be at a loss to know his duty. The different kinds of lamps employed are described, and the modes of attending to them pointed out, in plain, clear, and explicit terms, adapted especially to the understandings of the keepers of the lights. The subjects contained in the printed instructions and manuals, would form a part of the essentials in the examinations for qualifications of keepers.

"Best Mode of securing Attention to Instructions.—The system of inspection already recommended, the examinations for higher positions in the districts, and the exercise of the present power of removal for neglect or disobedience of instructions, would secure a due degree of attention to them. If promotions were made entirely by merit, on the recommendation of the general or local inspectors, and changes, not depending upon want of qualification, were avoided, there would be doubtless, great improvement in the knowledge, skill, and attention of the light-keepers.

"Improvements in the Materials for Illumination.—In regard to the substitution of the oil of colza (rape-seed), now used exclusively for light-house purposes in France, England, Scotland, and Ireland, and in most of the light-houses of the other maritime nations, for spermaceti oil, or, more properly, for that used in our lights, the Board would refer to the fact, that the recommendation of the select committee of the House of Commons of Great Britain, in 1845, to the Light-

house Board, to introduce the more economical oil of colza into their light-house establishments, had the effect of causing a thorough experimental examination to be made of the two oils (colza and the best winter-strained sperm oil), by Professor Faraday, Mr. Alan Stevenson, and others interested in light-house service, by which it was clearly demonstrated that the colza oil is superior, in every essential particular, to the best winter-strained sperm oil. Professor Faraday says, in his report: 'Having burnt the lamps for many days, I have been much struck by the great steadiness of the rape oil lamps, either as considered alone or in comparison with the sperm-oil lamps. They would burn for 12 or 14 hours at a time with little or no alteration of the light, the cottons or lamps not being touched the whole time; whereas the sperm oil lamps would in the course of four, five, or six hours, give a diminished flame, from the incrustation of the charred part of the cotton retarding the flow of oil. In the rape oil lamps the coal is broken and porous, and serves for wick almost as well as the fresh cotton; but in the sperm oil lamps the coal forms a hard, continuous ring, which seals up the ends of the threads; and this, with the more confined condition of the burner, and the greater distance of the oil beneath (from intentional difference of flow in the lamps), causes the sperm oil lamp flame to fail in brightness, and requires that the wick should be re-trimmed.'

* * * I have made many careful experiments on the proportion of light produced by the two kinds of lamps, in every case weighing the oil before and after combustion, so as to know exactly the quantity burned, and making, during the experiments, above 100 comparisons of the lights one with another. The rape oil lamps were always more brilliant than the sperm oil lamps, except, indeed, one or two rare cases; but, at the same time, more oil was burned in them. * * * From 108 observations of the lights, taken at such times as appeared fitted to give the best mean expression of the light of the lamps compared with the oil burned in them, the average light of the rape oil lamp came out as one and a half, that of the sperm oil lamp being one.' Mr. Alan Stevenson says: 'In my last annual report on the state of the light-houses, I directed the attention of the Board to the propriety of making trial, at several stations, of the patent colza or rape-seed oil, prepared by Messrs. Briggs, of Bishopsgate-street. These trials have now been made, during the months of January and February, at three catoptric and three dioptric lights.'

* * * The substantial agreement of all the reports, as to the qualities of the oil, renders it needless to enter into any details as to the slightly-varying circumstances of each case; and I have, therefore, great satisfaction in briefly stating, as follows, the very favorable conclusions at which I have arrived: 1. The colza oil possesses the advantage of remaining fluid at temperatures which thicken the spermaceti oil, so that it requires the application of the frost-lamp. * * * 3. The colza oil burns, both in the Fresnel lamp and the single Argand burner, with a thick wick, during 17 hours, without requiring any coaling of the wick or any adjustment of the damper, and the flame seems to be more steady and free from flickering than that from spermaceti oil. 4. There seems (most probably owing to the greater steadiness of the flame) to be less breakage of glass chimneys with the colza than with the sperm oil. 5. The consumption of oil, in so far as that can be ascertained during so short a period of trial, seems, in the Fresnel lamp, to be 121 for colza and 114 for spermaceti; while in the common Argand lamp, the consumption appears to be 910 for colza and 902 for spermaceti. 6. If we may assume the means of these numbers, 515 for colza and 508 for spermaceti, as representing the relative expenditure of these oils, and if the price of the colza is 3s. 9d., while that of spermaceti is 6s. 9d.

per imperial gallon, we shall have a saving in the ratio of 1 to 1.775, which, at the present rate of supply for the Northern lights, would give a saving of about £8226 per annum.' The evidence of these two distinguished gentlemen is conclusive of the superiority of the colza or rape-seed oil to the best winter-strained sperm oil; and how much better than that used in our lights, may be readily inferred without the aid of experiments on so nice a scale as these employed by Professor Faraday and Mr. Stevenson, when it is remembered that our lights are supplied with oil called winter and spring or summer oil. That efficient lights along the coasts of all maritime countries are essential to a safe navigation, and the successful prosecution of a lucrative commerce, will not be contested; that all mere personal or local interests should give way to the general good, is an assumption which will not meet with disfavor in this country; and inasmuch as it is of paramount importance to the best interests of the whole country, that our lights and other aids to navigation should be the best which money, science, and the mechanic arts will afford, it is, in the opinion of the Board, the duty of those charged with this important branch of the public service to employ every reasonable means, not inconsistent with law, to perfect them, and therefore recommend that the subject of introducing other combustibles than the oil now used, be taken into serious consideration, as one of the means of improving our lights, and, at the same time, of effecting considerable annual saving of expense to the country. If the rape-seed were cultivated to any extent in this country, it is not doubted it would supply the place of the numerous chemical oils, fluids, etc., now in general use for domestic purposes, as well as for lighting our light-houses and light-vessels. To insure the consummation of so desirable an object as the cultivation of this plant on a large scale in this country, where climate and soil are so well adapted to it, will be to place it in a fair competition with its rivals. It will be the duty of the Board, if authorized by Congress, among its numerous other important duties connected with the light-house establishment, to examine into the merits of all proposed improvements in apparatus and combustibles, and, by their recommendations to Congress, keep pace with the improvements of other countries in this branch. The introduction of gas into light-houses has long been looked forward to as an important step. Hitherto it has met with but little favor in any quarter. While the introduction of gas into our light-houses, if found adaptable to them, would involve important points to be considered, it is by no means certain that by the means of a series of experiments, the Board would not be enabled to decide conclusively as to the practicability of making the attempt in the present state of knowledge, or the best and safest means of generating, conducting, and continuing it for light-house purposes. The persons charged with the few gas-lights now existing in this country, for want of practical and theoretical knowledge, it is believed, are not competent to report results sufficiently reliable to decide so important a question.

"Buoys."—The material is iron or wood, sometimes covered with copper. The anchors are heavy blocks of stone, or mushroom anchors, or iron sinkers (which should be hollowed out below), or iron screws. It is worth trial whether fastening the buoys by a traverse line passing through the centre of oscillation would not diminish the liability to chafe off the chain, and separate the buoy from the anchor. A swivel-shackle, in a degree, prevents this, but not effectually. The colors of buoys are made to indicate their purpose, as designating a channel, shoal, spit, etc. They are sometimes even characteristically marked to distinguish them. The law passed in 1850, in regard to coloring and numbering buoys in the United States, is simple and effective. The numbers were intended to

begin at the exterior of a bay, harbor, etc. This law is as follows: Extract from an act making appropriation for light-houses, light vessels, buoys, etc., and providing for the creation and establishment of the same, and for other purposes, approved September 28, 1850: 'Section 6. *And be it further enacted*, That hereafter all buoys along the coast, or in the bays, harbors, sounds, or channels, shall be colored and numbered, so that, passing up the coast, or sound, or entering the bay, harbor, or channel, red buoys with even numbers shall be passed on the starboard hand; black buoys with uneven numbers, on the port hand; and buoys with red and black stripes, on either hand. Buoys in channel ways to be colored with alternate white and black perpendicular stripes.' Of course the buoys show, with more or less distinctness, when projected on the water, against the sky, trees, etc. The red buoys should be painted a bright red, and not a Spanish brown, in order to be well distinguished—red lead or vermilion being used as the paint. The experiments and observations of the Board satisfied them that in such a case, red and black were good colors for distinguishing buoys. The can-buoys, in some instances (as in New York harbor) are too small to be easily seen. The numbering is a simple matter, but is by no means effectively executed, especially on the spar-buoys, where the numbers repeated on the different sides, being seen in range in a diagonal view, lead to confusion. The Board have given some attention to plans for numbering buoys. The numbers should be placed above the buoys, on stems or perches; should present the same appearance on different sides, and have their distinctions by difference in a vertical line, and not by varying horizontally. Several plans have occurred to them. Three solids, the cone, cylinder, and sphere, arranged in groups of not more than 3 each, will give 42 combinations; no one of these figures can be taken for the other, and they may easily be placed on stems projecting nearly vertically above the buoy, the several solids being placed one above the other, with a sufficient interval. They can be of adequate size, and may be cheaply made in the turning lathe. The elementary forms of the unit, the 5 and the 10, of the Roman numerals, are the cylinder, the cone and the double cone. By combinations of these, 89 numbers are represented. Seven numbers may be represented by 2 signs and their combinations; 28 by 3 signs, restricting the number of elements in any one combination, to 4. Seven numbers of every 10 may be represented by only 2 more signs than those expressing the value of the ten's place, giving a very great variety. A letter made to revolve about a vertical axis, produces a solid of revolution which is easily recognized as the sign for the letter. Fourteen of the twenty-six letters are adapted to characteristic signs, as shown in the figures (A, B, E, I, J, L, O, P, Q, R, T, W, V, Y). Nine digits of the Arabic numerals, viz.: 1, 2, 4, 5, 6, 7, 8, 9, and 0, give easily formed and easily recognized signs, as is shown in the accompanying plate; and these the Board recommend for numbering buoys, excluding 3 as not sufficiently characteristic. In the English system of placing buoys, a red and black are placed on opposite sides of a channel, and the vessel runs between them. In our system only one buoy is placed on the starboard or port hand, and the vessel runs for the buoy, keeping it close aboard in passing. The English system is most simple, and even the most economical. In order to render buoys available at night, various propositions have been made for causing them to appear luminous, but none have succeeded practically. Lighting by gas is among the methods proposed.

"Of Fog Signals."—During the prevalence of fogs, the lights which ought to guide the seaman are often indistinctly seen, or entirely obscured, until he has approached too near the danger against which they were intended to warn him. In cases of fog, light-

ships and light-houses are, in some instances, provided with gongs and bells, which are then kept constantly sounding. It is unfortunate that the means of warning the seaman of his danger should extend to the shortest distance when that danger is most imminent. The lights usually employed are visible at a distance of from 6 to 80 miles; but the sound of a gong or bell is heard at a comparatively very small distance. When these instruments are heard, they merely indicate danger, but not its exact nature. It might, in some cases, be of great importance that the gong or bell should indicate the number of the light-ship. This could be accomplished by a very trifling alteration in the mechanism. Instead of striking the instrument at fixed intervals, let there be pauses and a long interval between the number of strokes which successively represent the digits of the number of the light-ships, just in the same manner as has been proposed for light-houses. A light-house or light-ship whose number is 243, would be thus indicated during fog: three blows on gong, pause; four blows on gong, pause; two blows on gong, long interval. The same mechanism which caused the occultations of the light might produce the blows on the gong. The preceding explanations are sufficient to show that each light-house or light-ship, by continually repeating its own number, might render any mistake of it for a different light very nearly impossible. The great principle on which the system rests is to give numerical expression to each light. If it be not thought necessary to apply it to every light-house, the most important may be chosen for its application. The expense of the alteration, and the amount of danger incurred by a mistake, will furnish the ground of decision in each individual case. In proposing, however, a new system which has extensive bearings on other questions connected with the safety of those who travel on the waters, it is desirable that a general and comprehensive view should be taken of such of its applications as the rapid advance in mechanical and chemical science justify us in supposing must take place in a few years. However partially the system may be adopted at first, a judicious foresight into its probable applications may enable us, without any present inconvenience, to accelerate future improvements, and to save considerable expense on their adoption. The following suggestions for improvements or applications, many of which are perfectly practicable at the present time, are offered for the consideration of those who may be called upon to carry out the *Numerical System of Light-houses*. They are not necessary for the success of the simple plan which has been already described, but may be adopted or rejected without any interference with it.

Suggestions for the Improvement of Light-house Signals, Buoys, etc.—Telegraphic communication during the night between Light-houses, and Ships in distress.—Cases occur in which it is of great consequence that a ship should communicate with the land long before it can send a boat ashore or enter its intended port. It may be the bearer of important intelligence. It may convey some person whose presence is essential for some great object. The vessel itself may be in distress. The state of the elements may render it impossible to send for or receive any assistance from the land; yet, even under such unfavorable circumstances, if directions from skillful pilots, acquainted with the coast, could be conveyed to the ship, its wreck might, perhaps, be prevented; or, if driven on shore, having been directed to the least unfavorable spot, its crew might possibly be saved. Such communications might easily be organized. There are already existing in the royal navy in the East India Company's service, and elsewhere, large dictionaries of numerical signals. These, it is true, are made by flags, or by balls; but the same numbers may be expressed by the occultations of lamps. Any number, however large, may be expressed by making the number of occultations corre-

sponding to the first or highest digit, then allowing a pause; after which the number of occultations representing the second digit, then a pause; and so on, always observing that, after the unit's figure has been expressed, there must follow a long interval.

"The plan for telegraphic communications would be thus arranged: 1. Light-house repeating its own number. 2. Ship fires a gun, and hoists a light, to call the attention of the light-keeper. 3. Light-house ceases repeating its number, and becomes a steady light, thus informing the ship that it is observed. 4. Ship having prepared its message, numerically expresses it by the occultations of its own lamp. 5. Light-house repeats the message of ship, in order to show that it has been rightly understood. 6. Light-house now repeats its own number, while it is preparing the answer. 7. Light-house expresses its answer by occultations. 8. Ship repeats the answer. This interchange of question and answer is continued as long as necessary, during which the light-house repeats its own number previously to each reply.

"Very little delay will occur; for these questions and answers will be arranged on movable discs, which may be placed in the mechanism employed for occulting, even while it is repeating another message. Many such discs, each containing a different message, may be placed in the machine at once, and on touching any lever the light will continue repeating the corresponding message. In case of a ship in distress, for instance, requiring an anchor of given weight, it may be necessary to send to the harbor-master of the adjacent port to give the order, and to ascertain the time when it can reach the vessel. During this interval, the light-house will be repeating its own number. An electric telegraph from the light-house to the dwelling of the harbor-master would save much time, and, in some cases, much damage. The gun fired by the vessel might also be heard by the harbor-master; and his attention then being directed to the telegraph light-house, the whole time might be saved. If even his own house was invisible to the ship, but within view of the light-house, he might, by means of a small light, correspond with the ship, through the intervention of the light-house, repeating the signals of both parties. Colored shades might, if thought expedient, be used for different dictionaries; or an entirely independent lantern might be specially devoted to signals; but this would cause additional expense, and seems unnecessary. It may be objected to this plan, that it would mislead other vessels on first coming in sight of the light-house. This objection, however, will be found on examination to be invalid; for a ship on first getting sight of a light-house, will be at the distance of many miles; and as all telegraphic messages would consist of more than three places of figures, the ship would immediately perceive that the light-house was acting telegraphically, and on turning to the dictionary would even become acquainted with its message. Besides, in the course of every three minutes, at least, the light-house would repeat its own number. Thus the ship would always know that it was in the presence of a light-house; and if its reckoning did not enable it identify the light, it could only remain in doubt during a few minutes.

"*Telegraphic Signals between Ships at night.*—The application of the system of occultations to ships at sea may not perhaps be quite so easy as that which is proposed for light-houses, but no objection has yet occurred which appears at all insurmountable. The question of the position of the occulted light or lights placed on the ship must be settled by practical men, after due consideration and experiment. It may, however, be suggested, that a light hid by a mast or sail may yet have its occultations made perfectly apparent by reflection from another sail. If such a system of signals were adopted, fleets might sail in company during the night, each repeating its own number; and

any orders could be conveyed to any individual ship. Specific lights have already been employed to distinguish sailing-vessels from steamers, in order to prevent collisions. By adapting the system of occultations to one or more of the lights of steamers, their character would appear more distinctly, and at greater distances. Perhaps, indeed, it would be better to have the distinctive character of a steam-vessel indicated by a continual enlargement and diminution of its light, rather than by an occultation. Two steamers also would have much less reason for approaching each other, because they could hold any correspondence by signals. They might also, by the same means, convey to each other their intended course long before they approach each other.

"Of a universal Dictionary of Signals.—Whether the system of occultations be generally adopted or not, numerical dictionaries of signals have been found absolutely necessary, and have long been in use. The rapid increase both of ships and of steamers renders some common language for all nations almost a matter of necessity. The concurrence between adjacent nations in numbering their respective light-houses would be essential if any numerical system is adopted for distinguishing them. Such an opportunity ought not to be lost of rendering those discussions still more useful by attempting to organize a plan for a universal system of numerical signals. The first step might, perhaps, be that each nation should supply all questions and answers that ships could ever require for their safety or convenience. Out of these, the duplicates being omitted, the first draught of the naval part of the dictionary might be formed. This being submitted to criticism, would probably itself suggest many additions.

"The questions should be very carefully translated into the languages of all maritime nations, and should be printed in columns for each language. A dictionary of this kind, containing about 5000 terms in ten European languages, was published in 1849 by M. K. P. Ter Reehorst. The words are contained on about 200 double pages; and since each word, of which there are usually about 25 in a page, is numbered, this work might be used as a numerical telegraphic dictionary. If a more general dictionary were undertaken, other considerations arise, and the great questions relating to the philosophy of language must be examined with reference to such a work. It will, however, be sufficiently early to enter on that subject when any steps are seriously taken to accomplish so desirable an object. The continually increasing use of the electric telegraph renders a universal language still more desirable.

"On the Identification of a Light-house.—A case has been more than once suggested to the author, to which it may be desirable to advert in order to point out the course of experiment which may lead to its removal. At certain periods of the year, and on certain coasts, there occur dense fogs. Under these circumstances, it has happened that a vessel has, on a partial and momentary opening in the fog, insufficient to show more than a single occultation, found herself almost close upon a light-house. In such a case, there is neither time nor opportunity to ascertain its number. It may here be remarked, that the assumed danger of going ashore is so imminent that it is not necessary to know the number. It is sufficient for the moment to know that there is a light-house in a certain direction, which is close at hand. It must, however, be admitted, that in common with all received systems of lights, the method of occultations will not furnish a remedy. If a colored light is already employed in particular localities to meet such a case, it will still accomplish the purpose when occultations are applied to it. The danger, although rare, ought, however, to be provided against. The following remarks are suggested to assist in attaining that object:

"The time between two occultations (usually one second) might be doubled in special cases. A little experience would enable most men to recognize the fact after two occultations. If such light-houses were placed alternately with others, no light-house would be mistaken for either of its adjacent neighbors. This plan might be partially extended, but it is liable to objections. Another view may be taken. Is it possible to give a specific character to the occultation itself? It has been found, that if the occultating cylinder descend rather slowly over the lamp, and then, after a *very short* pause, rise suddenly, the effect is best. It has also been observed, when an accidental defect in the apparatus caused the cylinder, after suddenly rising up, to rebound, and again to obscure partially the lamp, that the nature of the occultation was peculiarly characteristic. This peculiarity was very remarkable up to a certain distance, after which it became lost. Almost any form of peculiarity can be given to the occultations by giving proper forms to the cams which govern them. The fact that such peculiarities are not seen until the ship has approached within certain distances, does not appear to present a material difficulty, and may even prove an advantage. It would seem, then, to be desirable to institute a series of experiments to determine the following questions: Can the occultations of a lamp, in which the rapid re-appearance of the light occurs from the falling down of the shade, be distinguished from those in which it occurs in consequence of the rapid rising up of the shade; and if so, at what distance? In some cases the shades might move from right to left, and in this reverse direction. What peculiarities in occultations can be seen at the greatest distances? Among the experiments still required may be mentioned the loss of light resulting from the interposition of colored glasses, and also the proportion of light lost by sacrificing given portions of various parts of the optical apparatus used for concentrating it. This is necessary in order to enable us to judge what portion may be most economically sacrificed in case the space might be required for other purposes. The dangers arising from fogs are of such an extent that all the resources of science ought to be called in to remove them. Voltaic light can scarcely be depended upon except under continual superintendence; it would therefore be expensive. If, however, any intense light can be found capable of penetrating dense fogs, it might, during their continuance, be good economy to employ it even at considerable expense. Perhaps the ordinary light-house lamps might be supplied with oxygen during fogs; its expenditure being regulated by the obscurity to be penetrated. Possibly portions of phosphorus might be burnt in oxygen, and the light-house would then express its number by a series of *flashes*, and of *pauses* between them. The new form which that body is now known to assume, might render its application to this purpose free from danger.

"On Sounds used for Signals.—Both gongs and bells are employed as substitutes for lights during fogs. I am not aware of any series of experiments on the distances at which sounds of various kinds can be heard. In a question on which so much property and so many lives depend, it is surely important to be well informed. The only resource is experiment. It may be remarked that the low notes of the gong might be confounded with those of the roll of waves breaking on the shore, while the shrill whistle of the steam-engine will find a rival in the wind whistling through the rigging. The trumpet and the new and still more powerful instrument at the recent exposition ought also to be compared.

"Again, although some of these may be heard at greater distances in the open air, some may be more easily adapted to have their sound concentrated and directed, when placed in the focus of a parabolic mirror, or, perhaps, at the end of a long tube. Sound is

transmitted to considerable distances through water, and it has been suggested that this might be used in case of fogs. But it seems probable that sound would be much interrupted in its progress from the constant motion of the waves; and if it were transmitted at a considerable depth, it might be difficult for a vessel to send down an apparatus to render it sensible. Experiments should be made on the distance at which sounds can be heard under water in various circumstances of its motion. If, during storms, the surface only is agitated, it might be possible to transmit sounds in the still water near the bottom to considerable distances. Thus channels might be traversed by telegraphic communications with a less costly apparatus than that of the electric wire. It ought also to be ascertained whether the forms of the instruments struck would enable them to project their sounds in particular directions. Gongs, bells, and the firing of cannon under water, are among the sounds to be tried.

"Whatever may be the sound audible at the greatest distance, it will be necessary to ascertain what are the best means of producing it in greatest intensity—whether by one large instrument, or by many small ones. It seems probable that some combination of discordant sounds may be most effective, because it seems to be a law of our nature that contrasts produce stronger impressions than uniformity. There is one form of sound the most disagreeable with which we are acquainted; it is said 'to set the teeth on edge.' What is the cause of this, and does that highly obnoxious sound penetrate further than others? If it penetrate as far as others, it will certainly be the earliest to be noticed.

"*Lights on Buoys.*—The time is probably not remote when lights will be placed on floating buoys for the purpose of pointing out isolated dangers—as sunken rocks, shoals, etc., on which light-houses can not be placed, or where the great expense may prevent them from being built. They may also be useful to indicate the channels leading to some few ports of very great resort in order to render the approach of vessels possible during the night. The first difficulty in placing lights on buoys arises from the necessity of trimming the lamps, and of supplying them with fresh oil. Galvanic processes seem to present a similar difficulty. The chemical discoveries of recent times, however, offer some hope of removing it. By the destructive distillation of peat, of coal, and of shale, as well as by other methods, a variety of combinations of hydrogen and carbon have been obtained. Some of these only remain liquid under a pressure of two or three atmospheres. They possess considerable illuminating power; and by confining them in a close vessel, and allowing a very small aperture for their escape in the state of gas, a jet of flame may be produced, of uniform magnitude, and without the use of a wick, until the last drop of fluid has evaporated. If such a fluid could be produced at a moderate price, a quantity might be inclosed within the buoy, sufficient to last several weeks, if not months.

"Such a light would burn without the necessity of trimming, but it would require mechanism to light it each evening, and to put it out each morning. Such mechanism already exists in many of our public clocks. If it is thought desirable, too, that it should occult, so as to indicate its number, the plan already described might be applied. Thus the buoy would contain two pieces of mechanism. The only remaining difficulty would be the necessity of visiting the light frequently in order to wind up the two instruments. This might probably be removed by having within the buoy a heavy pendulum, or perhaps two such, swinging at right angles to each other. If the perpendicular motion of the buoy could be secured, then the winding up pendulums must be maintained horizontally by means of a powerful spring. These, by the action of the waves, would be continually winding up the springs

which drive the mechanism. This might be so arranged that it would never over-wind them. Spirits of turpentine, benzole, and several other compounds, assume a gaseous state at very low temperatures. If the end of a tolerably thick rod of metal is heated by the flame of the lamp, and the other end conducts the heat to the bottom of the fluid, it is sufficient to produce a continuous stream of gas to supply the burner until the last drop of the fluid is exhausted. Lamps constructed on this principle have, under various names, been in use for several years. If the fluid were sufficiently cheap, one of these movements might be dispensed with, by allowing the light to burn constantly during the day as well as the night. New forms would be required for such buoys. Probably a columnar form, weighted at the bottom, might give a steadier light amid the fluctuations caused by the waves. These buoys should be attached to their moorings by rings fixed at the centre of resistance.

"*Of the Mechanism necessary for Occulting Lights.*—The period of time occupied by any occulting light in making a signal is so short that great accuracy in the wheel-work is not necessary. In light-houses the moving power may be a heavy weight driving a train of wheels. This must terminate in a governor, which presses by springs against the inner side of a hollow cylinder. When the length of the time necessary to indicate the number of the light-house is known, the governor must be so adjusted that some one axis shall revolve in the given time. A cam-wheel must be fixed on this axis, having its cams and blank spaces so arranged as to lift up the tail of a lever carrying the occultating cylinder at the proper intervals of time. Each tooth of the cam-wheel will cause an occultation of the lamp by the cylinder, which is instantly drawn back by a spring. It is obvious that an axis might be used which moves round in the course of two, three, or more cycles. In this case, the same system of cams would be repeated an equal number of times in the circumference of the cam-wheel. This plan is sufficient for light-houses which are not intended for signal stations also. When signals are to be used, it is better to have a single cam on an axis which revolves once in the time which elapses from the end of one occultation to the end of the next. The effect of this cam will be, by acting upon a forked lever, to lift up the occulting cylinder. If nothing retain it in that position, the action of the spring on the lever will cause it to descend, and the cylinder, acted on by gravity, will instantly follow. But if an arm is interposed which retains the cylinder, then the forked lever alone will be pulled back by its spring, and the occulting cylinder will remain suspended until the next turn of the cam-wheel. The suspending arm which was interposed must itself be governed by a cam-wheel, expressing the number of the light-house.

"When a signal is to be made, an adjustable cam-wheel is to be set to the proposed signal, and is to be fixed upon the axis carrying the constant number of the light-house. When the proper time arrives for making the signal, it is only necessary to shift the axis, so that the adjustable cam-wheel shall be moved into the place occupied by the fixed cam-wheel. The signal will now be made and repeated as often as required, after which, the original position of the constant cam-wheel must be restored. It is clear that any number of adjusting cam-wheels might be prepared for signals, and put upon the axis at once, so that a series of different signals might be made in a very short time. Lights to mark the depth of water must have a heavy float connected with them, which, at every foot of its rise or fall, must alter the number of occultations made by the colored light. It must, also, at the turn of the tide, change the color of the light. It is sufficient for the present purpose to observe that the mechanism similar to that by which a clock strikes different hours, might be employed for

this purpose. The well in which the float is placed ought to be open to the tide by several small apertures; this would render the rise or fall of the float more uniform. Telescopes are used for observing light-houses. They have a small magnifying power, but a large aper-

ture. It is important that they should be as short as possible, for taking in a given visual angle. Possibly, those constructed with a lens of rock-crystal might be employed with advantage, but upon this subject, also, experiment must be made.

COMPARATIVE ELEVATION OF FOREIGN AND UNITED STATES' LIGHT-HOUSE TOWERS, ETC.

Names.	Height of tower.	Elevation above sea level.	Names.	Height of tower.	Elevation above sea level.	Names.	Height of tower.	Elevation above sea level.	Names.	Height of tower.	Elevation above sea level.
Feet.	Feet.		Feet.	Feet.		Feet.	Feet.		Feet.	Feet.	
UNIT. STATES.*											
Portland.....	45	80	Halsbrough....	67	100	IRELAND.			PRUSSIAN.		
Seguin.....	20	166	Cromer.....	88	274	Fastnet Rock....	75	151	Arcona.....	..	203
West Quoddy..	45	90	Chapel.....	49	115	Cape Clear.....	42	455	Jershöft.....	..	165
Monhegan Isl.	30	170	Spurn.....	90	100	Kinsale.....	42	274	Rixhöft.....	..	226
Owl's Head....	15	117	Flamborough..	72	214	Kinsale Harbor..	45	98	Hela.....	..	130
Cape Elizabeth.	50	140	Tynemouth....	75	154	Hook Tower.....	110	152	Brüsterört..	..	143
".....	50	140	SCOTLAND.			Tuskar.....	81	101	Memel.....	..	98
Dice's Head....	40	116	Inchkeith.....	45	220	Wicklow.....	58	250	SWEDISH.		
Eagle Isl. point	25	100	Isle of May....	57	240	".....	29	121	Orskär.....	..	113
Boar Island....	17	95	".....	86	110	Bally.....	42	184	Korsskär....	..	103
Boston.....	60	90	Bell Rock.....	100	90	Poolbeg.....	63	68	Landsort....	..	145
Thatcher's Isl.	37	90	Girdleness....	..	185	Carlingford(Rock)	111	101	Öland.....	..	180
".....	..	90	".....	..	113	Copeland.....	52	181	Kullen.....	..	238
Cape Cod.....	45	130	Buchanness....	100	180	Maldens.....	60	84	Winga.....	..	97
Gay Head.....	38	172	Kinnaird.....	57	120	".....	60	94	Marstrand..	..	292
Sankaty Head..	65	..	Skerries.....	..	160	Innistrahul....	26	167	NORWEGIAN.		
Juniper Island.	30	95	Tarbet.....	120	175	Tory Island.....	63	125	Færder.....	..	216
New London....	80	111	Noss Head....	..	175	Killybeg.....	41	104	Jumfrulund..	..	184
Eaton's Neck..	50	134	Dunnet.....	45	346	Eagle.....	..	220	Oxöe.....	..	140
Montauk.....	80	160	Pentland.....	30	170	Clare Island....	26	349	The Naze....	..	146
Sandy Hook....	77	90	".....	10	140	Loophead.....	49	269	Marköe.....	..	201
Navesink.....	40	243	Start.....	80	100	Kilkradan.....	26	183	Gunnarshong	..	129
".....	40	246	Sumburg.....	85	300	Skellig.....	26	372	Hödingsöe..	..	133
Cape Henlopen	72	150	Cape Wrath....	50	400	".....	26	178	Rondöe.....	..	168
Cape Henry....	72	120	Glass.....	80	130	This list comprises all the most important lights.			Tholmen....	..	131
Bald Head....	90	110	Barra Head....	..	680	BELGIUM.			Torningen..	..	100
Cape Hatteras..	90	95	Skerryvore....	..	150	Ostend (2d order fixed).....	72 1/2	87	Agdenes....	..	116
Cape Lookout..	93	95	Lismore.....	80	103	NETHERLANDS.			Villa Oen....	..	124
Charleston....	102	105	Rhins ofIslay..	80	150	Westkappel(fix'd)	..	146	RUSSIAN.		
Cape Romain..	65	87	Kintyre.....	28	297	Schouwen (1st order lens).....	..	170	Swalforort..	..	110
Tybee.....	95	100	Pladda.....	80	180	Goeree (fixed).....	..	148	Riga.....	..	100
Dry Tortugas..	65	70	Mull.....	70	325	Brille (fixed)....	..	208	Filsand.....	..	110
Cape Florida..	65	70	Little Ross....	..	175	Egmond-aan-zeo	..	125	".....	..	90
Cape May.....	68	88	Corsewall....	92	112	Kykduin.....	..	154	Dagerort....	..	588
ENGLISH LIGHTS			Calif of Man..	55	375	Vlieland.....	..	151	Odensholm..	..	111
Scilly.....	58	138	".....	40	282	Terschelling..	..	177	Pakerort....	..	146
Longships....	36	88	Douglas.....	65	104	HANOVERIAN.			Sourop.....	..	136
Lizard.....	45	221	ENGLAND—			Borcum.....	110	142	Narghen....	..	115
".....	45	224	WEST COAST.			Neuwark (fixed).	123	..	Revel.....	..	135
Eddystone....	72	72	St. Bees.....	38	883	HAMBURG.			".....	..	210
Start Point....	94	204	Walney.....	60	70	Skaw.....	..	69	Hogland....	..	382
Casquets.....	13	81	Black Rock....	118	118	Anholt.....	..	123	Outö.....	..	145
".....	28	81	Lesowe.....	50	300	Hesselöe.....	..	85	Hangaud....	..	107
".....	23	81	Lynns.....	36	128	Nakkhöved....	..	147	Parkaloud..	..	172
Portland.....	25	193	Skerries.....	54	117	Kronborg.....	..	113	Euskar.....	..	163
".....	70	131	Stack.....	59	201	Thunöe.....	..	100	Odessa.....	..	203
Needles.....	26	469	Bardsey.....	79	229	Stevensklint..	..	144	Pellinghe..	..	126
St. Catharine's	105	173	Small's (Rock).	..	70	Fakkebeirg....	..	128	Tarkankoot..	..	115
Beachy Head..	20	285	St. Ann's.....	44	192	Hameren.....	..	280	Khersonese..	..	109
Dunghness....	86	92	".....	17	159	Lubec.....	118	..	Inkerman....	..	420
South Foreland	41	372	South Bishop..	36	144				".....	..	360
".....	32	275	Caldy.....	40	210				Takli.....	..	168
North Foreland	70	184	Mumbles.....	56	114				Belosarisk..	..	176
Margate.....	70	85	Nash.....	90	167						
Orford.....	87	87	".....	45	122						
Lowestoft....	42	119	Flatholm.....	77	156						
".....	42	42	Lundy.....	89	540						
Halsbrough....	85	137	Trevose Head..	..	204						
			".....	..	129						

* This list of 34 towers comprises those of the greatest elevation of the entire number of stations (296) on the coasts of the United States. Of the remaining towers (say 261), the majority have no greater average elevation than 50 to 65 feet, while there are many having less than 30 to 40 feet. The European lists, on the contrary, comprise nearly all the sea-coast lights.

SCOTCH LIGHTS.

Of the 24 northern lights in 1884, the following were fitted as below:

Name.	No. of lamps & reflectors.	Name.	No. of lamps & reflectors.
Isle of May.....	24	Cape Wrath.....	20
Bell Rock.....	20	Island Glass....	19
Girdleness.....	28	Barra Head.....	21
Buchanness....	24	Lismore.....	18
Kinnaird Head..	21	Islay.....	24
Tarbetness....	18	Mull of Kintyre..	20
Pentland Skerries (2)	60	Mull of Galloway.	17
Sumburg Head..	28	One of only.....	9
Dunnet Head....	17	Six of only.....	12

"Of the 27 northern lights in 1845, there were 4 dioptric lights. (Reflector lights.) 1 fitted with 28 lamps and reflectors; 2 with 26; 4 with 24; 2 with 21; 2 with 20; 1 with 19; 3 with 18; 1 with 17; 1 with 16;

4 with 12. In 1851, nearly all the northern lights fitted previously with reflectors and Argand lamps had been changed to lens lights and the colza or rape-seed oil introduced. Perfectly formed parabolic reflectors, heavily plated with silver, and of large size, are employed in the lights of Great Britain, chiefly 24 and 21 inches in diameter. Reflectors are being changed as rapidly as possible for lenses, and the holophotal system of lenses and reflectors upon the plan of Mr. Thomas Stevenson of Edinburg.

"Of the sea-coast lights of Ireland in 1845, 1 was fitted with 40 lamps and reflectors; 1 with 28; 1 with 27; 2 with 26; 2 with 24; 2 with 23; 6 with 21; 2 with 20; 3 with 19; 1 with 17; 2 with 16; 3 with 15.

"Floating Lights.—1 was fitted with 24 lamps and reflectors; 2 with 16. Lens lights are being intro-

The lights of Algiers and the colonies are not included in this list. An imperfect list of these, up to the latest dates, may be found in *Pope's Yearly Journal of Trade*. Several important lights have been erected in Algiers during the past year (1854).

STATEMENT SHOWING THE NUMBER OF LENS LIGHTS IN EXISTENCE IN 1851. LENS APPARATUS.

Character of lights.	No.
In 1845 there were lights fitted with the first three orders of lens apparatus throughout the world.	95
Smaller catadioptric lights.....	115
Total lens lights.....	210
From 1845 to 1851 (six years), there were constructed in Paris and sold—	
1st order lens apparatus.....	65
2d " " ".....	20
3d " " ".....	36
4th " " ".....	37
Total in six years.....	158
Total of the first three orders of lens apparatus in use in 1851.....	216
Smaller lens lights.....	152
Total of lens lights in 1851.....	568

Books and Public Documents of Reference.—The following works, Reports, and Documents may be consulted upon the subject of light-houses, viz.:—Smeaton's Narrative of the Eddystone Light-house: London, 1793. Stevenson's Account of the Bell-Rock Light-house: Edinburgh, 1824. Mémoire sur un nouveau système d'éclairage des Phares; par M. A. Fresnel, Ingénieur au Corps Royal des Ponts et Chaussées, etc., etc.: Paris, 1822. Belidor, Architecture Hydraulique, tome iv., p. 151. Peclet, Traité de l'éclairage: Paris, 1827. Admiral de Rossel, Rapport contenant l'exposition du système adopté par la Commission des Phares pour éclairer les côtes de France: Paris, 1825. Treatise on burning instruments, containing the method of building large polyzonal lenses. By David Brewster, LL.D., F.R.S.: Edinburgh, 1812. Fanal di Salvore, nell'Istria, illuminato a gaz: Vienna, 1821. On the construction of polyzonal lenses and mirrors of great magnitude for light-houses and for burning instruments, and on the formation of a great national burning apparatus. By David Brewster, LL.D., F.R.S.: (Edinburgh Phil. Journal, 1823, vol. viii., p. 160.) Account of a new system of illumination for light-houses. By David Brewster, LL.D., F.R.S. Edinburgh, 1827. Saggio di osservazione, or observations on the means of improving the construction of light-houses; with an appendix, on the application of gas to light-houses. By Chevalier G. Aladini: Milan, 1823. Bodier Marcet, Notice descriptif d'un fanal à double aspect, etc., etc.: Paris, 1823. Bordier Marcet, Parabole soumise à l'art, ou Essai sur la catoptrique de l'éclairage: Paris, 1819. Description Sommaire des Phares et Fanaux allumés sur les côtes de France: Paris, 1845. Stevenson's British Pharos: Leith, 1831. The Light-houses of the British Islands, corrected at the Admiralty, to October, 1844. The Belgian, Netherlands, Hanoverian, Danish, Prussian, Swedish, Norwegian, Ionian Isles, and Russian Light-houses: London, 1843. The Light-houses, Beacons, and Floating Lights of the United States: Washington, 1845. Instruction pour le service des Phares Lenticulaires, Par Léonor Fresnel, ingénieur-en-chef, secrétaire de la Commission des Phares: Paris, 1835. Clauses et Conditions relatives à la fourniture, pendant trois années, de l'huile de colza nécessaire au service de l'éclairage des Phares et Fanaux des côtes de la Manche, 1839. Detail estimatif de la dépense annuelle de la fourniture en huile de colza nécessaire au service de l'éclairage des Phares et Fanaux des côtes de la Manche: Paris, 1839. Clauses et conditions de l'entreprise de l'éclairage des Phares et Fanaux des côtes de l'océan, et de la Méditerranée: Paris, 1838. Tableau de service de l'éclairage des Phares de l'océan: Paris, 1838. Detail estimatif des dépenses annuelles du service de l'éclairage des Phares et Fanaux des côtes de France: Paris, 1839, 1848. Sous détails du prix des diverses fournitures et des dépenses à faire pour le service de l'éclairage des Phares et Fanaux des côtes de France, 1838. Notice sur la

composition et les prix des Phares Lenticulaires, Catoptriques et Catadioptriques, parties optique et mécanique, par Létourneau et Cie., successeurs de MM. Soliel père, et François, jeune, constructeurs de Phares dioptriques, système de M. A. Fresnel, Rue des Poissonniers No. 24, près et hors la barrière Poissonnière, à Paris. Instruction sur l'organisation et la surveillance du service des Phares et Fanaux des côtes de France. Par Léonor Fresnel, l'ingénieur-en-chef, directeur, secrétaire de la Commission des Phares: Paris, 1842. Captain Leontey Spafareiff's New Guide for the Navigation of the Gulf of Finland: St. Petersburg, 1813. Collier, Guide des Marins: Paris, 1825. Stevenson's Sketch of Civil Engineering in America: London: 1838, p. 296. Report of the Select Committee of the House of Commons of Great Britain on Light-houses: Hansard, London, 1834. Report by a Committee of the Board of Commissioners, of the Northern Light-houses, on the Report of the Select Committee: Edinburgh, 1836. Report of the Commissioners of the Northern Light-houses on the illumination of Light-houses, by Alan Stevenson M. A.: Edinburgh, 1834. Report to the same board, on the Inchkeith Dioptric Light, by Alan Stevenson: Edinburgh, 1835. Report on the Isle of May Dioptric Light, by Alan Stevenson: 1836. Report on the Isle of May Light, by a Committee of the Royal Society (Professor Forbes, reporter): Edinburgh, 1836. Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences, tome 18, p. 25: Mémoire présenté à l'Académie des Sciences le 8 Janvier, 1844. Note sur l'Appareil Catadioptrique exécutée par M. François, jeune, pour le Phare Ecosais de Scherivore: Commissaires MM. Arago, Mathieu, Babinet. Report of the Select Committee of the House of Commons of Great Britain upon Light-houses: Hansard, London, 1845. Captain Denham, R. N. Mersey, and Dee Navigation: Liverpool, 1840. Encyclopædia Britannica, 7th edition: Edinburgh, 1842; vol. xx., article Sea-lights, p. 15. Circular: Instruction sur la Nouvelle Organisation de l'éclairage des Phares et Fanaux: Paris, le 25 Juin, 1839. Circular: the same subject: Paris, le 28 Juin, 1839. Circular: Phares et Fanaux; Contrôle des consommations en huile et de la situation des divers approvisionnements: Paris, le 17 Mars, 1845. Documents H. R., 2d session 25th Congress, Nos. 21, 27, 38, and 41. Documents Senate, 2d session 25th Congress, Nos. 138, 159, 428, 375, 506, 258. Document H. R., 3d session 25th Congress, No. 24. Documents Senate, 1st session 26th Congress, Nos. 474 and 619. Documents H. R., 2d session 27th Congress, Nos. 140, 193, 274, 811. Documents H. R., 3d session 27th Congress, Nos. 183 and 199. Documents H. R. 1st session 28th Congress, Nos. 38 and 62. Document Senate, 2d session 28th Congress, No. 166. Document Senate, 3d session 26th Congress, No. 190. Document H. R., 3d session 27th Congress, No. 282. Document Senate, 2d session 27th Congress, No. 983. Document H. R., 2d session 27th Congress, No. 740. Document Senate, 1st session 26th Congress, No. 58. Documents Senate, 3d session 25th Congress, Nos. 160, 181, 187. Documents Senate, 2d session 25th Congress, Nos. 189, 254, 15. Memoir of Colonel B. Ayrig, on the Light-houses at Barfleur and Ostend; Document H. R., No. 190, 3d session 25th Congress. American Review, vol. i., No. 3: New York, March, 1845. Captain Cotton's History of the Trinity House, London. Edinburgh Review, No. cxv., vol. 57, p. 180; No. cxxiii., vol. 61, p. 117; No. cxxiv., vol. 61, p. 279. Transactions of the Royal Society, London: Drummond Light. Nautical Magazine, vols. 1 to 15: 1832 to 1846. Encyclopædia Britannica, 8th edition: Edinburgh, 1856; vol. 6, article Burning-glasses. Annuaire pour l'an 1831, présenté au Roi, par le Bureau des Longitudes: Notices Scientifiques par M. Arago, p. 151 et p. 172. Ex. Document H. R., No. 14, 2d session 31st Congress. Rudimentary Treatise on

Light-houses, by Alan Stevenson, C. E., etc., etc., etc.: London, 1850. Account of the Skerryvore Light-house, with notes on the illumination of Light-houses, by Alan Stevenson, LL.B., F.R.S.E., M.I.C.E., Engineer to the Northern Light-house Board: Edinburgh and London, 1848. Report of the Franklin Institute on the Dioptric System of Augustin Fresnel, for the illumination of Light Houses: Journal Franklin Institute, 1849, 1850. Account of the Holophotal system of illuminating light-houses; being a description of the light of maximum intensity: by Thomas Stevenson, F.R.S.E., F.R.S.S.A., civil engineer: Edinburgh, 1851. Ex. document, first session, 30th Congress, No. 27. Ex. document, special session Senate, No. 1. Instruction pour le service des Phares lenticulaires: Paris, 1848. An account of the cast-iron light-house tower on Gibbs's Hill on the Bermudas: by Peter Paterson: London, 1850. An account of the construction and fitting up of the new light-house on the Moro castle at Havana, island of Cuba; first order lens apparatus. Franklin Institute Journal, July, 1847. Returns to Parliament of Northern lights for 1844, 1845, 1846, 1847, 1848, 1849, and 1850. Returns to Parliament of British Colonial lights for 1846, 1849, 1850, and 1851: London. Returns to Parliament of Trinity House Corporation lights for 1844, 1845, 1847, and 1848. Returns to Parliament of Irish lights for 1846 and 1848. Returns relating to the use of colza oil in Great Britain, three cahiers, 1846. Cast-iron light-houses, Nautical Magazine: June, 1850. Light-house economy, Nautical Magazine: May, 1851. Light-houses of the British colonies and possessions abroad: by Alexander Gordon, M. Inst. C.E., etc., London, 1848. Parliamentary report on shipwrecks: London, 1843. William Herschel on the reflection of light from surfaces of *speculum* metal, in the Philosophical Transactions, vol. 90, p. 64: London. An account of the construction and price of lenticular sea-lights; catoptric and catadioptric, optical and mechanical portions. W. Wilkins: London, 1851. *Traité élémentaire de Physique*, par E. Péclot: Paris, 1847."

Light-house System of the United States 1856-57.—The recommendations suggested in the Report of 1851, have been generally carried into effect. At the end of the year 1856, there were in operation, or nearly finished, in the United States, 509 light-houses, light-boats, etc. The following extracts from the Light-house Board Report, under date November 1, 1856, will show some of the important changes that have recently taken place:

"The general condition of the aids to navigation, at the date of the last report from this office, was such as to leave but little to be done toward completing the systematic plan of improvements of authorized aids to navigation along the coasts beyond the general routine duties of renovating and repairing existing structures, and of providing those aids for which appropriations had been then recently made. The system of buoyage and beaconage had been carried out as perfectly, and to as great an extent as the means provided for that object would admit; and it is believed that but few localities are known to exist requiring additional aids of that kind. Renovations and improvements of light-houses and light-vessels, in addition to the ordinary necessary repairs, have been made as extensively during the past year as the means provided and the period of time for doing so would permit. A large number of lens illuminating apparatus has been substituted for the old reflectors and fountain lamps, to the great benefit and economy of the service. Changes are still being made as rapidly as the lens apparatus is available, having in each case due regard to the condition of the old apparatus in the light-houses requiring renovation. New and improved illuminating apparatus has been placed in, or is in course of preparation for, such of the light-vessels as had not been refitted at the date of the last report. All

the aids to navigation, for which special appropriations have been made, have either been completed or commenced, except those condemned as being unnecessary by the proper authority, or those to the sites of which perfect titles have not been obtained. The late period of the year at which Congress made appropriations at its last regular session for new aids to navigation, rendered it impracticable to commence many of the works this season; but preliminary steps have been taken for commencing those at the north early next spring, and those at the south will be commenced and prosecuted as far as possible during the ensuing winter.

"The frequent inspections of the lights by inspectors and others, the instruction which the keepers have derived from them, and their acquirement of a better knowledge of their duties, as laid down in the printed instructions and directions, have resulted in a gradual but very perceptible improvement in the character, appearance, and reliability of lights along the entire coast. Notwithstanding the extraordinary severity of the past winter, and the consequent injury done to the buoys and light-vessels by the masses of floating ice on the coast from the capes of Virginia to the eastern boundary, it is believed but little serious inconvenience resulted to navigation on account of the temporary absence at times of these aids from their proper stations. The buoys which were driven from their stations were promptly replaced, by means of the buoy vessels, from the duplicates kept on hand at different points along the coast, and no efforts were spared to have the light-vessels repaired and towed by steamers to their stations with the least practicable delay. Since the light-vessels have been provided with service and spare moorings of the best description, but few of them have broken adrift from, or left even the most exposed positions. The supplies have been distributed to the lights on the Atlantic, gulf, and lake coasts, by three supply vessels employed, with as much regularity, and as satisfactorily as could be expected in a service, the successful performance of which depends so much upon the weather. The great diminution in the quantity of oil required to be delivered at the lights fitted with lens apparatus, will be the means, as the new apparatus is substituted for reflectors, of facilitating the operations of making deliveries; and more frequent and regular visits will be made without increasing the number or expense of the supply-vessels.

"The officer in charge of the light-house service on the Pacific coast was instructed to lose no time in commencing the erection of the light-house at Umpqua, in Oregon Territory, and it is expected, from the urgent instructions from this office, and the zeal and energy of the officer in charge, that it will be built as soon as the necessary materials can be collected at the site. The illuminating apparatus and lantern for that light reached the Pacific coast in July last. Instructions were also given to commence the building of the light at New Dungeness, in Washington Territory, and to take the necessary steps for commencing the one at Cape Flattery and at Blunt's Island with the least practicable delay. The Indian hostilities in Washington and Oregon Territories, and the difficulties attending, necessarily, operations at such distant and sparsely populated localities, will doubtless account for any seeming delay in the execution of these works. In the last report from this Board attention was invited to the low rate of compensation allowed to light-keepers under the existing law. By the fourth section of the act making appropriations for light-houses, etc., approved May 23, 1828, the Secretary of the Treasury is authorized and empowered to regulate and fix the salaries of the respective keepers of light-houses in such a manner as he shall deem just and proper, 'provided the whole sum allowed shall not exceed an average of \$400 to each keeper.' The Board would again respectfully renew its recommendation of last year, that a reasonable increase be made

to the present average rate of compensation to light-keepers, as the best means of insuring efficiency and true economy in the care and management of the light-houses on our extended, dangerous, and, in many portions, sparsely populated and inhospitable coast. The present average rate of compensation to the keepers of light-houses on the Pacific coast, as established by the appropriation bills, is \$800 per annum; but the difficulties which have been met with in obtaining the services of competent and reliable keepers for some of the lights at isolated, though important points, on that coast, and the frequent resignations of keepers after a short trial of the duties, lead to the opinion that the main cause of dissatisfaction with the service arises from insufficiency of the compensation in the present state of that part of the country."

The annual report of the United States Light-house Board, under date of November, 1857, recapitulates the progress of the work, viz.:

The systematic plan for an economical administration of the light-house establishment service, and for improving and perfecting those aids to navigation which had been authorized by the different acts of Congress subsequent to the passage of the law of August 7, 1789, which enacted "that all expenses which shall accrue from and after the fifteenth day of August, one thousand seven hundred and eighty-nine, in the necessary support, maintenance, and repairs of light-houses, beacons, buoys, and public piers, erected, placed, or sunk, before the passage of this act, at the entrance of or within any bay, inlet, harbor, or port of the United States, for rendering the navigation thereof easy and safe, shall be defrayed out of the treasury of the United States," was commenced by this board under the direction, orders, and instructions of the honorable Secretary of the Treasury on the 9th of October, 1852, under the authority of the act of Congress of 31st August, 1852.

At that time there were 325 light-houses and lighted beacons, and 38 light-vessels, making an aggregate of 343 light stations and 371 lights of all orders or classes, distributed in the waters and along the coasts of the Atlantic, Gulf, and northwestern lakes. A few buoys and beacons were placed along the coast and in the bays and harbors of the most prominent sea-ports, without system or plan, and often misleading instead of guiding the mariner. There were no lights or other aids to navigation at that time in the harbors or bays on the Pacific coast of the United States. There are now on the Atlantic, Gulf, Lake, and Pacific coasts of the United States, 548 light-house and light-vessel stations, with an aggregate of 602 lights; also 31 lights remaining either to be condemned according to law, or to be built in obedience to the directions of Congress, as soon as valid titles to the sites are obtained; making, after allowing for all probable condemnations and the discontinuance of such as time has shown to be wholly unnecessary for the general interests of commerce and navigation, an aggregate of 579 light stations, including light-vessels, and 627 lights. The buoyage and beaconage, at that time almost entirely neglected, is now, it is believed, unsurpassed in systematic arrangement, in reliability, and in economy of administration. The number of buoys and beacons may be put down, in round numbers, at not less than 4500 or 5000, with duplicates (and at most places along the coast spare buoys) to replace those to be taken up each spring and autumn for cleaning and painting, and to replace those removed or destroyed by ice or by storms, and by being run into and sunk by steamers and other vessels. The entrances to the principal harbors, and ship-channels leading to them, are marked by large nun and can buoys, made chiefly of iron, which have been introduced within the last four years. The previous reports from this office during the last five years have informed the department and Congress of the extremely dilapidated condition

of the towers and buildings, of the inferior quality of the illuminating apparatus, and of the wasteful expenditures of oil, wicks, chimneys, and other necessary supplies, owing to the large number of lamps employed at the different light-stations, many of which, with proper illuminating apparatus, would have incurred less than one-tenth the cost for far more brilliant and better adapted lights. The light-vessels were found to be in a state of inefficiency, some of them absent from their stations for months at a time, without substitutes to occupy their places, with an inferior description of lamps, consuming large quantities of oil without producing sufficiently powerful lights to be seen at the required distances, or an adequate return for the expense incurred.

It will appear that at the time the Light-house Board was organized under the act of August 31, 1852, there were but five lights at four stations fitted with apparatus that had long before been shown incontestably to be in point of economical effect in no case less than 4 to 1, as compared with the catadioptric or reflecting light system, and in point of power and brilliancy the proportion in percentage was 83 to 16—that is, the consumption of oil would not exceed one-fourth in the new system of what was actually required in the old, and at the same time the new system producing for the benefit of the navigator more than five times as much light with this one-fourth part of the oil required for the argand lamps and parabolic reflectors. But even this comparison is too favorable to the state of the light-house establishment as it existed up to 1853, inasmuch as the apparatus was not, of its kind, the best that could be made, and also from the fact that the great majority of lights (those in the bays, sounds, rivers, and harbors) were fitted with a much larger number of lamps than was necessary, even under that system, attributable, however, to the great inferiority of the apparatus, which, it would seem, it was attempted to remedy by increasing the number of lamps at each station. The estimates for 1853 gave 3093 lamps for the 331 light stations. Estimating at an average of 10 lamps for each new light authorized or built since that time, the number of lamps to be fed with oil, to be supplied with wicks and chimneys, and in proportion to be supplied with the various articles of expensive cleaning materials, would, under the old system, have amounted to the large number of 5560 lamps, requiring an annual supply of not less than 222,400 gallons of oil, computing the consumption at 40 gallons per lamp, which is the minimum rate. The cost of oil has been as high as \$2 per gallon at the warehouses of the manufacturer, and has been estimated for the year 1858-'59 at the rate of \$1 60 per gallon.

The lights at Southwest Pass and South Pass of the Mississippi should be discontinued after the completion of the Southwest Pass screw-pile tower, which was authorized August 4, 1854, and for which \$45,000 was appropriated, leaving about \$70,000 to be appropriated for its entire completion before commencing the work.

The annual appropriations for renovations, repairs, etc., of light-houses, within the period referred to, have been employed to the best possible advantage in rebuilding such light-houses as were in imminent danger of falling to pieces, and, where special appropriations had not been made for rebuilding them, in providing the necessary improved and economical apparatus, fitting the lanterns and towers for receiving them, and in placing them; and with those means alone the whole of the light-houses existing in January, 1853, have been provided with new apparatus of the most approved kind, which combines the greatest advantages yet discovered in the science of light-house illumination—of power, durability, and economy.—See *Light-house Reports*, 1853 to 1858; also *Coast Survey Reports*.

Lima, the capital of Peru, on the west coast of South America, lat. $12^{\circ} 2' 42''$ S., long. $77^{\circ} 7' 15''$ W. Population variously estimated; but may probably amount to from 50,000 to 60,000. In 1524, Pizarro, marching through Peru, was struck with the beauty of the valley of Rimac, and there he founded a city, and gave it the name of *Ciudad de los Reyes*, or City of the Kings. This Spanish name it retains in all legal deeds, but it is better known as Lima. Awful earthquakes occurred here, since solemnly commemorated by annual festivals, A.D., 1586, 1630, 1687, and October 28, 1746. In the last it was almost totally destroyed, as well as Callao.

Callao, the port of Lima, is about six miles west from the latter. The harbor lies to the north of a projecting point of land, in the angle formed by the small uninhabited island of San Lorenzo. Previously to the emancipation of Peru, and the other *ci-devant* Spanish provinces in the New World, Lima was the grand *entrepôt* for the trade of all the west coast of South America; but a considerable portion of the foreign trade of Peru is now carried on through Buenos Ayres, and the former is also in the habit of importing European goods at second hand from Valparaiso and other ports in Chili. The exports from Lima consist principally of silver, which is by far the most important article, copper ore, bark, soap, Alpaca wool, etc. Guano is found in large quantities on some parts of the coast of Peru, but is principally imported from some small islands, opposite to Pisco, where it is found in vast quantities. The great value of guano as a manure is now generally recognized, and it is hardly of less importance as an article of commerce, no fewer than 80,000 tons having been imported in 1847. It was partly, however, brought from Chili and other ports, as well as from Peru; but that from the latter is decidedly the best. The imports consist principally of cotton stuffs, linens, woolens, and hardware, principally from England; silks, brandy, wine, and quicksilver from Spain and France; stock-fish and flour from the United States, indigo from Mexico, Paraguay herb from Paraguay, spices, dye-stuffs, etc. Timber for the construction of ships and houses is brought from Guayaquil. For moneys, weights, and measures, see PERU.

Lime (Ger. *Kalk*; Fr. *Chaux*; It. *Calcina*, *Calce*; Sp. *Cal*; Rus. *Iwest*), an earthy substance of a white color, moderately hard, but which is easily reduced to powder, either by sprinkling it with water or by trituration. It has a hot burning taste, and in some measure corrodes and destroys the texture of those animal bodies to which it is applied. Specific gravity, 2.3. Calcium, the metallic basis of lime, was discovered by Sir H. Davy. There are few parts of the world in which lime does not exist. It is found purest in limestone, marble, and chalk. None of these substances is, however, strictly speaking, lime; but they are all easily converted into it by a well-known process; that is, by placing them in kilns or furnaces constructed for the purpose, and keeping them for some time in a white heat—a process called the burning of lime.—*Thomson's Chemistry*. The use of lime as mortar in building, has prevailed from the earliest antiquity, and is nearly universal. It is also very extensively used in this country, and in an inferior degree in some parts of the Continent and of North America, as a manure to fertilize land. But it is a curious fact that the use of lime as a manure is entirely a European practice; and that its employment in that way has never been so much as dreamed of in any part of Asia or Africa. Lime is of much importance in the arts, as a flux in the smelting of metals, in the shape of chlorate in bleaching, in tanning, etc. Lime and limestones may be carried and landed coastwise without any customs document whatever. Its consumption in this country is very great.

Lime (Fr. *Citronier*; Ger. *Citronen*; Hind. *Neem-*

bo), a species of lemon (*Citrus medica*, var. δ C.), which grows in abundance in most of the West India islands, and is also to be met with in some parts of France, in Spain, Portugal, and throughout India, etc. The lime is smaller than the lemon, its rind is usually thinner, and its color, when the fruit arrives at a perfect state of maturity, is a fine bright yellow. It is uncommonly juicy, and its flavor is esteemed superior to that of the lemon; it is, besides, more acid than the latter, and to a certain degree acrid.

Limerick, the principal city of west Ireland, and a parliamentary and municipal borough, river port, and county of itself, and capital county. Limerick, on an island in the Shannon, and on both banks of that river, being partly in county Clare, 50 miles from the Atlantic, and 25 miles N.N.W. Tipperary, with which town it communicates by railroad. Lat. $52^{\circ} 40'$ N., long. $8^{\circ} 35'$ W. Area of border, 70,000 acres. Population 1851, 55,268. Inhabited houses, 5,566. Population of town, 53,274. There are numerous flour mills, but manufactories are very limited; those of lace and fish-hooks are the principal; the trade, consisting of imports of British manufactures, coal, turf, continental and colonial produce, and of exports of corn, meal, butter, beef, pork, is great, and still increasing. Ships of 500 tons unload at the quays, and those of 1000 tons approach within 5 miles of the city, which by steamers on the upper Shannon and by canals, has also a water communication with Dublin.

Lime-tree. Lime-tree, Black Lime-tree, Smooth-leaved Lime-tree, Bass-wood. The *Tilia Americana*, like the European linden, is regarded as one of the finest of forest trees, and when cultivated, proves highly ornamental. In our native woods it often rises more than 80 feet in height, and frequently upward of four feet in diameter; and there is little doubt but, if cultivated, and judiciously treated, it would reach a size little inferior, if not equal, to the European species. Its body is straight, uniform, and surmounted with an ample and tufted summit. In winter it is readily recognized by the robust appearance of the trunk and branches, and by the dark-brown color of the bark on the shoots.

Geography and History.—The *Tilia Americana* is found in Canada and the northern parts of the United States. It becomes less abundant toward the south, except on the Alleghanies, where it is found quite at their termination in Georgia. It is profusely multiplied on the borders of Lakes Erie, Ontario, and in Maine, New Hampshire, and Vermont. It was cultivated in England by Miller, in 1752, but has not been very extensively distributed. The *Tilia Americana laxiflora* is said to abound from Maryland to Georgia, near the sea-coast. It was introduced into Britain in 1820, and is but sparingly cultivated in that country. The *Tilia Americana pubescens* belongs to the southern parts of the United States; Florida, Kentucky, and Texas. It is said to be the only variety found in the maritime parts of Carolina, Georgia, and Florida. Seeds of this tree were carried from this country to England by Mark Catesby, in 1726; but it does not appear to have been much cultivated. The *Tilia Americana alba* is not met with east of the River Delaware, but it is found in Pennsylvania, Maryland, Delaware, Virginia, Ohio, Kentucky, and Georgia. It is said, also, to grow on the River Santee, in South Carolina, and on the Mississippi. It is remarkable, that, although this variety was known in France in 1755, it should not have been introduced into England till 1811.

Properties and Uses.—The wood of the American lime-tree, when dry, weighs 35 pounds to a cubic foot. It is very white, when green, but becomes of a light-brown hue, when seasoned. It is soft, easily worked, and is often sawed into boards, which do not warp, like those formed of resinous trees. In the northern parts of the United States, and in the British prov-

inces, where the tulip-tree does not abound, it is used for the panels of carriage bodies, and the seats of chairs. In Kentucky and the western States, the wood of the white lime is often substituted for that of the white pine. In various parts of the country, it is turned into domestic utensils of various kinds; and is also carved into images for the heads of vessels, and other ornamental work. The young trees are sometimes cut, and employed as rails for rural fences; but they are not durable when thus exposed. The wood is almost useless as fuel, when green, being too full of sap, and of but little value when dry. The cellular integument of the bark is separated from the epidermis, and, after being macerated in water, is formed into ropes, after the manner of making them in Europe, of the other species. The bark was also employed by the Lenni Lenape Indians for making lines and ropes, as well as for covering their habitations. The outer bark of the *Tilia Americana* is rough and stringy, and the inner portion viscid and sweet. The twigs and buds are very glutinous when chewed, and afford considerable nutriment. In severe winters, when fodder is scarce, it is common for the farmers of the British American provinces, as well as those of Maine, New Hampshire, and Vermont, to drive their cattle into the woods in the morning, and fell a bass-wood, or other tree, on which they eagerly browse during the day.

The wood of the European lime-tree, or linden-tree, as compared with that of the oak, the ash, and other timber trees, holds but an inferior rank, and is only used in such works as are not to be exposed to the alternations of moisture and dryness. It is of a pale yellow, or white, close-grained, soft, light, and smooth; and, when seasoned, it is not liable to be attacked by insects. It is used by piano-forte-makers for sounding-boards, and by cabinet-makers for a variety of purposes, as it does not warp under atmospheric changes. It is turned into domestic utensils of various kinds, carved into toys, and turned into small boxes for apothecaries. The most elegant use to which it is applied, is for carving, for which it is superior to every other wood. Many of the fine carvings in Windsor Castle, Trinity College Library, at Cambridge, and in the Duke of Devonshire's mansion, at Chatworth, are of this wood. It is said to make excellent charcoal for gunpowder, even better than alder, and nearly as good as hazel, or willow. Baskets and cradles were formerly made from the twigs; and shoe-makers and glovers are said to prefer planks of lime-tree for cutting the finer kinds of leather upon. The leaves of this tree are collected in Sweden, Norway, Carniola, and Switzerland, for feeding cattle; though, in Sweden, Linnaeus says, they communicate a bad flavor to the milk of cows. One of the most important uses of the lime-tree, in the north of Europe, is that of supplying material for making ropes and mats; the latter of which enter extensively into European commerce. The Russian peasants weave the bark of the young shoots for the upper parts of their shoes, the bark of the trunks or large branches serving for the soles; and they also make of it, tied together with strips of the inner bark, baskets and boxes for domestic purposes. The outer bark of old trees also supplies them, like that of the birch, with tiles for covering their cottages. Ropes are still made of the bark of this tree in Cornwall, and in some parts of Devonshire. The manufacture of mats from the inner bark, however, is now chiefly confined to Russia, and to some parts of Sweden. Trees from six to twelve inches in diameter are selected at the beginning of summer, when, from the expansion produced from the ascending sap, the bark parts freely from the wood. The bark is then stripped from them in lengths of six to eight feet, and is afterward steeped in water till it separates freely in layers. It is then taken out, and divided into ribbons or strands, and hung up in the

shade, generally in the forest where it grows, and, in the course of the summer, is manufactured into mats, so much in use by gardeners and upholsterers, and for covering packages generally. The fishermen of Sweden make nets for catching fish, of the fibres of the inner bark, separated by maceration, so as to form a kind of flax or hemp; and the shepherds of Carniola weave a coarse cloth of it, which serves for their ordinary clothing. The sap of the lime-tree, drawn off in spring, and evaporated, affords a considerable quantity of sugar. The honey produced from the flowers is considered superior to all other kinds for its delicacy, selling for three or four times the price of common honey; and it is used in the preparation of medicine, and for making particular *liqueurs*, more especially *rosoglia*. This lime-tree honey is only produced at the little town of Kowno, on the River Niemen, in Lithuania, which is surrounded by an extensive forest of lime-trees, and where the management of the honey-bee occupies the principal attention of the inhabitants. The Jews of Poland produce a close imitation of this honey, by bleaching the common kind in the open air, during frosty weather. The fruit of the lime-tree had long been thought of little use, till M. Missa, of Paris, by triturating it, mixed with some of its flowers, succeeded in procuring a butter, perfectly resembling chocolate, both in taste and consistency; but, unfortunately, it was found that the lime-tree chocolate would not keep. It has been suggested whether some of the American varieties of *tilia* would not prove successful in this particular. In England, there are many ancient lime-trees, planted in towns, because, in olden times, their odor was considered as purifying to the air, and to be good against epilepsy.—BROWNE'S *Trees of America*.

Line, in Geometry, a quantity extended in length only without breadth or thickness: It is formed by the flux or motion of a point. *Line*, in the art of war, is understood as the disposition of an army ranged in order of battle with the front extended out so that it may be flanked. *Line of battle* is also understood as the disposition of a fleet in the day of engagement; on which occasion the vessels are usually drawn up as much as possible in a straight line, as well to gain and keep the advantage of the wind as to run the same board. *Horizontal line*, in Geography, and Astronomy, a line drawn parallel to the horizon of any part of the earth. *Equinoctial line* in Geography is a great circle on the earth's surface exactly at the distance of 90° from each of the poles, and of consequence bisecting the earth in that part. From this imaginary line the degrees of longitude and latitude are reckoned. In Astronomy, the equinoctial line is that circle which the sun seems to describe round the earth on the days of the equinox in March and September. *Meridian line*, is an imaginary circle drawn through the two poles of the earth and any part of its surface.

Linen (Ger. *Linnen*, *Leinwand*; Du. *Lynwaat*; Fr. *Toile*; It. *Tela*, *Panno*, *lino*; Sp. *Lienza*, *Tela de lino*; Rus. *Polotno*), a species of cloth made of thread of flax or hemp. The linen manufacture has been prosecuted in England for a very long period; but though its progress has been considerable, particularly of late years, it has not been so great as might have been anticipated. This is partly, perhaps, to be ascribed to the efforts that have been made to bolster up and encourage the manufacture in Ireland and Scotland, and partly to the rapid growth of the cotton manufacture—fabrics of cotton having to a considerable extent supplanted those of linen.

Linen is a fabric of very remote antiquity. Pharaoh arrayed Joseph in vestures of fine linen.—*Gen.*, xli. 42. This article was first manufactured in England by Flemish weavers, under the protection of Henry III. 1253. Before this period woollen shirts were generally worn. A company of linen weavers established itself in London, 1668, and the art of stain-

ing linen became known in 1579. A colony of Scots in the reign of James I., and other Presbyterians who fled from persecution in that country in the succeeding inglorious reigns, planted themselves in the north-east part of Ireland and there established the linen manufacture. It was liberally encouraged by the lord deputy Wentworth, in 1634. Hemp, flax, linen, thread, and yarn, from Ireland, were permitted to be exported duty free, 1696. This law gave rise to the subsequently improved state of the manufacture there. The Irish Linen Board was established in 1711; the Linen-hall, Dublin, was opened, 1728; the Board was abolished in 1828. Dunfermline in Fifehire, Dundee in Angusshire, and Barnsley in Yorkshire, are, in Great Britain, chief seats of the linen manufacture.

Spinning by the hand is now nearly unknown in Ireland, and the manufacture has disappeared from several parts of the country, where it had been largely introduced, leaving those who were partially dependent on it for subsistence, in a very depressed state. On the whole, however, there can be no doubt that the introduction of the factory system will be, in the end, most advantageous. Belfast has long been the great seat of the manufacture in Ireland, and there it is carried on in large factories furnished with the best machinery, and conducted on the most approved principle. In 1841, there were in the town and its immediate vicinity, 25 steam mills for spinning linen yarn, one of which employed 800 hands. In 1835, the exports of linen goods from Belfast, amounted to 53,881,000 yards of the value of £2,694,000. According to the official returns, there were in Ireland, in 1838, 40 flax-mills employing in all, 9,017 hands. The total average export of linens from Ireland during the 3 years ending with 1825, was 51,947,413 yards, of which 49,031,073 came to this country; the exports to all other parts being only 2,916,340. Since 1825, the trade between Ireland and Great Britain has been placed on the footing of a coasting trade; and linens being exported and imported without any specific entry at the custom-house, no account is kept of their quantity and value.

Scotch Linen.—In 1727, a Board of Trustees was established in Scotland for the superintendence and improvement of the linen manufacture. It is not easy to suppose that the institution of this Board could of itself have been of any material service; but considerable bounties and premiums being at the same time given on the production and exportation of linen, the manufacture went on increasing. Still, however, it did not increase so fast as cotton and some others, which have not received any adventitious support, until machinery began to be extensively employed in the manufacture; so that it is very doubtful whether the influence of the bounty has been so great as it would at first sight appear to have been. The regulations as to the manufacture, after having been long objected to by those concerned, were abolished in 1822; and the bounties have now ceased.

Dundee is the grand seat of the Scotch linen manufacture; and its progress there during the last few years has been so extraordinary, that the following details in respect to it may not be unacceptable. The manufacture appears to have been introduced into Dundee some time toward the beginning of last century; but, for a lengthened period, its progress was comparatively slow. In 1745 only 74 tons of flax were imported, without any hemp; the shipments of linen cloth during the same year being estimated at about 1,000,000 yards, no mention being made either of sail-cloth or bagging. In 1791, the imports of flax amounted to 2,444 tons, and those of hemp to 299 tons; the exports that year being 7,842,000 yards linen, 280,000 yards sail-cloth, and 65,000 yards bagging. From this period the trade began to extend itself gradually, though not rapidly. Previously to the peace of 1815, no great quantity of machinery was em-

ployed in spinning; but about this period, in consequence, partly and principally, of the improvement of machinery, and its extensive introduction into the manufacture, and partly of the greater regularity with which supplies of the raw material were obtained from the Northern powers, the trade began rapidly to increase. Its progress has, indeed, been quite astonishing; the imports of flax and hemp having increased from about 3000 tons in 1814 to 15,000 tons in 1830, and 40,000 tons in 1845, of which at least 30,000 tons were spun by the mills in the town, the rest being spun in the vicinity. The value of the exports of manufactured goods and yarn, from Dundee, amounts at present (1847) to from £1,600,000 to £1,700,000, a year.

AN ACCOUNT OF THE QUANTITIES OF THE DIFFERENT VARIETIES OF LINEN GOODS EXPORTED FROM DUNDEE DURING EACH OF THE FOUR YEARS ENDING WITH 1845.

Linen.	1831.	1835.	1844.	1845.
	Pieces.	Pieces.	Pieces.	Pieces.
Osnaburgs.....	96,957	139,460	78,816	77,629
Sheetings.....	131,660	165,959	263,345	281,904
Cotton bagging.....	65,592	80,158	10,524	952
Sundries.....	7,395	12,511	16,009	28,886
Sail-cloth.....	72,268	103,010	118,264	160,861
Sacking.....	45,593	57,177	174,759	182,317
Dowls.....	40,915	46,733	82,957	73,131
Sundries.....	11,550	18,709	24,887	29,230
Total.....	474,230	618,707	774,591	784,910

It is not easy to give any satisfactory explanation of the remarkable progress of the linen manufacture at Dundee. Something must be ascribed to the convenient situation of the port for obtaining supplies of the raw material; and more perhaps to the manufacture having been long established in the towns and villages of Strathmore, the Carse of Gowrie, and the northern parts of Fife, of which Dundee is the emporium. But these circumstances do not seem adequate to explain the superiority to which she has recently attained in this department; and however unphilosophical it may seem, we do not really know that we can ascribe it to any thing else than a concurrence of fortunate accidents. Nothing, in fact, is so difficult to explain as the superiority to which certain towns frequently attain in particular departments of industry, without apparently possessing any peculiar facilities for carrying them on. But from whatever causes their pre-eminence may arise in the first instance, it is very difficult, when once they have attained it, for others to come into competition with them. They have on their side established connections, workmen of superior skill and dexterity in manipulation, improved machinery, &c. Recently indeed the advantages in favor of old establishments have been, to a considerable extent, neutralized by the prevalence of combinations among their workmen; but it is to be hoped that means may be devised for obviating this formidable evil.

Value of Manufacture.—There are no means by which to form an accurate estimate of the entire value of the linen manufacture of Great Britain and Ireland. Dr. Colquhoun estimates it at £15,000,000; but there can not be the shadow of a doubt that this estimate was, at the time, absurdly exaggerated. In the last edition of this work we estimated the annual value of the manufacture at £7,500,000. But it has increased very rapidly in the interval, principally through the great extension of the exports of France, and its value is at present (1847) certainly not under, if it do not exceed £10,000,000 or £12,000,000. But taking it at the former amount, and setting aside a third part of this sum for the value of the raw material, and another third for profits, wages of superintendence, wear and tear of capital, coal, &c., we have £3,333,000 to be divided as wages among those employed in the manufacture. And supposing each individual to earn on an average £24 a year, the total number employed would be about 133,000. It may be thought, perhaps, that £24 is too low an estimate for wages; and such, no

doubt, would be the case were not Ireland taken into the average. But as many persons are there employed in the manufacture at very low wages, we believe that £24 is not very far from the mean rate.

The rapid increase in the exports of linen goods and yarn, especially the latter, to France (see for an account of this increase the article HAVRE), though latterly they have declined, is wholly a consequence of their comparative cheapness in this country, occasioned by our superior and cheaper machinery. And if the French really wish to rival us in this department of industry, they should endeavor, by reducing or repealing the oppressive duties on iron and machinery imported into France (which would, of course, proportionally reduce the cost of the spinning-mills and power-loom factories), to place their manufacturers and spinners on something like the same footing as ours. In this way they might, perhaps, have some chance of rivaling us; but the attempts that have recently been made to bolster up the manufacture by means of duties, must necessarily fail, and will have no effect but to perpetuate exploded practices, and to promote the trade of smuggling. The British exports of linen goods are also increasing to most other countries, as well as to France; and we are gaining on the Germans in most markets that are equally accessible to both. Hence the decrease of late years in the export of linens from Hamburg. The improvement in the manufacture of damasks and table-linen generally, which is principally carried on in Dunfermline and Kirkcaldy, has been quite as striking as in the other departments of the trade, especially since the introduction of the Jacquard mounting. In fact, table-linen is now shipped from this country for Germany; so that the duty of 10 per cent. on the importation of German damasks and such like fabrics might be reduced or repealed without the measure having any injurious influence over the manufacturer.

TABULAR VIEW OF THE FOREIGN EXPORTS OF LINEN GOODS FROM GREAT BRITAIN FOR EACH YEAR FROM 1821 TO 1852, BOTH INCLUSIVE.

Years.	Value.	Years.	Value.	Years.	Value.
1821....	21,981,465	1832....	21,655,478	1843....	23,702,052
1822....	2,192,772	1833....	2,289,020	1844....	4,075,476
1823....	2,095,574	1834....	2,579,658	1845....	4,104,936
1824....	2,442,440	1835....	3,208,778	1846....	3,706,212
1825....	2,130,705	1836....	3,645,097	1847....	3,619,772
1826....	1,489,647	1837....	2,606,752	1848....	3,292,701
1827....	1,895,186	1838....	3,566,435	1849....	4,103,463
1828....	2,000,033	1839....	4,238,452	1850....	4,845,030
1829....	1,885,831	1840....	4,123,964	1851....	5,067,096
1830....	1,926,256	1841....	4,320,021	1852....	5,867,371
1831....	2,301,803	1842....	3,872,300		

STATEMENT SHOWING THE IMPORTS OF LINEN INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

DISTRICTS.	Linen bleached or unbleached.	Hosiery and articles made on frames.	Manufactures not specified.
Passamaquoddy.....	\$1,952	.....	.....
Portland & Falmouth	18,733	.....	.....
Gloucester.....	.....	.....	\$206
Boston & Charlestown	641,293	.....	464,159
Niagara.....	96	.....	.....
Oswegatchie.....	1	.....	4
New York.....	7,557,773	\$4,858	601,897
Champlain.....	.....	.....	798
Cape Vincent.....	.....	.....	10
Philadelphia.....	973,463	.....	229,971
Delaware.....	81	.....	.....
Baltimore.....	125,899	11	14,571
Charleston.....	42,733	24	2,671
Savannah.....	.....	.....	400
Mobile.....	14,862	.....	3,343
Key West.....	859	.....	.....
New Orleans.....	381,168	.....	12,861
Texas.....	803	.....	997
Saluria.....	.....	28	.....
Brazos de Santiago..	893	.....	63
Detroit.....	1,615	.....	20
Michilimackinac.....	26	.....	.....
San Francisco.....	87,295	.....	2,466
Total.....	\$9,549,600	\$4,921	\$1,334,942

Consumption of Foreign Linens.—According to the returns of the imports and entries of foreign linens

for the four years ending with 1844, the consumption of foreign linens in England is quite inconsiderable; the real or declared value of those entered for home consumption in 1844 could hardly amount to £40,000.

Until recently, this manufacture has been neglected in the United States. Lately, however, mills have been erected to test the profitability of linen manufacture. In Fall River, Mass., new mills have been built, but not long enough in operation to give any statistics.

Linseed. The manufacture of linseed oil has greatly increased within a few years, encouraging the importation of seed from Calcutta and other places. The imports of linseed into Boston from Calcutta for the year 1856 were 1,887,944 bushels, valued at \$1,841,719. The imports of linseed into the United States for the year 1856, amounted to 1,696,294 bushels, of which 1,691,875 bushels were from the East Indies.

By the official returns it appears that the imports into the United Kingdoms in 1856 amounted to 1,180,179 quarters of linseed, and to 264,919 of rape-seed, showing a very great increase in both cases as compared with the previous annual arrivals. Annexed are the official returns for the last 16 years, during which the consumption of the manufactured articles has made rapid strides.

Years.	Linseed.	Rape-seed.
	Quarters.	Quarters.
1841.....	363,461	89,442
1842.....	367,700	65,685
1843.....	470,539	87,097
1844.....	616,947	65,884
1845.....	656,793	47,677
1846.....	506,141	87,662
1847.....	489,512	47,523
1848.....	799,650	79,970
1849.....	626,495	29,480
1850.....	608,934	107,029
1851.....	680,471	82,394
1852.....	799,402	146,230
1853.....	1,035,335	86,815
1854.....	825,543	103,155
1855.....	756,950	162,353
1856.....	1,180,179	264,919

Liquorice (Ger. *Suessholz*; Fr. *Régliasse*, *Racine douce*; It. *Regolizia*, *Logorizia*, *Liquirizia*; Sp. *Regaliz Orozuz*), a perennial plant (*Glycyrrhiza glabra*), a native of the south of Europe, but cultivated to some extent in England, particularly at Mitcham in Surrey. Its root, which is its only valuable part, is long, slender, fibrous, of a yellow color, and when fresh very juicy. The liquorice grown in England is fit for use at the end of 3 years; the roots, when taken up, are either immediately sold to the brewers' druggists, or to common druggists, by whom they are applied to different purposes, or they are packed in sand, like carrots or potatoes, till wanted. The roots of liquorice have been introduced into the middle and southern States, and have thus far been successful. From the increasing demands for this root, it is probable that it could be cultivated profitably. The amount annually imported (and manufactured), is valued at about \$300,000.

Liquorice Juice (*Succus Liquoritiæ*), popularly *black sugar*, the inspissated juice of the roots just mentioned. Very little of this extract is prepared in Britain, by far the larger part of our supply being imported from Spain and Sicily. The juice obtained by crushing the roots in a mill, and subjecting them to the press, is slowly boiled till it becomes of a proper consistency, when it is formed into rolls of a considerable thickness, which are usually covered with bay leaves. This is the state in which we import it. Most part of it is afterward redissolved, purified, and cast into small cylindrical rolls of about the thickness of a goose quill, when it is called *refined liquorice*. It is then of a glossy black color, brittle, having a sweet mucilaginous taste. It is used in the *materia medica*, particularly in colds, etc.—*Thomson's Chemistry*.

Lisbon, the capital of Portugal, situated on the north bank of the River Tagus, the observatory of the fort being in lat. $38^{\circ} 42' 24''$ N., long. $9^{\circ} 5' 50''$ W. Population about 240,000. The Moors are said to have given the name of Lisboa to this city when they conquered it, A.D. 716. It was made the capital of Portugal by Emanuel, 1506. Lisbon was almost destroyed by an earthquake, November 1, 1755. See *Earthquakes*. It became a point of the late war, and the court fled to the Brazils, November, 1807, in which month (the 30th) the French army under Junot entered Lisbon, and held possession of it until the battle of Vimeira, in which they were defeated by the British, under Sir Arthur Wellesley, August 21, 1808. Insurrection at Lisbon, August 21, 1831. Massacre at Lisbon, June 9, 1834. See PORTUGAL.

Port.—The harbor, or rather road, of Lisbon is one of the finest in the world, and the quays are at once convenient and beautiful. Port St. Julian marks the northern entrance of the Tagus. It is built on a steep projecting rock. There is a light-house in the centre, 120 feet above the level of the sea. At the mouth of the Tagus are two large banks, called the North and South *Chachops*. There are two channels for entering the river; the north or little, and the south or great channel, exhibited in the ordinary charts. On the middle of the South Chachop, about $\frac{1}{2}$ miles from Fort St. Julian, is the Bugio fort and light-house, the latter being 66 feet in height. The least depth of water in the north channel on the bar is 4 fathoms, and in the south, 6. The only danger in entering the port arises from the strength of the tide; the ebb running down at the rate of 7 miles an hour; and after heavy rains, when there is a great deal of fresh water in the river, the difficulty of entering is considerably augmented. When at such periods, there is a strong wind from the sea, there is a complete break all over the bar; vessels moor up and down the river with open hawse to the southward. In some parts they may come within 200 yards of the shore, being guided by the depth of water, which, from nearly 20 fathoms in mid-channel, shoals gradually to the edge.

Trade, etc.—Lisbon is one of the best situated commercial cities of Europe. But notwithstanding this circumstance, the excellence of the port, and the command of the navigation of the Tagus, her commerce is comparatively trifling. Lisbon has a royal manufactory of fire-arms and powder, and a cannon foundry; other manufactories comprise silks, porcelain, paper, soap, jewelry, and trinkets; none of these, except the last, is in a flourishing state. The despotism, intolerance, and imbecility of the government have weighed down all the energies of the nation. The law and police being alike bad, there is no adequate security. Assassination is very frequent. Industry of all sorts is, in consequence, paralyzed; and since the independence of Brazil, commerce has rapidly declined. Formerly Lisbon had about 400 ships, of from 300 to 600 tons burden, employed in the trade with South America. But at present there are not above 50 ships belonging to the port engaged in foreign trade; and, of these, the average burden does not exceed 150 tons! The produce of Portugal sent to foreign countries, is almost entirely conveyed to its destination in foreign ships. The trade between Lisbon and Cork, is, we believe, the only exception to this; it being principally carried on in Portuguese vessels, which take salt from St. Ubes, and bring back butter in return. About 200 small craft belong to the city, which are exclusively employed in the coasting trade. There are neither price currents, shipping lists, nor official returns of any kind, published in Lisbon. The principal exports are lemons and oranges— which, however, are very inferior to those of Spain; wine, particularly Lisbon and Calcavella; wool, oil, tanned hides, woolen caps, vinegar, salt, cork, etc.

Besides colonial produce, the principal imports consist of cotton, woolen, and linen goods; hardware, earthenware, dried fish, butter, corn, cheese, timber and deals, hemp, etc.

Money.—Accounts are kept in rees, 1000 of which = 1 milree. In the notation of accounts the milrees are separated from the rees by a crossed cypher (θ), and the milrees from the millions by a colon; thus, Rs. 2:700 θ 500 = 2,700 milrees and 500 rees. The crusado of exchange, or old crusado = 400 rees; the new crusado = 480 rees; the testoon = 100 rees; and the vinten or vintem = 20 rees. The gold piece of 6,400 rees = 85s. 11d. sterling; the gold crusado = 2s. 3d.; and the milree, valued in gold = 67 $\frac{1}{2}$ d. sterling. It appears, however, from assays made at the London mint, in 1812, on modern silver crusados, that the average value of the milree in silver may be estimated at 60d. or 5s. sterling. **Weights and Measures.**—The commercial weights are, 8 ounces = 1 marc; 2 marcs = 1 pound or arratel; 22 pounds = 1 arroba; 4 arrobas = 1 quintal; 100 lbs. or arratels of Portugal = 101.19 lbs. avoirdupois = 45.895 kilogrammes = 94.761 lbs. of Hamburg = 92.918 lbs. of Amsterdam. The principal measure for corn, salt, etc., is the moyo, divided into 15 fanegas, 30 alquieiras, 240 quartos, 480 selemis, etc. The moyo = 23.03 Winchester bushels. The principal liquid measure is the almude, divided into 2 potes, 12 canadas, or 48 quartellos; 18 almudes = 1 baril; 26 almudes = 1 pipe; 52 almudes = 1 tonelada. The almude = 4.37 English wine gallons; and the tonelada = 227 $\frac{1}{2}$ ditto. A pipe of Lisbon is estimated by the custom-house (British) at 140 gallons; and this pipe is supposed to be 31 almudes. A pipe of port is 160 gallons, divided into 21 almudes of Oporto. Of measures of length, 2 pes = 3 palmos = 1 covado, or cubit; 1 $\frac{1}{2}$ covados = 1 vara; 2 varas = 1 branga. The pe or foot = 12.944 English inches; 100 feet of Portugal = 107.8 English feet; the vara = 43.2 English inches. For freight a last is reckoned at 4 pipes of oil or wine, 4 chests of sugar, 4000 lbs. of tobacco, 3,600 lbs. of shumac. But from one place in Portugal to another, a tonelada is reckoned at 52 almudes of liquid, or 54 almudes of dry goods. Coffee is sold per arraba; cotton, indigo, and pepper, per lb.; oil, per almude; wine, per pipe; corn, per alquiere; salt, per moyo. Grain, seed, fish, wool, and timber are sold on board. Weights and long measures are the same throughout Portugal; but there is a great discrepancy in the measures of capacity. The almude and alquiere, at the principal places, are in English measures as follows: Lisbon almude = 5.37 gals. English wine measure; Lisbon alquiere = 8.07 gals. Winchester measure; Oporto almude = 6 $\frac{1}{2}$ gals. wine measure; Oporto alquiere = 8 $\frac{1}{2}$ gals. Winchester measure; Faro almude = 4 $\frac{1}{2}$ gals. wine measure; Faro alquiere = 3 $\frac{1}{2}$ gals. Winchester measure; Figuiera almude = 5 $\frac{1}{2}$ gals. wine measure; Figuiera alquiere = 3 $\frac{1}{2}$ gals. Winchester measure; Vianna almude = 6 $\frac{1}{2}$ gals. wine measure; Vianna alquiere = 3 $\frac{1}{2}$ gals. Winchester measure.

Bank of Lisbon.—This establishment was founded in 1822. Its capital consists of about £700,000 sterling, divided into 7000 shares. The shareholders are not liable beyond the amount of their shares. The bank discounts bills not having more than 3 months to run, at 5 per cent. Its dividends, at an average of the 3 years ending with 1831, were about 6 per cent. It enjoys the singular but valuable privilege of having its claims on all estates paid off in full, provided the estate amounts to so much; other creditors being obliged to content themselves with a division of the residue, if there be any.

Port regulations.—All vessels entering the Tagus are obliged to come to anchor off Belem Castle, where there is an office at which they must be entered, their cargoes declared, from whence they come, and whether the cargo be intended to be landed in Lisbon or not; if not, the master applies for "*franquia*," that is, for

leave to remain 8 days in the port for the purpose of disposing of the cargo or of departing with it. Two custom-house officers are then sent on board, and if the cargo is to be discharged at Lisbon, the vessel proceeds to the custom-house, when the master makes entry, delivering the manifest and bills of lading attached to the certificate of the Portuguese consul, at the port of lading, in order to identify the cargo. The officers put on board at Belem are then relieved by two others, who remain until the vessel be discharged and visited by the custom-house searcher. The port dues have to be paid in different offices; but the vessel is not subject to any other charges.

All goods sent on board for exportation must be accompanied by a permit from the custom-house. When the clearances are obtained, the papers are presented by the master, or the ship's agent, to the authorities at Belem, who deliver the signal the vessel is to hoist when going to sea.

There is no regular warehousing and bonding system at Lisbon. All imported dry goods are allowed to remain in the custom-house stores 2 years, and liquids 6 months, without being charged warehouse rent, provided they are intended for consumption, and pay the duties accordingly. But if, after that period, they are then taken out to be exported, they are charged 2 per cent. duty.

Port Charges.—On a foreign ship of 800 tons entering the port of Lisbon, with a general or mixed cargo, and clearing out with the same:

Royal passport.....	Rees.	7,200
Petty expenses on entering at the		
Custom house, about.....	700	
Anchorage.....	500	
Ballast clearance.....	400	
Tonnage, 100 rees per ton.....	30,000	
Lights, 60 rees per ton.....	18,000	
Contribution to board of trade.....	1,500	
Petty charges.....	750	
Bill of health.....	240	
Total.....	56,260=£11	6s. 0d.

Vessels coming with a cargo, or in ballast, and departing in ballast, pay 200 rees per ton lights, or 4 times as much as if they sailed with cargoes. Vessels coming with a cargo, and sailing with the same cargo, pay no tonnage duty.

Commission.—The ordinary rates of commission are, on the sale of goods, $2\frac{1}{2}$ per cent.; *del credere*, $2\frac{1}{2}$ per cent.; on the value of goods landed from a vessel putting in to effect repairs, 1 per cent.; on ship's disbursements, 5 per cent.

Insurances are effected to a trifling amount. There is one national company for effecting insurances; but it enjoys little credit.

Tares are not regulated by any certain rule. Those allowed are generally those invoiced or marked on the package. See *Annuaire du Commerce Maritime*, p. 290; KELLY's *Cambist*; CONSULS' *Answers to Circular Queries*, etc.

Litharge (Ger. *Glätte*, *Glätte*; Du. *Gelit*; Fr. *Litharge*; It. *Lithargio*; Sp. *Almarraga*, *Litharjio*; Rus. *Glet*; Lat. *Lithargyrium*), an oxyd of lead in an imperfect state of vitrification. Most of the lead met with in commerce contains silver, from a few grains to 20 ounces or more in the fodder: when the quantity is sufficient to pay the expense of separation, it is *refined*; that is, the metal is exposed to a high heat, passing at the same time a current of air over the surface: the lead is thus oxydised and converted into *litharge*, while the silver, remaining unchanged, is collected at the end of the process.—THOMSON'S *Chemistry*. Litharge is used for various purposes in the arts, by potters, glass makers, painters, etc.

Litre. The French standard measure of capacity in the decimal system. The litre is a cubic decimetre; that is, a cube, each of the sides of which are 3.937 English inches: it contains 61.028 English cubic inches, and is, therefore, rather less than our quart.

Four and a half litres are a close approach to the English imperial gallon.

Live Oak. Under acts of Congress, the President of the United States is authorized to take measures for the protection of the live oak timber growing on lands owned by the United States in Florida and elsewhere. Persons cutting or removing live oak, or red cedar, and other timber belonging to the United States (without authority), are subject to imprisonment for twelve months and to a fine: the vessels engaged in such unlawful removal are subject to forfeiture, and the captain to a fine of \$1000. (Act of 1881.) See OAK.

Liverpool, a borough of England, in Lancashire, and one of the greatest commercial towns in the world, is situate on the Mersey, along which it extends for nearly six miles. For five miles of this distance a line or chain of docks runs parallel with the river, and from these docks, at intervals, streets extend at right angles, tolerably direct, to the extremity of the boundary. These are crossed by streets more or less parallel to the river; but as the town grew up rather suddenly, no great attention was paid to regularity. The boundary line, from where it touches the river at the south, to its termination at Bootle Bay, embraces a circle of about eight miles. As yet the extremities are imperfectly filled up, but in some places the houses extend beyond the line.

History.—Local archaeologists have been eager to invest the town with the dignity of a remote antiquity; but their labors have not been very successful. In *Doomsday Book* the name does not appear, although sites within its present boundary are mentioned. Mr. Picton, in his admirable paper on "Ancient Liverpool," contends that the place mentioned as *Smedone* must have represented Liverpool, and that *Smedone* is identical with Smithdown, now one of the southern streets. This, however, is not likely, for Smithdown was remote from ancient Liverpool, and on the south side of the Pool, then called Mersey Sea. The name has been a subject of unsatisfying contention; for although the final syllable *pool* is derived from the locality, *liver* is of doubtful origin. In early times the town was called indifferently *Lirpool*, *Litherpool*, *Lithpool*, and *Liferpole*. *F* and *v* were commutable; but, in the most ancient records, the name is written indifferently *Lithepol* and *Lithepole*. Mr. Baines, in his *History of Liverpool*, is disposed to think that *lithe* must be accepted for sea, and thus the derivation will be the pool on the sea. Originally the place was only a small fishing village; for the Mersey, up to a very recent period, was remarkable for its supply of salmon and other fish. The first authentic record of the town is found in a charter of Henry II., in the year 1173, declaring that the estuary of "the Mersey shall be for ever a port endowed with all the liberties belonging to a port of the sea, and that the men of Lyrpul, near to Toxteth, may come and go from each side of the sea with their ships and merchandise free and without obstruction." It is supposed that his majesty in this charter had reference to the conquest of Ireland; for, not content with the bestowal of a barren privilege, he actually erected dwellings called burghage houses, the tenants of which were the primitive freemen of Liverpool. These houses continued to yield a rental to the crown up to the time of Elizabeth, and constituted, to a great extent, the dwellings of the inhabitants. In 1207 King John granted the town a charter, as follows: "Know ye, that we have granted to all our faithful subjects who have taken burghage houses at Liverpool, that they may have all the liberties and free customs in the town of Liverpool which any other free borough upon the sea has in our territories. And, therefore, we command you, that, securely and in our peace, you may come thither to receive and dwell in our burghage houses; in witness whereof, we transmit to you these our letters patent. Witness—Simon de

Pateshill, at Winchester, the 28th day of August, in the 9th year of our reign."

The first palpable step in advance taken by the town was in the reign of Charles II. A new world had then been opened to the enterprise of the old; and Liverpool invited to its port such trade as was created by the infant manufactures of Lancashire, Yorkshire, and Cheshire. As the plantations in America increased, so did the trade of Liverpool; and from an early period her merchants took a prominent part in the slave-trade. She sent out ships to Africa, conveyed their live burdens to America and the West Indies, and in return brought back to the Mersey the sugar, tobacco, and other produce of those regions. The English merchants and ship-owners had competed successfully with the Spaniards and Portuguese; but it was not until 1708 that the first slavers was despatched from the Mersey. Having entered on the trade, they soon participated largely in it; for, in 1752, 101 Liverpool merchants were engaged in the slave traffic, 135 appertaining to London, and 157 to Bristol. The number of Liverpool vessels engaged in the American and West India trade was 106, and of these 88 were slavers. In due time this trade greatly increased; and that it enriched Liverpool may be inferred from the fact that the greater portion of the West Indies belonged to merchants of this place. This trade, however, like every other, was affected by war. It almost ceased during the French war of the 18th century, and the merchant ships unemployed were eagerly converted into privateers. At first the gain was immense; but subsequently the French predominated, and Liverpool suffered severely by the privateers of the enemy. On the return of peace trade was resumed, but not with any accelerated force until the inventions of Arkwright and others created the cotton trade in Lancashire. The war of American Independence had the worst possible effect on the prosperity of Liverpool; and the late war of the French Revolution at first operated most adversely. Still, two circumstances obviated these bad effects. The great increase of population and trade in the United States of America created a demand for British manufactures, and these manufactures had nearly all to pass from the Mersey, which received in return the raw produce indirectly paid for them. At the close of the war Liverpool was still advancing, but not so rapidly as within the last 25 years. The population of the old borough in 1801 was 77,000; in 1811, 94,000; in 1821, 118,000; in 1831, 203,000; in 1841, in the new borough, 286,000; and in 1851, 376,000. The usual rate of increase from 1851 to 1857 will have augmented the population to more than 400,000, and latterly it has gone on in accelerated ratio. Proof of this is derived from the fact, that the number of new houses erected in 1855 was 1355, while in 1856 it was 1703.

Trade of the Port.—In 1750 Liverpool had only 20 sailing vessels engaged in the continental trade; now she has treble that number, and fleets of screw steamers, which constantly visit every port in the Mediterranean, and render the Mersey a medium of communication between France, Holland, Belgium, and America. The East Indies, too, have been opened to Liverpool enterprise. Since the alteration in the Company's charter, and in the amount of business done in the East, Liverpool stands next to London. Another trade she has almost monopolized—the Australian trade. Her clipper vessels are admitted to be the finest in the world, and, in consequence, the emigration to the antipodes is the largest from this port, and the return cargoes the heaviest; for necessarily the freights are low, as more goods go than come, and cheapness induces shippers to send their wool here rather than to London, although London is the principal market. But Liverpool is now creating a wool market of her own. The first authentic account of the number of vessels entering the port dates from

1577; and the following returns indicate at a glance the progress of the trade:

Years.	Vessels.	Tonnage.	Dock duties.
1757.....	1,371	....	£2,386
1780.....	2,261	....	8,523
1800.....	4,746	450,000	28,379
1820*.....	7,277	805,033	94,412
1830.....	11,214	1,411,964	151,359
1840.....	15,998	2,445,708	178,196
1850.....	20,457	8,586,837	211,743
1856.....	20,586	4,320,618	326,801

* This is the first year when goods were rated as well as ships.

The custom-house revenue collected in the port was, in 1855, £3,576,344, 2s. 8d., and 1856, £3,824,177, 14s. 8d., showing an increase of £247,843, 12s. The last quarter of 1856 exhibits a comparatively further increase of £118,581 over the corresponding quarter of 1855. The town dues now produce more than £120,000 a year, and there is another impost called light-dues, which produced in 1856 £99,965, against £86,182 in 1855. These light-dues go altogether to the Board of Trade, and are disposed of as passing tolls. The greater number of vessels frequenting the port comes from the United States of America; for the great trade of Liverpool is in cotton, and the cotton supplied comes in largest quantities from the southern States of the Union. The following returns will give a correct idea of the progress of this trade. "In 1770 there were imported into Liverpool 6037 bags 3 bales 3 barrels of raw cotton; but since the improvements of Hargreaves and Arkwright in spinning, the trade has greatly increased. Thus the importation was, in

	Pounds.		Pounds.
1780.....	6,766,613	1830.....	261,961,452
1800.....	56,010,732	1840.....	583,400,000
1820.....	143,672,655	1850.....	685,600,000

In 1856 there were imported into Liverpool 2,028,850 bales of cotton. A large trade is carried on in flour, grain, and corn. The imports of these in 1856 were:

Wheat.....	qrs. 1,370,152	Flour....	sacks 282,704
Corn.....	" 897,407	"	" barrels 1,188,260

Two thirds of all this came from the United States. The quantity re-exported is small. The total sugar imported in 1856 was 76,000 tons, of which 17,840 tons were from the British West India plantations, 18,555 from Bengal, and 19,996 from Brazil.

Docks.—For carrying on a trade so large great facilities are afforded. In 1715 the first dock was constructed with an area of 3½ acres. This sufficed for 42 years; but, at an interval of 18 years, another dock appeared, and within a period of 50 years five additional docks were made. In 1826 the corporation filled up the primitive dock in order to erect the custom-house on its site. In consequence of this proceeding, and the rapid increase of buildings, none of the docks run inland, but all extend along and parallel with the river. From 1830 to 1842, eight new docks were opened; and from 1845 to 1852, not less than 14 docks and basins have been added. The total water space afforded by the docks is 200 acres; and the quays measure 14 miles in length. The river wall is 5 miles 200 yards long; the total area of the dock estate is 712 acres. No other port can present any thing to be compared with the Liverpool Docks. One serious inconvenience, however, is, that running along the river wall, they interrupt the approaches to the ferries, and when the gates are open, stop intercourse for a short time altogether. To remedy this, an immense landing stage, constructed by Mr. Cubitt, has been placed at St. George's Pier, and this has not only promoted the comfort of passengers, but served as a very popular promenade. Another landing-stage has been constructed, three times the size of the former one, at a cost of £150,000. Means, too, are under consideration for facilitating approach to the ferries. Until 1826 there were few warehouses on the dock quays. The warehouses are in general up the town, or at some dis-

tance from the quays. The inconvenience of this provoked a lively agitation among the merchants, and, through the great exertion of several members of the council, the Albert Dock was constructed and surrounded, like St. Katherine's Dock, London, by piles of ponderous warehouses. Stanley Dock has since also been surrounded by warehouses, and the new Wapping Docks are to have the same advantage. Extensive as the dock accommodation is, it is no longer adequate to the wants of the port. Several new docks are projected at the north end, on land reclaimed from the bay, under a certain understanding with the Earl of Derby; and in 1854 the corporation became purchasers of the Birkenhead Dock and estates for a sum of £1,143,000. But these docks, to be rendered available, will require a further outlay of £800,000. The constitution of the dock management has undergone some changes. The corporation having been the first projectors and supporters of the docks, were recognized as trustees of the estate. Under the act 51st George III. the committee consisted of 21 persons, all members of and appointed by the common council, and this continued until the passing of the act 6th George IV., 1825, when the dock rate-payers were first directly represented by returning 8 members to the committee; the council electing 13, including the chairman, and the council having a veto on the proceedings. This continued until the act of 1851, by which a committee of 24 is appointed—12 by the council and 12 by the dock rate-payers. The committee appoint their own chairman and deputy-chairman; the chairman being, however, one of the 12 members elected by the council. The council have also a veto on the proceedings of the committee by a majority of two thirds. The care of the port is divided between the dock committee and the corporation. The latter constructed the light-house and built the Wallasey embankment, to prevent the sea encroaching on the district and impairing the channels leading to the river; and the former provide buoys, and a marine surveyor whose duty it is to note the shifting of the sandbanks, and give notice to the pilots and mariners.

Ship-building.—There are several eminent ship-builders in Liverpool, but of late the greater part of the trade has been in repairing and in the building of iron ships. There are five building-yards on the Lancashire side of the river, and three on the other side. Those on the Cheshire side combine graving with building docks, and, although there are several graving docks on the Liverpool side, they are found to be inadequate to the wants of the port. As might be expected, a large trade is carried on in ships. In 1856, 694 ships, of 828,991 tons were sold, and of these one fifth were bought by foreigners. Liverpool is a place of trade rather than of manufactures, and those manufactures which exist are more for the supply of local wants than for general purposes. An attempt was made to establish a cotton manufactory, but without success.

Next to London, the corporation of Liverpool is decidedly the richest in the kingdom. At first her income was miserably small, and centuries passed without improving it; but in 1777 the corporation purchased from Lord Molyneux, for £2250, his reversion, expectant on the determination of his lease in the town dues, and these rose gradually from £20,000 a year to £120,000. The income of the corporation is also derived from land within the town, from markets, and from police rates—the whole estimated at £268,000 for 1857. The claim to the town dues has often been questioned. A case was tried in the Court of King's Bench in 1831, and decided in favor of the corporation; but in 1856 government brought in a bill to abolish them. Great resistance being offered, a select committee was appointed; it heard evidence, but made no report. The people of Manchester are opposed to

these dues, and it is believed that ultimately there must be a compromise. The dues consist of small sums, hardly appreciable in amount, collected on merchandise. The dock-rates belong to no special interest, being devoted not to demands, but simply to interest of money borrowed, and the cost of working.

With the increase of trade and wealth, the mode of doing business underwent a great change. At the beginning of the present century the merchant had his counting-house and warehouse behind his dwelling-house. These mansions may now be seen in Hanover-street, Duke-street, Seel-street, and others, bearing still, in their architecture, evidence of cost and taste, although now mostly devoted to meaner uses. 80 years later the mercantile offices began to gather about the Exchange; mean buildings were transformed into lordly edifices; and as much as £600 or £800 a year is now (1857) paid for a suite of rooms on a single floor. Such rents are, of course, temptations to an increase of buildings; and in 1856 as much as £47 a square yard has been paid for building-land near the Town-hall. All the opulent classes live in the environs. Up to the year 1833 New Brighton was a sand-hill, without a single tenement on it; now it is covered with villas. The villas cover the hills and crowd the gorges, which extend from the Red Noses to Rock Ferry; while on the Lancashire side, Aigburth, Allerton, Woolton, Wavertree, Old Swan, Knotty Ash, West Derby, Walton, Crosby, Litherland, Waterloo, and Bootle, have been entirely occupied by the mansions and villas of the opulent people of Liverpool.

The mercantile offices which have sprung up around the Exchange are remarkable for their architectural beauty, as well as for their convenience. Water-street, from the Town-hall to George's Dock, presents a succession of such buildings. On the site of the old tower, the last remnant of the Castle, have been erected the Tower Buildings—a mass of counting-houses, ornamented toward the river by an Italian tower, now used as a semaphore telegraph station. Fenwick-street, at right angles with Water-street, presents a succession of buildings equally beautiful. The Corn Exchange is in Brunswick-street; and in the same street is the Union Bank, a perfect architectural *bijou*; and a little further on, in James-street, at the top of Fenwick-street, is the North and South Wales Bank, equally entitled to notice. In Castle-street stands the Branch Bank of England, constructed by Mr. Cockerell; and in the same street the Commercial Bank Buildings, erected after Mr. Cunningham's design. North John-street, which runs parallel with Castle-street, is entirely devoted to offices; and in Dale-street are situated the Royal Bank Buildings, remarkable for boldness of design. The Custom-house, which stands at the foot of South-street, was built after a design of John Foster, at the cost of £283,804. The estimate was £175,000; and although the building is an imposing one in appearance, it is regarded as not fully answering its purposes. In front of it is a bronze statue of Huskisson, by Gibson. Part of the custom-house is used as a dock-office, and another part of it as the post-office; for neither of which is the building particularly suitable. To the east of the custom-house is the Sailors' Home, which is admirably adapted to the intended object of the Marine Board, and for a sailors' dépôt.—E. B.

Breakwater for Liverpool.—Mr. George Rennie, C. E., has projected for the port and harbor of Liverpool a jetty or breakwater, from the Black Rock Point, at the entrance of the Mersey, on the Cheshire shore, in a line nearly parallel to the Lancashire shore. The breakwater will take a north-westerly direction and curve outward toward the Victoria Channel, across the Brazil and Burbo Banks, for a distance of upward of three miles, when it will be ended by a light-house. Simultaneously with the construction of a breakwater, it is proposed to continue the line of quay wall of the

north docks, in a direction curving inward as far as Formby Point, so as to assimilate the form of the entrance into the Mersey to a trumpet's mouth. The advantages proposed by this plan are said to be: 1. The general improvement of the entrance into the harbor, by which the flow and ebb of the tides will be more regular and more favorable to the deepening and preserving the low water channels, and to their navigation generally. 2. The protection of the north docks (occasionally inaccessible in stormy weather), and of the Bootle and Formby shores from the violent effects of the prevailing winds. 3. The acquisition of nearly 2000 acres of valuable land, which will be inclosed between the new wall and that shore. 4. The valuable conversion of from 30,000 to 40,000 acres of sand-banks now rapidly accumulating and rising above low water, along the whole shore in front of the Lea-

sowes, from the Rock Point to the entrance of the Dee estuary at Hilbre Point. 5. The prevention from entering into the harbor of vast quantities of drift sand which come from the North Burbo banks, in south-westerly gales. 6. The prevention of many shipwrecks and loss of lives and property which occur annually. 7. The reduction to a minimum of the great expenses now incurred in maintaining the lights, buoys, steam-tugs, dredgers, etc., now employed in preserving the direction and depth of the sea channels, and which heavily tax the 40,000 ships and 4,000,000 of tons carried by them annually. Finally, the preservation and improvement of the port and harbor of Liverpool, and which, like its neighbor, the estuary of the Dee, will be entirely ruined if prompt measures be not taken to prevent it. The following table shows the grain trade of Liverpool:

COMPARISON OF IMPORTS OF GRAIN, ETC., INTO LIVERPOOL FOR TWELVE MONTHS ENDING 30TH SEPTEMBER, 1852, 1853, 1854, 1855, AND 1856.

Years.	WHEAT.			FLOUR.			OATS.	
	Coastwise and Ireland.	Colonial.	Foreign.	British.	Foreign.	Colonial.	British.	Foreign.
1852.	Quarters. 20,090	Quarters. 21,730	Sacks. 475,799	Sacks. 81,534	Barrels. 140,597	Barrels. 930,453	Barrels. 73,055	Quarters. 186,223
1853.	22,147	47,651	880,770	85,550	207,836	1,080,658	85,525	211,943
1854.	25,565	43,021	761,676	27,474	172,591	1,281,449	77,707	167,094
1855.	89,235	4,943	891,007	51,411	304,303	70,674	11,168	157,211
1856.	53,817	66,357	1,017,905	52,526	231,447	1,016,587	121,345	182,271

COMPARISON OF IMPORTS OF GRAIN, ETC., INTO LIVERPOOL.—Continued.

Years.	BARLEY.		BEANS.		PEAS.		OATMEAL.	INDIAN CORN.	INDIAN CORN MEAL.
	British.	Foreign.	British.	Foreign.	British.	Foreign.	British.	Foreign.	Foreign.
1852.	Quarters. 35,528	Quarters. 28,896	Quarters. 18,189	Quarters. 118,836	Quarters. 7,763	Quarters. 4,911	Loads. 277,812	Quarters. 211,526	Barrels. 712
1853.	22,103	18,024	9,915	105,631	13,958	9,100	345,838	304,360	223
1854.	29,069	25,253	9,535	76,247	7,532	8,543	324,621	814,003	37,440
1855.	16,944	10,391	3,894	126,433	3,635	9,823	851,220	765,299	4,832
1856.	12,396	14,139	2,776	127,218	16,949	16,593	237,710	775,394	8,699

COMPARISON OF EXPORTS OF GRAIN, ETC., FROM LIVERPOOL FOR TWELVE MONTHS ENDING 30TH SEPTEMBER, 1852, 1853, 1854, 1855, AND 1856.

Years.	WHEAT.		FLOUR.		OATS.		BARLEY.	
	Coastwise and Ireland.	Foreign.	Coastwise and Ireland.	Foreign.	Coastwise.	Foreign.	Coastwise.	Foreign.
1852.	Quarters. 127,607	Quarters. 1,657	Sacks. 42,463	Barrels. 346,932	Barrels. 29,246	Quarters. 750	Quarters. 987	Quarters.
1853.	180,468	6,311	72,098	228,440	26,634	2,396	12,580	627
1854.	116,258	4,994	53,410	293,367	13,320	2,064	13,527	7,252
1855.	88,477	972	69,514	87,937	16,535	1,043	85,153	2,989
1856.	108,932	17,324	55,107	33,520	39,093	893	42,629	6,061

COMPARISON OF EXPORTS OF GRAIN, ETC., FROM LIVERPOOL.—Continued.

Years.	BEANS.		PEAS.		OATMEAL.	INDIAN CORN.	INDIAN CORN MEAL.
	Coastwise.	Foreign.	Coastwise.	Foreign.	British and Foreign.	Coastwise.	British and Foreign.
1852.	Quarters. 12,068	Quarters.	Quarters. 419	Quarters.	Quarters. 185,574	Quarters.	Barrels. 8,494
1853.	3,174	218	365	185	18,747	123,412	191
1854.	7,758	63	242	104	33,743	482,501	2,277
1855.	6,698	69	370	615	8,911	592,995	14,857
1856.	11,917	683	4,989	968	7,737	861,088	5,195

For a full exhibit of the commerce of Great Britain, including a statement of that of Liverpool, see articles GREAT BRITAIN AND ENGLAND.

Livre. From about the year 800, in the reign of Charlemagne, to the year 1103, in that of Philip I., the French *livre*, or money unit, contained exactly a pound weight of twelve ounces (*poids de marc*) of pure silver. It was divided into 20 sols, each of which, of course, weighed 1-20th part of a pound. This ancient standard was first violated by Philip I., who diminished considerably the quantity of pure silver contained in the sols. The example, once set, was so well followed up, that in 1180 the *livre* was reduced to less than a fourth part of its original weight of pure silver. In almost every succeeding reign there was a fresh diminution. "La Monnoye," says Lé Blanc, "qui est la plus précieuse et la plus importante des mesures, a changé en France presque aussi souvent que nos habits ont changé de mode." And to such an extent had the process of degradation been carried, that, at the epoch of the Revolution, the *livre* did not contain

a seventy-eighth part of the silver contained in the *livre* of Charlemagne. It would then have required 7885 *livres* really to extinguish a debt of 100 *livres* contracted in the ninth or tenth century; and an individual who, in that remote period, had an annual income of 1000 *livres*, was as rich, in respect to money, as those who, at the Revolution, enjoyed a revenue of 78,850 *livres*. (PAUCOT, *Traité des Mesures, Poids, etc.*, p. 693.) It was not to be expected that degradations originating in the necessities, the ignorance, and the rapacity of a long series of arbitrary princes, should be made according to any fixed principle. They were sometimes the result of an increase in the denomination of the coins, but more frequently of a diminution of the purity of the metal of which they were struck. A degradation of this kind was not so easily detected; and, in order to render its discovery still more difficult, Philip of Valois, John, and some other kings, obliged the officers of the mint to swear to conceal the fraud, and to endeavor to make the merchants believe that the coins were of full value. (LÉ BLANC, p. 212.)

Sometimes one species of money was reduced, without any alteration being made in the others. No sooner, however, had the people, in their dealings, manifested a preference, as they uniformly did, for the money which had not been reduced, than its circulation was forbidden, or its value brought down to the same level with the rest. By an enactment of Congress, the commercial value, in the United States, of a livre tournois of France, is fixed at 18½ cents.

Lloyd's, a number of rooms in the Royal Exchange of London, frequented by underwriters, merchants, ship-owners, ship and insurance brokers, and others, chiefly for the purpose of obtaining shipping intelligence, and of transacting business connected with marine insurance. The principal room is that of the Underwriters, in which two enormous ledgers lie constantly open, the one containing notices of *speaking*, or ships spoken with, and arrivals of vessels at their various destinations; the other recording disasters at sea. All intelligence is entered immediately upon its reception, without removing the ledgers from their places, in order that they may at any moment be inspected by those interested in their contents. At the inner end of the room is an ingenious piece of mechanism, by means of which the indications of an anemometer and an anemoscope are inscribed every hour in the 24, by a couple of pencils, upon a sheet of white paper. The advantage to the underwriter, in the conduct of his business, of this information respecting the force and the direction of the wind, can scarcely be over-estimated. The underwriters are persons who, for a premium, grant an indemnity to merchants against risks by sea; and they are so called from the custom of *writing* their names *under*, or at the foot of the policies of insurance. The method of *effecting* an insurance at Lloyd's is the following: When a broker receives an order to insure interest to a certain amount in a particular ship, he writes upon a slip of paper the name of the vessel, the master's name, the nature of the voyage, the subject to be insured, and its value, and any other information which the circumstances of the case may require. He then offers the risk to different underwriters until the value of the interest to be insured is exhausted, each underwriter subscribing his name opposite to the amount he engages to insure, and all agreeing to accept a uniform premium. The insurance is now virtually effected; the stamped policy being afterward extended from this slip. This distribution of the risk among many individuals is, of course, very conducive both to the solvency of the underwriter and to the security of the insured. The number of underwriters is under 200; but some idea of the immense amount of insurance business done at Lloyd's may be derived from the fact, that the value of the interest annually insured at the present is estimated at about £40,000,000. No person is permitted to transact business at Lloyd's as an underwriter or insurance broker until he shall have been duly admitted as a member, and shall have paid an entrance fee. Communicating with the Underwriters' Room is the Chart Room. Here a valuable collection of charts, and shipping intelligence as originally received, are carefully arranged, so as to be at all times easy of access. In this room also lie, for the use of members, four ledgers, in which the names of ships are arranged in alphabetical order, each name having under it all the information possessed regarding the vessel. The Merchants' Room is a place of resort for general news; it is, in fact, a news or reading-room. The Captains' Room is employed as an auction-room for sales of ships, etc. Every person who enjoys the privilege of frequenting Lloyd's pays a fixed annual subscription.

The shipping intelligence received at Lloyd's is furnished by agents, who are appointed for the purpose; and as there is scarcely a port of any consequence where one is not resident, their number is very large.

The information which each transmits to headquarters is regular, accurate, and complete. It is furnished by means of *letters*, signed by the agents, and by means of the newspapers, and shipping lists which are published at the various ports; the intelligence thus received consisting not only of lists of vessels which had arrived at and which had sailed from the particular ports, together with their accomplished and intended voyages, and of casualties which had occurred at or near the ports, but also of notices of ships spoken with, and of casualties at sea, furnished by vessels. No salary attaches to the office of agent for Lloyd's; the labor involved being amply recompensed by the business which it commands, and by the credit which the appointment confers upon its holder as a person of worth and respectability. The intelligence, besides being made known to the members of Lloyd's by means of the ledgers, of which we have already spoken, is published every afternoon in *Lloyd's List* for diffusion over the country. The management of Lloyd's lies with the subscribers, who select a committee from their number for the purpose, called the "Committee for managing the affairs of Lloyd's." This committee appoints the agents and the officials of the establishment. The expenses connected with the establishment are defrayed by the fees and annual subscriptions.

The designation *Lloyd's* originated with a person of the name of Lloyd, who kept a coffee-house in Abchurch Lane, Lombard-street. From the vicinity of this house to the Old Royal Exchange, it speedily became a rendezvous of merchants for news, and for the transaction of business. It was afterward removed to Pope's Head Alley, and thence again, in 1774, to the Royal Exchange. After the destruction of the Exchange, in 1838, by fire, which originated in Lloyd's, the business was carried on in the South Sea House, in Old Broad-street, where it remained until the opening of the present Royal Exchange, in 1844, when it was finally removed to its present splendid apartments. Similar establishments exist in our principal sea-ports. *Lloyd's Register of British and Foreign Shipping*, a volume published annually, and furnishing information respecting the nature of vessels, their class, place where built, materials, owners, captains, age, repairs, etc. The ships are registered according to the reports of salaried agents, appointed at various ports. The office of this *Register* is in White Lion Court, Cornhill, and is quite distinct from Lloyd's of the Exchange.—E. B.

Loadstone (Ger. *Magnet*; Du. *Magneet*; Fr. *Aimant*; It. *Calamita*; Sp. *Iman*; Rus. *Magnit*; Lat. *Magnes*). M. Haüy observes, that the ores in which the iron contains the least oxygen without being engaged in other combinations, form natural magnets; and he calls the *loadstones* of commerce, which are found in considerable masses in Germany, Sweden, Norway, Spain, Italy, China, Siam, the Philippine Isles, Corsica, and Ethiopia, *oxydulated iron*. The loadstone is characterized by the following properties: A very strong action on the magnetic needle. Specific gravity 4.2457; not ductile; of a dark gray color, with a metallic lustre; primitive form, the regular octahedron; insoluble in nitric acid. This singular substance was known to the ancients; and they had remarked its peculiar property of attracting iron; but it does not appear that they were acquainted with the wonderful property which it also has of turning to the pole when suspended, and left at liberty to move freely. Upon this remarkable circumstance the mariners' compass depends—an instrument which gives us such infinite advantage over the ancients. It is this which enables the mariner to conduct his vessel through vast oceans out of the sight of land, in any given direction; and this directive property also guides the miner in subterranean excavations, and the traveler through deserts otherwise impassable. The natural loadstone

has also the quality of communicating its properties to iron and steel; and when pieces of steel properly prepared are touched, as it is called, by the loadstone, they are denominated artificial magnets. See COMPASS. Its virtues were but indistinctly known to the ancients, yet its attractive quality had been taken notice of from very remote times.—*Sturmius*. Aristotle assures us that Thales made mention of it, and Hippocrates speaks of it under the name of stone that attracts iron; and Pliny was struck with its attractive power. The polar attraction of the loadstone was, it is said, known in France before A. D. 1180; but this honor is accorded to Roger Bacon about 1267. The Italians discovered that it could communicate its virtues to steel or iron; and Flavio Giojo, of Amalfi, was the inventor of the mariners' compass.—*Haydn*.

Loans. Those for the service of the crown of England were generally borrowed at Antwerp until after the reign of Elizabeth. In 1559, the queen borrowed £200,000 of the city of Antwerp, to enable her to reform her own coin, and Sir Thomas Gresham and the city of London joined in the security.—*Rapin*. The amount of the English loans, during four late memorable periods, was, viz.:

Seven years' war, 1755—1768.....	£52,100,000
American war, 1776—1784.....	75,500,000
French Revolutionary war, 1793—1802... ..	168,500,000
War against Bonaparte, 1803—1814.....	206,800,000

Besides the property tax. In 1813 were raised two loans of 21,000,000 and 22,000,000; and it deserves to be recorded, that a subscription loan to carry the war against France was filled up in London in 15 hours and 20 minutes, to the amount of £18,000,000, December 5, 1796.

Lobos, or Seal Islands, two groups of guano islands in the Pacific Ocean, lying off the coast of Peru. The landward and northern group are about 20 miles west of the main land, in S. lat. $6^{\circ} 29'$, W. long. $80^{\circ} 53'$, and consist of one large island, 5 miles long by 2 in breadth, with several rocky islets. The seaward group lie about 38 miles from the main land, in S. lat. $6^{\circ} 56'$, W. long. $80^{\circ} 55'$, and consist of two islands of about the same size, viz., 1 mile long by 1 in breadth, and separated from each other by a narrow channel. Both belong to Peru, although unsuccessful attempts have been made at various times by private companies to obtain possession of them. On the north group there is estimated to be a deposit of guano of about 400,000 tons, and on the other islands of more than 200,000 tons. The only inhabitants are those employed in the shipment of the manure, and consisting chiefly of Indians and Chinese.

Lobster (Fr. *Ecrevisse*; Lat. *Cancer*), a fish of the crab species. The Scilly Islands and the Land's End abound in lobsters, as well as several places on the Scotch shores, particularly about Montrose. But the principal lobster fishery is on the coast of Norway; whence it is believed about 1,000,000 lobsters are annually imported into London. Those of Heligoland are, however, esteemed the best; they are of a deeper black color, and their flesh is firmer than those brought from Norway.

Loch. The Scotch term for lake, which see.

Lock, in Internal Navigation, is a part of a canal included between two floodgates, by means of which a vessel is transferred from a higher to a lower level, or from a lower to a higher.

Lock, Locks (Ger. *Schlösser*; Du. *Sloten*; Fr. *Serrures*; It. *Serrature*; Sp. *Cerraduras*, *Cerrajos*; Rus. *Samki*), a well-known instrument, of which there are infinite varieties. A great deal of art and delicacy is sometimes displayed in contriving and varying the wards, springs, bolts, etc., and adjusting them to the places where they are to be used, and to the occasions of using them. From the various structure of locks, accommodated to their different intentions, they acquire various names, as stock locks, spring locks,

padlocks, etc. The grand difficulty to be overcome in making a lock is to construct it so that it may not be opened by any key except its own, nor admit of being picked; it should also be possessed of sufficient strength and durability, and not be too complex. Many ingenious contrivances have been proposed for the attainment of the desired security—several of which are possessed of considerable merit. Common door-locks are now usually inserted in the wood, instead of being, as formerly, screwed to it; and when so placed are called *mortise* locks.

Locust-tree. The *Robina pseudacacia*, or common locust, from the valuable properties of its wood, and the beauty of its foliage and flowers, ranks among the first trees of the American forests. In favorable situations, it attains a height of 80 or 90 feet, and sometimes exceeds four feet in diameter; but ordinarily, it does not surpass half of these dimensions. On the trunks and large limbs of old trees, the bark is very thick, and deeply furrowed, but on young trees, not more than two or three inches in diameter, it is armed with strong, hooked prickles, which disappear altogether as they grow old; and in some varieties they are wanting even when young.

The common locust naturally abounds in the country west of the Alleghanies, as far as Arkansas. It is also plentiful in the Canadas, but is not found indigenous in the United States east of the river Delaware, nor does it grow spontaneously in the maritime parts of the middle and southern States, within the distance of 50 to 100 miles from the sea. It is planted, however, for purposes of utility and ornament, from Maine to Georgia. It was observed by Michaux, that "the locust forms a much smaller portion of the American forests than the oaks and walnuts, and that it is nowhere found occupying tracts, even of a few acres exclusively." Hence the tree, where it is met with, is often spared by settlers, as being ornamental, and comparatively rare, and old specimens, which formerly belonged to the aboriginal forests, are frequently seen growing in the midst of cultivated fields.

Of all American trees that have been cultivated in Europe there is no one, of which so much has been said and done, as the locust. It was among the first plants that were carried to that country, and it has been more extensively propagated than any other, both in Britain and in France, where it has been alternately extolled and neglected; and even at the present day, though the beauty of its foliage and flowers is universally admired, and the valuable properties have enthusiastically been praised and acknowledged, it is not considered as holding a high rank as a timber-tree, or as being generally planted with a view to profit.

The wood of the locust, which is commonly of a greenish-yellow color, marked with brown veins, is very hard, compact, and susceptible of a brilliant polish. It possesses great strength, with but little elasticity; and its most valuable property is that of resisting decay longer than almost any other species of wood. When newly cut, it weighs 63 pounds 3 ounces to a cubic foot; half dry, 56½ pounds, and when quite dry, only 48½ pounds, or according to others, only 46 pounds. According to M. Hartig, the German dendrologist, its value for fuel, when compared with that of the beech (*Fagus sylvatica*), is as 12 to 15. For duration, he places it next below the oak (*Quercus robur*), and next above the larch (*Larix europæa*), and the Scotch pine (*Pinus sylvestris*). Barlow, in Wither's *Treatise*, gives the strength of locust timber, as compared with other woods, as follows:—Teak (*Tectona grandis*), 2462; Ash (*Fraxinus excelsior*), 2026; Locust (*Robina pseudacacia*), 1867; Oak (*Quercus robur*), 1672; Beech (*Fagus sylvatica*), 1556; Norway spar (*Abies excelsa*), 1474; Riga fir (*Pinus sylvestris rigensis*), 1108; Elm (*Ulmus campestris*), 1013. From some experiments made at Brest, in 1823, the weight of the lo-

cust wood was found to be one sixth heavier than that of the English oak; its strength as 1427 to 820; and its elasticity as 21 to 9. By experiments made in the yard of the royal naval college, at Woolwich, it appears that the lateral strength of the locust timber, in resisting fracture, is greater than that of the British oak, in the proportion of 100 to 75. From all these experiments, however widely they may differ in their results, we may safely conclude, that sound, well-seasoned locust timber "is heavier, harder, stronger, more rigid, more elastic, and tougher than that of the best English oak," and consequently is more suitable for trenails. Michaux remarks that, "if the trunks of the locust-trees grown in the north of Pennsylvania, exceed 15 inches in diameter, when they are cut down and split open, they are frequently found to be decayed at the heart; but that this is not the case with trees that have grown further south," which would tend to show that a poor soil and a cold climate are not sufficient to produce good timber.

There are, at least, three popular varieties of the common locust, distinguishable by the color of the heart-wood, which may be described as follows:

1. *Red Locust*, with the heart red, and is esteemed as far the most beautiful and durable timber. Posts of this variety, perfectly seasoned before they are set in the ground, are estimated to last 40 years; or twice as long as those of the white locust.

2. *Green, or Yellow Locust*.—This is the most common variety, being known by its greenish-yellow heart, and is held next best in quality to the red locust.

3. *White Locust*, with a white heart; and is considered as the least valuable of them all.

All of the above-mentioned variations are supposed to be owing entirely to the soil and situations in which they grow, being caused in a similar manner as the various colors of the flowers of the hydrangea, which depend on the nature of the earth in which they are planted, and even on the color of the water with which they are irrigated.

In naval architecture, the timber of the locust is much esteemed by American shipwrights, and enters, with the live oak, the white oak, and the red cedar, into the upper and the lower parts of the frames of vessels, though in very small proportions. It is considered as durable as the live oak and the red cedar, with the advantage of being lighter than the former and stronger than the latter. It is used for trenails in the dockyards of Europe and the United States, in preference to any other kind of wood; and instead of decaying, it acquires, in time, an extraordinary degree of hardness. In civil architecture, in this country, it enters but little into the composition of houses, on account of its scarcity, and its value in ship-building, and for posts of rural fences, etc. When employed in the construction of houses, it is more particularly applied for the support of the sills, which usually consist of more destructible timber, and which, if they were placed immediately on the ground, would sooner decay. From the hardness of the wood when seasoned, the firmness of the grain, and its lustre when polished, it has been extensively used in cabinet-making, and has been substituted by turners for the box-wood, in many species of light work, such as small domestic wares, toys, etc. It has also been employed by millwrights for cogs, but it is less valuable for this purpose than that of the rock-maple.

The most important use to which the locust is applied in Britain, is that of forming trenails for ship-fastenings; and large quantities are annually imported into that country from America. As long as we can supply them for the prices which they at present bear, it never would repay the grower to cultivate them in England for this special purpose.

In France, the locust has been extensively cultivated in the Gironde, in copses, which are cut at the age of four years, for vine-props; and these props are

said to last more than 20 years. In the same district, old trees are pollarded, and their branches lopped every third year, for the same purpose. In Paris, many small articles are made of the wood; such as salt-cellars, sugar-dishes, spoons, forks, sand-boxes, paper-knives, etc.

In Lombardy, the wood of the locust is used for many rural purposes. Young plants of it were formerly much employed for live fences; but this practice has long since been abandoned, because the tree was found to impoverish the soil; and, with age, lost its prickles; besides, from being continually pruned, to keep it low, or from being cropped by animals, the hedges became thin and open at the bottom, and eventually became mere stumps. Italy, as well as the southern Departments of France, Michaux considers the countries in which the greatest advantages may be derived from the rapid growth of this tree. In good soils, in such climates, at the end of 20 or 25 years, he says that a mass of wood may be obtained from the locust, twice as great as from any other species of tree.

In countries where clover and root crops are not cultivated, the leaves of the locust may serve as a substitute for these articles as provender for animals. When this species is cultivated for this purpose, it should be mown every year; or the trees may be allowed to grow to the height of 8 or 10 feet, and treated as pollards, the branches being cut off every other year, which should be done at mid-summer, when they are succulent, and can be dried for winter's use. In performing this operation, one or two shoots should be left on each tree, to keep up vegetation, which may be pruned off the following winter or spring. When the shoots are to be eaten green, none should be taken but those of the same season; because in them the prickles are herbaceous, and, consequently, do not injure the mouths of the animals.—BROWNE'S *Trees of America*.

Lofoden Islands, a large group of islands off the north-west coast of Norway, stretching north-east to south-west from N. lat. 67° 30' to 69° 30', and E. long. 12° 16' 30'. The group resembles the vertebrae of an animal in form; the islands fitting into each other so closely, that from a distance they seem to form one long continent. The islands, which are all of a granite or limestone formation, are precipitous, and very lofty; the hills of Vaagoe rising almost perpendicularly to a height of 4000 feet above the sea. The channels which separate them are narrow, tortuous, and generally of great depth. The largest islands of the group are in the north, viz., Hindoe, Andoe, and Langoe; the first being separated from the main land by a passage about a mile in width. The tail of the chain is formed of a number of smaller islands, the chief of which are the two Vaagoes, Moskenösoe, Vårøe, and Rost, separated from the main land by West Fiord. This gulf is much dreaded by mariners when the wind is south-west, on account of the great swell which rolls in from the North Sea, and which is especially dangerous at the Mälstroem channel between Vårøe and Moskenösoe. The mean temperature of the group ranges from 23° in winter to 50° in summer, which, considering the high latitude, is comparatively mild. This is caused, however, by the exposure of the group to the Gulf Stream. Large shoals of herring and cod frequent the Lofodens annually, and attract to these islands a large concourse of fishing-boats from several hundreds of miles of sea-coast. In the inclement months of February and March, generally about 3000 boats (mostly open) assemble here for the cod-fishing, each having, on an average, five of a crew, while the aggregate number of fish taken amounts to more than 3,000,000. These are chiefly dried in the sun and wind, without salt, and sent to Tromsø, Trondhjem, Bergen, etc., along with large quantities of cod-liver oil and cod-roe, for exportation or home consumption. The cod-fishery ends in April, and is

followed by the herring-fishing, which is carried on till the boisterous season, at the end of autumn. The permanent population of the Lofodens is very small, considering the extent of territory, and is sustained principally by the fisheries. Some cattle, however, are kept in the most sheltered parts of the island, where good pasturage is obtained in the summer. Steilo, in the island of Ulvo, is the chief village of the group, and has communication with the ports of the main land by means of a steamer, which visits the Lofodens in summer. Estimated population of group, 4000.

Log, an apparatus used to measure the rate of a ship's velocity through the water. For this purpose, there are several inventions, but the one most generally used is the following, called the *common log*. It is a piece of thin board, forming the quadrant of a circle of about 6 inches radius, and balances by a small plate of lead, nailed on the circular part, so as to swim perpendicularly in the water, with the greater part immersed. The log-line is fastened to the log by means of two legs, one of which is knotted, through a hole at one corner, while the other is attached to a pin, fixed in a hole at the other corner so as to draw out occasionally. The log-line being divided into certain spaces, which are in proportion to an equal number of geographical miles, as a half or quarter minute is to an hour of time, is wound about a reel. The whole is employed to measure the ship's head-way in the following manner: the reel being held by one man, and the half-minute glass by another; the mate of the watch fixes the pin, and throws the log over the stern, which, swimming perpendicularly, feels an immediate resistance, and is considered as fixed, the line being slackened over the stern to prevent the pin coming out. The knots are measured from a mark on the line, at the distance of 12 or 15 fathoms from the log. The glass is, therefore, turned the instant the mark passes over the stern; and, as soon as the sand in the glass has run out, the line is stopped. The water, then being on the log, dislodges the pin, so that the board, now presenting only its edge to the water, is easily drawn aboard. The number of knots and fathoms which had run off at the expiration of the glass, determines the ship's velocity. The half-minute glass, and divisions on the line, should be frequently measured, to determine any variation in either of them, and to make allowance accordingly. If the glass runs 30 seconds, the distance between the knots should be 50 feet. When it runs more or less, it should therefore be corrected by the following analogy: as 30 is to 50, so is the number of seconds of the glass to the distance between the knots upon the line. As the heat or moisture of the weather has often a considerable effect on the glass, so as to make it run slower or faster, it should be frequently tried by the vibration of a pendulum. As many accidents attend a ship during a day's sailing, such as the variableness of winds, the different quantity of sail carried, etc., it will be necessary to heave the log at every alteration, and even if no alteration be perceptible, yet it ought to be constantly heaved. The inventor of this simple but valuable device is not known, and no mention of it occurs till the year 1607, in an East India voyage, published by Purchas.—E. A.

Logarithms, so useful in mathematics, are the indexes of the ratio of numbers one to another. They were invented by Baron Merchiston, an eminent Scotchman (Sir John Napier), in 1614. The method of computing by means of marked pieces of ivory, was discovered about the same time, and hence called Napier's lines. The invention was afterward completed by Mr. Briggs, at Oxford.

Log-Board, two boards shutting together like a book, and divided into several columns, containing the hours of the day and night, the direction of the winds and the course of the ship, with all the material

occurrences that happen during the 24 hours, or from noon to noon, together with the latitude by observation. From this table the officers work the ship's way, and compile their journals. The whole being written with chalk, is rubbed out every day at noon.—E. A.

Log-Book, a book into which the contents of the log-board are daily transcribed at noon, together with any circumstances, deserving notice, that may happen to the ship, or within her cognizance, either at sea, or within a harbor, etc. The intermediate divisions or watches of a log-book, containing 4 hours each, are usually signed by the commanding officer thereof, in ships of war, or East Indiamen.—E. A.

Log-Line, the line which is fastened to the log.

Logwood (Fr. *Bois de Campêche*; Ger. *Kampescholz*; Du. *Campecheout*; Sp. *Palo de Campeche*), the wood of a tree (*Hæmatoxylon Campechianum*, Lin.), a native of America, and which attains the greatest perfection at Campeachy, and in the West Indies. It thrives best in a wet soil, with a large proportion of clay. The logwood-tree is like the white thorn, but a great deal larger. The wood is hard, compact, heavy, and of a deep red color internally, which it gives out both to water and alcohol. It is an article of great commercial importance, being extensively used as a dye-wood. It is imported in logs, that are afterward chipped. (The logwood-tree, and the adventures of those that were formerly engaged in cutting it, are described by Dampier; see his *Voyages*, vol. ii., part 2, p. 56, ed. 1729.) We borrow from the learned and able work of Dr. Bancroft, the following curious details with respect to the use of logwood: "Logwood seems to have been first brought to England soon after the accession of Queen Elizabeth; but the various and beautiful colors dyed from it proved so fugacious, that a general outcry against its use was soon raised; and an Act of Parliament was passed in the 23d year of her reign, which prohibited its use as a dye under severe penalties, and not only authorized but directed the burning of it, in whatever hands it might be found within the realm; and though this wood was afterward sometimes clandestinely used (under the feigned name of blackwood), it continued subject to this prohibition for nearly 100 years, or until the passing of the act 13 and 14 Chas. II., the preamble of which declares, that the ingenious industry of modern times hath taught the dyers of England the art of fixing colors made of logwood, *alias* blackwood, so as that, by experience, they are found as lasting as the colors made with any other sort of dyeing wood whatever; and on this ground it repeals so much of the statute of Elizabeth as related to logwood, and gives permission to import and use it for dyeing." Probably the solicitude of the dyers to obtain this permission, induced them to pretend that their industry had done much more than it really had, in fixing the colors of logwood; most of which, even at this time, are notoriously deficient in regard to their durability."—BANCROFT on Permanent Colors.

Loire, La (anc. *Liger*), the longest river in France, rises at the foot of Gerbier des Jones, among the Cevennes Mountains, in the Department of Ardèche, and after a westerly course of 540 miles, falls into the Bay of Biscay. This river drains a district of France nearly equal in extent to one fourth of the entire kingdom. It becomes navigable at Roanne, and passes the flourishing towns of Orleans, Blois, Tours, Saumur, and Nantes. The navigation is interrupted, however, during four or five months of the year, by frost or floods. To obviate some of the difficulties incidental to the navigation of this river, a lateral canal has been formed along a part of its course, extending from the Canal du Centre to the Canal de Briare. The Loire communicates with the Rhone and Seine by means of canals. The affluents of this river are very numerous and important—many of them navigable. Those on the right are, the Arroux, the Nièvre, the

Maine (formed by the union of the Mayenne and the Sarthe); on the left, the Alliet, the Loiret, the Cher, the Indre, the Vienne, the Thouë, and the Sèvre-Nantaise. To prevent the Loire from spreading over the low grounds along its course, it has been banked in by dykes, built much above its ordinary level. These embankments were never known to give way previous to the great floods of 1846. They gave way at the same place during the fearful inundations of June, 1856, carrying away the bridge and village of Savonnières, and inundating the communes of La Riche-extra and La Chapelle-aux-Naux, causing a dreadful loss of life and property. The mouth of the river is about seven miles wide, measured from St. Nazaire to Paimboeuf. Ships find great difficulty in taking the mouth of the river, owing to the exposed nature of its position, and to the numerous sand-banks which traverse it.

Lombard, a term anciently used in England for a banker or money-lender. The name is derived from the Italian merchants, the great usurers or money-lenders of the middle ages, principally from the cities of Lombardy, who are said to have settled in London in the middle of the 13th century, and to have taken up their residence in a street in the city which still bears their name. Lombard usurers were sent to England by Pope Gregory IX. to lend money to convents, communities, and private persons, who were not able to pay down the tenths which were collected throughout the kingdom with great rigor that year, 13 Henry III., 1229. They had offices in Lombard-street, which great banking street is called after them to this day. Their usurious transactions caused their expulsion from the kingdom in the reign of Elizabeth. Stowe, in his *Survey of London*, says, "Then have ye Lombarde-street, so called of the Longobards and other merchants, strangers of diverse nations, assembling there twice every day. The meeting of which merchants there continued until the 22d of December, in the year 1568; on the which day the said merchants to make their meetings at the Bursse, a place then new builded for that purpose, in the ward of Cornhill, and was since, by her majesty Queen Elizabeth, named the Royal Exchange."

London (Latin, *Londinium*; French, *Londres*; Italian, *Londra*), the metropolis of the British empire, and one of the greatest cities of ancient or modern times, is situate on both banks of the Thames, about 45 miles above its mouth at the Nore, and 15 below the highest tideway. Though chiefly within the county of Middlesex, London includes parts of Surrey and Kent, and extends into Essex. St. Paul's, the most striking object in the city, is in lat. $51^{\circ} 30' 48''$ N., long. $0^{\circ} 5' 48''$ W. of Greenwich. Its early history is lost in obscurity, and the first authentic notice of its existence is that of Tacitus (*Annal.*, lib. xiv., cap. 3), who, in alluding to *Londinium*, says, "Cognomento quidem colonie non insigne, sed copia negotiatorum et commeatuum maxime celebre." The derivation of the name "London," has been the subject of much conjecture; but that mentioned by Pennant (*London*, p. 17) seems most feasible, viz., *Llyn*, in Celtic, a lake, and *din*, a town. It could not, however, have been a place of importance at the period of Julius Cæsar's invasion, as it is not noticed in his *Commentaries*. About 100 years thereafter, the Romans, under Claudius, took possession of the city, and called it Augusta, in honor of that prince. It was erected into a prefecture; and the inhabitants, nominally citizens of Rome, were governed by Roman laws and Roman magistrates.

London was not fortified at an early period of the Roman occupation; for in A.D. 61, the Britons under Boadicea, revolted, captured and burned the city, and massacred the inhabitants. The city was soon, however, rebuilt, but is supposed to have remained open till the reign of Constantine the Great. From the number of coins of his time found under the walls, it

may be inferred that that emperor constructed the walls; and it is alleged that he made London an episcopal see. The limits of these walls have been pretty exactly ascertained. They commenced near the site of the present Tower, extended along the Minories and back of Houndsditch, across Bishopsgate-street, in a straight line, by London Wall, to Cripplegate; thence southward to Aldersgate, proceeding afterward by the back of Christ's Hospital and Old Newgate, passing behind the site of Newgate Prison, and so reaching Ludgate; again proceeding westward to the River Fleet, and terminating at a fort called afterward Baynard's Castle. Their compass was completed by another wall along the bank of the Thames. Extent of the walls from and to the side of the river, 2 miles and 1 furlong; on the bank, 1 mile and 1-10th; uniform height, 22 feet. Through gates in these walls, roads led to different parts of the kingdom. The great Roman Roads, Watling-street and Ermin-street, had their termini at the London Stone, or Roman Milliarium, a portion of which still remains, and is inserted in the most conspicuous part of St. Swithin's Church, abutting on Cannon-street. The names of the gates are still preserved in streets, etc., viz., Ludgate, Aldersgate, Moorgate, Bishopsgate, Aldgate, Newgate, Cripplegate, and Postern Row, on Tower Hill. After the Romans withdrew their forces from England, London suffered severely till the Saxons fixed themselves in the country. It is said to have become then the capital of the East Saxon kingdom; at any rate, it quickly regained its former importance, and is called by Venerable Bede a "princely town of trade." Soon after the introduction of Christianity, Old St. Paul's, and St. Peter's at Westminster, were founded. When the Saxon monarchies were united in the person of Egbert, London became the capital of the consolidated kingdom, and such it has continued to be. In the reign of Alfred it recovered from the effects of the Danish invasion, as well as from those of a fire, which nearly consumed it in 893.

After the battle of Hastings, the city submitted to William, who granted it a charter, still extant; and who commenced building the Tower of London in 1078. About this time the capital suffered severely and frequently by fires, especially in 1077 and 1086. In the following reign it was visited by a hurricane and an inundation; the latter carrying away the first wooden bridge over the Thames. Henry I. granted a new charter to the city in 1100, restoring the privileges it enjoyed previous to the Conquest, and conferring on the citizens the right of electing their own magistrates. It is said that this document served as the model for Magna Charta. The population in 1141 was estimated by Peter of Blois at 40,000. The title of the chief magistrate was changed by Henry II. from Portreeve to Bailiff; and in 1191 he is called Lord Mayor, in a document issued by the Court of Aldermen. In 1198 Richard I. committed the duty of fixing a national standard of weights and measures to the sheriffs of London and Middlesex. John, by several charters, conferred additional favors on the city; among others, the jurisdiction and conservation of the Rivers Thames and Medway; and the power of choosing sheriffs. In 1221 the first stone of the present Westminster Abbey was laid by Henry III.; and in 1236 water was conveyed in pipes from the village of Tyburn to the city. In 1258 and 1270 the city was visited by famine, and in 1348 by a species of plague, on all of which occasions it suffered grievously.

Under Edward I. London was first divided into 24 wards, each to choose common councilmen and an alderman. Edward II., in 1316, prohibited as a nuisance the burning of coal, then lately introduced, but his mistake was soon discovered and rectified. Under Edward III. the city received the perpetual right of magistracy over Southwark. In 1881 the citizens were alarmed by the insurrection of Wat Tyler, but

this was soon suppressed. Street lamps were first used in 1416. In the wars of the Roses, London chiefly favored the interests of the House of York; and after the battle of Barnet, in 1471, Edward VI. knighted the mayor, recorder, and 12 aldermen. This was the era of the first printing-press, constructed and worked by Caxton in Westminster Abbey, as well as the erection of water cisterns and conduits in several parts of the city and suburbs. In the reign of Henry VII., a disease called the "sweating sickness" carried off two mayors and six aldermen, with many citizens. Some considerable improvements were made in this reign, as well as in that of Henry VIII., to which the suppression of religious houses by the latter materially contributed; these giving way to schools, hospitals, and charitable institutions. By the aid of Queen Elizabeth, the prosperity of London rapidly advanced during her reign. The refugees from the Netherlands introduced numerous manufactures before unknown in England, and in this way conferred especial benefits on London.

By maps of the time of Elizabeth and James I., it may be seen that the chief part of London then consisted of Newgate-street, Cheapside, the Poultry, and Cornhill, and the various streets and alleys leading from them to the Thames. Along the Strand, toward Westminster, were houses on both sides—those to the south, and abutting on the river, being the palaces of the chief nobility. The names of Salisbury, Norfolk, Buckingham, Arundel, Essex, etc., have been perpetuated in the streets now on the sites of palaces and gardens formerly belonging to these families. Spring Gardens formed a series of walks, with bowling green, etc., extending from Charing Cross toward Whitehall Palace, whence to the Abbey there was a regular street. On the Surrey side, there were not ten buildings between Lambeth and the west foot of Blackfriars Bridge; but from that point a row of houses was continued to the Borough. Southwark then extended but a short distance along High-street; and there were small scattered houses from Tooley-street to Horselydown. In the reign of James I. brick was introduced as a substitute for wood in London houses, and the streets were first paved with stones. The city was severely visited by the plague in 1604, and again in the reign of Charles I. During the civil wars a majority of the corporation took part with the Commons, and the city treasury was of great service to their party.

After the Restoration London began greatly to revive; but a serious check was given to it by the last visit of the plague, which raged from June till the end of December, 1665, and destroyed nearly a third of the population. This was speedily followed by the "Great Fire," which commenced 2d September, 1666, lasted four days and nights, and in that time reduced to ashes five sixths of the whole city within the walls. The ruins covered a space more than a mile long and half a mile broad; and the value of buildings and goods consumed was estimated at ten to twelve millions sterling. But though severe at the time, this visitation contributed materially to the improvement of the city. It was built on a more commodious plan by Sir Christopher Wren in about four years. From the time of its re-construction, few stirring events occurred. The first stone of St. Paul's was laid in 1675. The revocation of the Edict of Nantes in 1685 brought to London many French Protestant families, who peopled Spitalfields, and introduced the manufacture of silk. The continued growth of the city in the reign of Queen Anne occasioned the act of 1711 for building fifty new churches, the cost being paid by a tax on all coals brought into the Thames. The streets were then first generally lighted; fire-engines were provided, and measures taken for watching the city. In her reign, Clerkenwell, Old-street, the lower part of Shore-ditch, Marlborough-street, Soho, Bedford-row, Red

Lion-square, and a district north of Holborn, were annexed to the metropolis.

In the reign of George I. some additions were made to London, chiefly to the north of Oxford-street and about Berkeley-square. In the reign of George II. some new parishes were erected, viz., St. George's, Bloomsbury; St. Ann's, Limehouse; St. Paul's, Deptford; and St. Matthew's, Bethnal Green. The River Fleet was covered, and a market built on it; Grosvenor-square, Westminster Bridge, and Great George-street, were built; and roads were formed in several directions, the principal one skirting the northern part of the city from Paddington to Islington.

The accession of George III. gave a fresh stimulus to improvement and extension. A new bridge at Blackfriars, with handsome streets leading to it, and many new dwellings on the Surrey side, were erected. On the north-west side the parishes of St. Pancras and Marylebone were formed. At the same period the street pavement for foot passengers was first laid down, the kennels removed from the middle to the sides of the streets, and the numbering of houses introduced. The American war gave a temporary check to extension; but soon after the peace of 1783 the advance became more rapid than ever. Docks were constructed, the commerce of the city rapidly augmented, the ground near the water side was covered with buildings, and, westward, Bedford, Russell, and Brunswick Squares quickly sprung up. From the Regency in 1811, London advanced in extent and elegance still more rapidly. Regent's Park was formed, and surrounded by handsome terraces; and within the last few years the extensive and fashionable districts called Belgravia and Tyburnia—the former to the south and the latter to the north of Hyde Park—have been created, and literally covered with houses of a high class. In 1851 there were 805,933 inhabited houses in the metropolis, and there are no less than 6300 streets enumerated in the *London Postal Guide* for January, 1857.

The situation of London, on the banks of a great tidal river, is also peculiarly favorable for a large city in a sanitary point of view. The subsoil is partly clay (the London clay of the geologist). The valley of the Thames has a gradual ascent on the north side; and the south side, though below the level of spring tides, has been well secured against inundations by embankments. The air is temperate and rather dry than moist, and the health of the inhabitants has gradually but rapidly improved from the earlier part of last century, when the deaths were annually 1 in 20 of the population, whereas at present they are about 1 in 40.

It is difficult to assign any distinct boundaries to the metropolis, as almost continuous lines of houses stretch like branches from the main trunk of London, to Chiswick, Kensal Green, Kilburn, Hampstead, Highgate, Stamford Hill, and Upper Clapton in Middlesex; Stratford and North Woolwich in Essex; Greenwich and Lee in Kent; and Dulwich, Norwood, Clapham, Wandsworth, and Putney in Surrey. These, too, are constantly increasing in length and breadth; the vacant spaces between distant lines of road being filled up with extraordinary rapidity. The circle formed on a radius of four miles from Charing Cross excludes a large portion of London; but its extreme length may be set down as ten miles, and its breadth at about six. There are four divisions of the metropolis which, though rather vague, are pretty generally understood by Londoners—these are, the City, the West End, Lambeth, and the Borough; the two first on the Middlesex, and the others on the Surrey side of the water. The city of London proper has an area of 725 acres, and contains 108 parishes—97 within and 11 without the walls. In its most limited sense, the metropolis includes the cities of London and Westminster, the parliamentary boroughs of Tower Ham-

lets, Finsbury, Marylebone, Lambeth, and Southwark. Annexed is an account of the population of the various

cities and boroughs above mentioned, as ascertained by the different censuses, beginning with the first in 1801:

Cities and Boroughs.	1801.	1811.	1821.	1831.	1841.	1851.
London City.....	156,859	120,909	125,434	122,863	120,702	127,869
Westminster City.....	153,210	162,085	182,085	201,842	219,390	241,611
Tower Hamlets Borough.....	184,568	287,487	291,650	357,246	419,730	539,111
Finsbury.....	184,616	167,190	201,731	259,123	265,043	329,772
Marylebone.....	97,642	126,566	174,354	240,294	287,465	370,957
Lambeth.....	49,886	76,806	108,565	160,568	197,412	251,345
Southwark.....	94,518	103,763	123,663	134,117	142,620	172,863
Total.....	876,954	994,746	1,207,482	1,476,048	1,652,902	2,027,523

The metropolitan district comprised within the bills of mortality includes, with the cities and boroughs embraced in the foregoing table, other integral parts of London, like Chelsea, Brompton, and Kensington; and the suburbs, such as Greenwich, Wandsworth, Hammersmith, Putney, etc. In this view, the area of the metropolis is 78,029 acres, comprising 186 parishes, and the present population may be estimated at upward of 2,500,000. Annexed is an account of the population of this area at the date of each census, commencing with 1801:

Years.	Population.	Years.	Population.
1801.....	958,868	1831.....	1,654,994
1811.....	1,198,815	1841.....	1,948,417
1821.....	1,378,947	1851.....	2,362,236

But many merchants and citizens, taking advantage of the easy access to the country afforded by the railways, occupy houses at such places as Kingston, Esther, Walton, Richmond, Twickenham, Staines, Windsor, Reigate, Brighton, etc., making daily journeys to and from the city, so that they and their families are not included in the foregoing account.

Commerce.—As one of the great occupations of its inhabitants, the commerce of London demands the first notice. The capital of a great empire, with immense wealth concentrated in it, having easy access, both by land and water, to all parts of the kingdom, and every facility of communication with foreign countries, London has become, with perhaps the single exception of New York, the greatest commercial city in the world. The commercial growth and prosperity of London are especially to be ascribed to its great river-port, the Thames. This famous stream has its source within the borders of Gloucestershire, a little to the south-west of Cirencester, and becomes navigable at Lechlade, 138 miles above London. It is first affected by the tide about 15 miles above the metropolis; but before reaching this point it is swollen by junction with the Isis, Kennet, Coln, and Wey. The city corporation are the chief conservators of the river, and appoint a navigation committee, who superintend the towing-paths, bridges, water-courses, and whatever relates to the river, as far as a stone a little above Staine's Bridge. Higher up the supervision is divided between the city and a body chiefly composed of the landowners on both sides of the river. The conservation of the river below London is also in some measure under the government of the city corporation, but the Trinity House has concurrent jurisdiction, and no ballast can be raised without its authority. The appointment and control of pilots, the placing and repairs of land-marks and buoys to indicate the channels, and the establishment of floating lights, are also under the superintendence of the Trinity House. Close to London Bridge there is water sufficient for vessels of 800 tons burden, and the legislature has placed the shipping of the port, and their moorings, under the direction of the harbor-masters, nominated by the corporation, and approved by the Trinity House. The sinuosities, currents, and shoals in the river, and its varying depth, render the navigation rather intricate. The river pilots, who are a distinct class, conduct vessels to Gravesend, where they are relieved by the sea pilots. Down to 1800, the commerce of London, and the shipping interest, suffered materially from the crowded state of the river, and the difficulties, delays,

and abuses connected with the berthing and mooring of vessels, and the landing and storing of merchandise. These evils led to the construction of the West India Docks, which were opened in August, 1802. These, next to the Commercial Docks, the oldest in London, were formed in the gorge of the Isle of Dogs, on the Middlesex side of the river. They comprise the import and export dock (communicating with the river at Blackwall and Limehouse), and a dock of 19 acres for bonded timber.

The export dock occupies about 25, and the import dock 30, acres. The gates are 45 feet wide, and admit vessels of 1200 tons. At the highest spring-tides the water is 24 feet deep; and within the docks there is sufficient space for 600 vessels of from 250 to 600 tons. The import and export docks are parallel to each other, but divided by stacks of warehouses. There are sheds for sheltering the goods; and the chief warehouses are capable of storing 170,000 hhds. of sugar, besides coffee and other tropical productions. The whole space occupied by these docks and warehouses is 295 acres. The East India Docks at Blackwall now belong to, and are managed by, the same company as the West India Docks. They were commenced in 1803, finished in 1806, and were intended to accommodate the trade of the East India Company. They include an import basin of 18 acres, an export basin of about 9, and an entrance basin of 2½ acres. The entrance lock is 210 feet wide, the width of the gates 48 feet, and the depth of water in the docks is never less than 23 feet. The extent of warehouse-room at these docks is comparatively small. The East and West India Docks are well inclosed and guarded, and the buildings are fireproof. The London Docks, situated between Ratcliff Highway and the Thames, were begun in June, 1802, and opened in January, 1805. They consist of two docks; the western, covering 20 acres, and the eastern about 7 acres. The latter is entered from Shadwell, and the former near Wapping Old Stairs, and also at the Hermitage. The whole can receive 500 vessels of from 200 to 800 tons. The entire space inclosed is 71 acres. The warehouses are very fine; the most extraordinary being that for bonded tobacco. The roof and pillars supporting it are of iron, and the whole building covers five acres of land, and is capable of containing 24,000 hhds. The company is governed by a body of directors, of whom the lord mayor is one. The regulations to prevent fire and pilfering are as effectual as in the East India Docks. St. Katherine's Docks, situate between the London Docks and the Tower, were executed in a year and a half, and first opened in October, 1828. The whole extent of the property is 24 acres, of which nearly one half is inclosed in the two docks, communicating by a basin. The entrance lock, near Irongate Wharf, is 180 feet long, and 45 feet broad, and admits ships of from 200 to 800 tons. The warehouses are very large and commodious, and the regulations and charges are similar to those of the other dock. Victoria Docks, the last constructed, were completed in 1855. They are situated in the Plaistow Marshes, immediately below the East and West India Docks. The portion of this property appropriated by the Dock Company for their own purposes is about 200 acres, but the dock itself occupies but 74, and affords 284 feet depth of water. The en-

trance lock at Bow Creek is 300 feet long, and 80 wide. There is a half-tide basin of 16 acres; and the available warehouse floor is stated to be upward of 11 acres. The company have also acquired about an acre and a half between Thames-street and the river for the erection of an up-town warehouse. One object of the company is to withdraw from the Thames a portion of the large fleet of colliers which lie at anchor in the Pool, and seriously obstruct the traffic on the river. On the other bank of the Thames, extending along the side of the river opposite Limehouse, and terminating nearly opposite the entrance to the West India Docks, are the Commercial, formerly the Greenland Docks, which existed in the 17th century. They are now of great extent, inclosing 120 acres, of which 70 are water, and were designed to receive vessels laden with timber, corn, and other commodities more bulky than costly. These docks are entered by a basin near Dog-and-Duck Stairs, sometimes called the East Country Docks, and the main body of the water within is divided into six unequal parts. See DOCKS.

Parallel to these is the Surrey Canal, having an inner and outer dock at the entrance in Rotherhithe, by which ships are received, and affording communication with the Croydon Canal. The Regent's Canal was formed to save expense of cartage through London of articles brought by sea, and afterward forwarded for consumption to the north-west parts of the metropolis; and also to communicate with the Grand Junction Canal. The Regent's Canal passes from Paddington, by a tunnel under Maida Hill, to the Regent's Park, thence to Islington, under which it is carried by a tunnel three quarters of a mile in length, and so on to Hoxton, Hackney, and Limehouse. It is 9 miles long, and is provided with 12 large locks. It is not easy, within a moderate compass, to give even a sketch of the foreign commerce of London. It would be an epitome of that of the world. To the British capital are brought the products, natural and artificial, of all soils and all climates. It has in store whatever the ingenuity and industry of man in any part of the globe can spare to exchange for what his own country does not yield. We can, therefore, do little more than state the number and size of the vessels that belong to and frequent the port, and the value of the produce and manufactures of the United Kingdom exported from the same:

ACCOUNT OF THE NUMBER AND TONNAGE OF VESSELS BELONGING TO THE PORT OF LONDON ON 31ST DECEMBER, 1855.

Description of vessels.	Under 50 tons.		Above 50 tons.	
	Vessels.	Tons.	Vessels.	Tons.
Sailing vessels...	617	21,303	1,870	668,599
Steamers.....	132	4,327	405	163,406
Total.....	749	25,630	2,275	827,305

ACCOUNT OF THE NUMBER AND TONNAGE OF VESSELS WHICH HAVE ENTERED THE PORT OF LONDON FROM FOREIGN COUNTRIES AND THE COLONIES, IN EACH OF THE FIVE YEARS ENDING WITH 1855.

Years.	Vessels.	Tonnage.	Years.	Vessels.	Tonnage.
1851....	10,841	2,170,822	1854....	10,943	2,637,823
1852....	9,936	2,160,157	1855....	9,770	2,420,536
1853....	11,763	2,594,113			

ACCOUNT OF THE NUMBER AND TONNAGE OF COASTING VESSELS THAT ENTERED THE PORT OF LONDON IN 1855, DISTINGUISHING BRITISH FROM FOREIGN.

Description of vessels.	British.		Foreign.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
Sailing vessels...	17,729	2,438,873	13	1,801
Steamers.....	1,297	411,444	1	105
Total.....	19,026	2,850,317	14	1,906

The conveyance of coals to London employs a great deal of shipping. They are chiefly brought from the north-eastern district of the kingdom, and are sold at the New Coal Exchange, lately erected in Lower Thames-street.

Very large quantities of coal now reach London by means of the railways which centre in the metropolis.

ACCOUNT OF THE NUMBER OF SHIPS LADEN WITH COAL WHICH ENTERED THE PORT OF LONDON IN EACH YEAR FROM 1845 TO 1855 INCLUSIVE.

Years.	Ships.	Years.	Ships.
1845.....	11,987	1851.....	11,765
1846.....	10,488	1852.....	12,085
1847.....	11,911	1853.....	12,111
1848.....	12,267	1854.....	11,875
1849.....	12,074	1855.....	10,784
1850.....	12,633		

DECLARED VALUE OF BRITISH AND IRISH PRODUCE AND MANUFACTURES EXPORTED FROM LONDON TO FOREIGN COUNTRIES AND THE COLONIES IN 1855 AND 1856.

1855.....	£20,915,512
1856.....	25,966,083

Custom-house.—The present custom-house, opened in May, 1817, stands in Lower Thames-street, with its principal and imposing front, 480 feet long, toward the river, and occupies the site of a similar but smaller one destroyed by fire in 1814, as a preceding one had been in 1718. The Long Room is a noble apartment, 186 feet long, 60 broad, and of an appropriate height, with desks on each side for the several officers; the centre being left for such of the public as have business there. The other parts are distributed so as to suit the several branches of the office. The London customs establishment of clerks, tide-waiters, etc., amounted in 1856 to 2167; though as but 1620 were required for all the other English ports, it would seem as if the numbers here were excessive.

AMOUNT OF CUSTOMS DUTIES COLLECTED IN THE PORT OF LONDON IN 1855 AND 1856.

1855.....	£11,525,125
1856.....	12,287,519

Trinity House.—The Society of the Trinity House has its chief establishment in a large and handsome house on Tower Hill, built by Wyatt in 1793. It was incorporated in 1815; but from the terms of its charter, it evidently had a previous existence, and was then established at Deptford Stroud. Its privileges were confirmed by the charter of 1658, and its members are now partly men of high rank, and partly those remarkable for naval knowledge and skill in maritime affairs. Its duties as to pilots, light-houses, buoys, ballast, etc., have already been mentioned. In process of time this society acquired large property; the net revenue under its management having in 1855 amounted to £204,195. Until the passing of the act 13th and 17th Vic., c. 131, the society spent much of its surplus revenue in pensions to poor and disabled seamen, or their widows and orphans; but this act transfers their revenue, as well as the charge for maintaining light-houses, etc., to the Mercantile Marine Fund. It would appear, from a parliamentary paper lately published, that the Board of Trade expended in 1856 out of this fund £1388 as rewards for the salvage of life. The Trinity House contains some portraits of naval heroes, naval trophies, etc.

Mint.—The Royal Mint, also on Tower Hill, was removed thither from the Tower in 1811. The present building which is extensive and well suited to its purpose, was completed under the direction of Sir R. Smirke. The interior is appropriately arranged for the manufacture of coin; and the machinery combines great ingenuity and beauty. In consequence of the report of a commission in 1849, the old company of moneyers was abolished, and a scientific chief has since been allotted to this department, instead of a political one. The amount of gold, silver, and copper money coined here in the last three years has been as follows:

ACCOUNT OF THE TOTAL VALUE OF GOLD, SILVER, AND COPPER COINED AT THE MINT IN EACH OF THE THREE YEARS ENDING WITH 1856.

Year.	Gold.	Silver.	Copper.	Total.
1854	£4,152,188	£140,480	£30,866	£4,323,529
1855	9,008,663	195,511	41,091	9,245,265
1856	6,002,114	462,523	11,418	6,476,060
Total	£19,162,960	£798,519	£81,375	£20,042,854

Banks.—The Bank of England, one of the most attractive objects in the city, was founded by act of Parliament in 1694, and its business was carried on for many years at Grocers' Hall. In 1733 it was transferred to Threadneedle-street, and soon thereafter the present hall and bullion office were opened. Between 1770 and 1788 the façade was extended, and two wings added, under the directions of Sir Robert Taylor and Sir John Soane. Under the superintendence of the latter, the front and wings of the original structure were harmonized. The area of the bank is an irregular quadrangle; the south or principal front is 365 feet, and the north 410; the east 245 feet, and the west 440. Its principal entrance is from Threadneedle-street, the other two from Bartholomew Lane and Lothbury. The interior contains several open courts, the rotunda, or circular room, numerous offices, committee-rooms, and private apartments for the residence of officers and servants. The business is carried on by a staff of about 800 clerks, etc., whose salaries amount to nearly £200,000. The bank has received nine successive renewals of its charter since it was first granted in 1694, and measures have been taken in Parliament this session (the first of 1857) for again renewing it. The act of 1844, still in force, separated the Bank into two distinct branches, viz.: 1. The Issue Department, devoted to its business as agent of the State in creating and issuing paper money, or bank-notes, convertible into gold on demand; and, 2. The Banking Department, where the private business of deposit and discount is carried on. There are 60 private and 28 joint-stock banks in the metropolis. Some few of the former, such as Child's, in Fleet-street, were established before the end of the 17th century; while the joint-stock banks are all the offspring of the last few years. There is an establishment near Lombard-street, called the Clearing House, where a daily exchange of checks or drafts on city bankers is effected, and this process tends greatly to facilitate banking business.

Royal Exchange.—The Royal Exchange, colossal in proportions, and occupying a commanding position between the Bank of England and Cornhill, is a spot where great mercantile transactions are daily concluded. The first exchange was built by Sir Thomas Gresham, completed in 1567, but destroyed by the great fire of 1666. It was, however, speedily rebuilt, and was opened on 28th September, 1669. Again destroyed by fire in 1838, it was rebuilt, and completed in 1846 by Mr. Tite. The present building is quadrangular, and the interior surrounded by arcades. In the centre, which is uncovered and unprotected from the weather, stands a statue of her majesty by Lough. The outside of the building, except the grand western entrance, is occupied by small shops; and on the upper floor is Lloyd's, where the business of marine insurance is conducted by underwriters. It has been estimated that, on an average, 200,000 persons daily visit the exchange, but this can be little more than conjecture. Merchants and brokers resort much to coffee-houses in the vicinity of the Exchange for the transaction of business. Most of the larger transactions are negotiated by brokers, who in general confine themselves to one branch of trade, with which they are thoroughly acquainted. Thus we have colonial brokers, insurance brokers, ship brokers, stock brokers, bill or money brokers, etc. Near the Royal Exchange and the Bank is the Stock Exchange, where real and fictitious sales are made of property in the public funds, etc.; the latter for the most part being a species of gambling.

London, when compared with some of the towns in the north and west of England, can scarcely be called a manufacturing place; yet the various articles produced here employ many thousand persons. The silk manufacture especially employs a large number of hands. Originally introduced by French Protestant

refugees, many of their descendants still continue the trade, which employed, in 1851, 15,764 persons, of whom 8277 were females. The manufacture of London porter and beer is a much more lucrative business, but a London brewery requires a very large capital. Sugar-refining and clock and watch making also prevail to a considerable extent, the latter chiefly in a district called Clerkenwell. London-built carriages are generally considered the best, as they are undoubtedly the most elegant in the world. London enjoys a high reputation for the manufacture of numerous smaller articles, such as mathematical, surgical, and musical instruments, jewelry of the superior kinds, gold and silver plate, etc. The great number of those employed in house-building proves that the metropolis is still rapidly extending; and though this business received a severe check during the late war with Russia, it was only temporary, as evinced by the general resumption of building in the various outskirts of London.

The shops in London are, generally speaking, well managed, and many of them are handsomely fitted up, especially those in Bond-street, Regent-street, and Oxford-street. The wholesale shops or warehouses are chiefly to be found in the city; the retail shops, particularly those on a large scale, being more general in the west or fashionable end of the metropolis. The bazaars in London, each of which forms an aggregation of shops or stalls, are not now so attractive as they once were. They deal mostly in fancy goods, furniture, toys, etc. The four great establishments of the kind are those in Soho Square and Baker-street, the Pantheon in Oxford-street, and the Pantheonicon in Halkin-street, Belgrave Square. The Burlington and Lowther Arcades contain many shops for the sale of the like commodities.

TABLE SHOWING THE AREA IN SQUARE MILES, AND THE POPULATION OF THE METROPOLIS, THE NUMBER OF HOUSES THEREIN, AND THE NUMBER OF FAMILIES OCCUPYING THE SAME IN 1851.

Divisions.	Area in square miles.	Houses.			Families or groups of well-to-do.	Population.
		Inhabited.	Uninhabited.	Build- ing.		
Middlesex.....	51	218,279	10,618	3,046	395,708	1,745,601
Surrey.....	96	72,844	4,524	1,160	110,097	482,435
Kent.....	35	20,310	1,506	609	27,850	134,202
Total.....	122	305,983	16,964	4,815	538,550	2,362,238

ACCOUNT SHOWING THE NUMBER OF PERSONS OVER 20 YEARS OF AGE IN THE METROPOLIS IN 1851, DISTINGUISHING THE MARRIED FROM THE UNMARRIED.

Sexes.	Of the age of 20 and upward.			
	Total.	Bachelors and spinsters.	Husbands and wives.	Widowers and widows.
Males.....	682,545	196,857	398,624	37,064
Females.....	762,418	246,124	406,266	110,028

From different quarters we have gleaned the following estimates of the annual consumption of certain articles of London food. All, however, may be considered applicable to the period of the last census in 1851:

Wheat.....	1,600,000 quarters.
Bullocks.....	240,000 head.
Sheep.....	1,700,000 "
Calves.....	28,000 "
Pigs.....	35,000 "
Poultry.....	8,748,000 "
Game, etc.....	1,807,000 "
Fish, wet and dry, of which more than half were herrings.....	450,150,900 lbs.
Oysters.....	809,935 barrels.
Potatoes.....	810,464,000 lbs.
Cabbages.....	89,672,000 "
Onions.....	1,480,600 "
Apples.....	725,500 bushels.
Foreign eggs.....	about 75,000,000
Milk, the produce of.....	13,000 cows.

* Exclusive of large quantities of bacon and ham.

Water.—Although London is supplied with many excellent springs of fresh water, they proved, centu-

ries ago, quite inadequate to the wants of the citizens. As already mentioned, conduits were then adopted as a substitute. The first effort to supply water on a great scale was made in 1608 by Sir Hugh Myddelton—a spirited citizen, who undertook, at his own risk, to convey a river of fresh and good water to the city. From this we may presume that in Myddelton's time the Thames no longer merited the eulogy of Stowe, that its "water was as cleere as that of the sea." In 1613 the River Lea water was let into the basin at the

New River head at Islington, and thence, at the present day, the New River Company, with increased means, transmit the water through pipes to the houses, etc., supplied by them.

Bridges.—The bridges spanning the Thames in its passage through London, are nine in number, eight of these being adapted for carriages. The cost of New Westminster Bridge is estimated at £235,000. The following table will show the cost and dimensions of these various bridges:

TABLE SHOWING THE MATERIAL, COST, ETC., OF THE BRIDGES OVER THE THAMES, IN LONDON AND ITS VICINITY.

Names.	Date of completion.	Material.	Cost including Approaches.	Cost exclusive of Approaches.	Number of Arches.	Length.	Breadth.	Span of central Arch.
						Feet.	Feet.	Feet.
London Bridge.....	1881	Granite.....	£2,000,000	£542,150	5	904	53	150
Southwark.....	1819	Iron arches, stone piers..	800,000	384,000	2	800	42	240
Blackfriars.....	1770	Stone.....	260,000	157,840	9	995	42	100
Waterloo.....	1817	Granite.....	1,150,000	579,915	9	1,850	42	120
Westminster.....	1751	Portland stone.....	389,500	.....	15	1,160	43	76
Vauxhall.....	1814	Iron arches, stone piers..	Unknown.	800,000	9	840	36	78
Hungerford Suspension.....	1845	Brick and stone piers....	113,000	95,760	NIL	1,536	13	....
Chelsea Suspension.....	1857	Iron piers and roadway..	85,000	.....	....	922	45	....
Battersea.....	1770	Wood.....	Unknown.	.....	....	....	..	....

Trade of 1856.—The East India and China Association have published their usual comparative statement of the number of ships, both British and foreign, with their aggregate tonnage, entered inward and cleared outward with cargo from and to places within the limits of the East India Company's charter, from the 1st of January to the 31st of March, 1855 and 1856. According to the statistics of the vessels entered inward, the return for the port of London shows a decrease of 31 vessels and 8971 tons, the difference between 197 vessels, with the capacity of 109,484 tons, in 1855, and 166 vessels, with a capacity of 100,513 tons, in 1856. Liverpool figures for an increase of 8 vessels and 14,339 tons, the arrivals in the former period having been 62 vessels, with a capacity of 39,364 tons, and in the latter 70 vessels, with a capacity of 53,703 tons. With regard to Bristol, there is a decrease of 3 vessels, with an increase of 806 tons; the arrivals in 1855 having been 10 vessels, with a capacity of 2917 tons, and in 1856 7 vessels, with a capacity of 3723 tons. The return for the Clyde exhibits a decrease of 2 vessels and an increase of 722 tons, the difference between 8 vessels, with a capacity of 3414 tons, and 10 vessels with a capacity of 2629 tons. A review of these figures shows a net decrease of 24 vessels and an increase of 5452 tons; the arrivals in 1855 having been 277 vessels, with a capacity of 155,179 tons, and in 1856 253 vessels, with a capacity of 160,631 tons. The principal arrivals were from Calcutta, Madras, and the Cape of Good Hope. According to the statistics of vessels cleared outward, the return for the port of London exhibits an increase of 6 vessels, and 5905 tons; the departures in 1855 having been 157 vessels, with a capacity of 94,784 tons, and in 1856 163 vessels, with a capacity of 100,689 tons. In the case of Liverpool there is a decrease of 9 vessels and 11,197 tons, the difference between 98 vessels, with a capacity of 80,444 tons, and 89 vessels, with a capacity of 69,247 tons. The figures for Bristol show a decrease of 2 vessels and 459 tons; the departures in 1855 having been 3 vessels, with a capacity of 1641 tons, and in 1856 1 vessel, with a capacity of 1182 tons. With regard to the Clyde, the results show a decrease of 3 vessels, with 2534 tons, the difference between 25 vessels, with a capacity of 16,044 tons, and 22 vessels, with a capacity of 13,510 tons. Taking the result of the whole return, there is a net decrease of 8 vessels, with 8285 tons; the departures in 1855 having been 283 vessels, with a capacity of 192,913 tons, and in 1856 275 vessels, with a capacity of 184,628 tons. The principal decline has been in departures for Australia, Calcutta, the Mauritius, Java and Sumatra, and Arabia. For a full exhibit of the commerce of Great Britain, including that of London, see GREAT BRITAIN.

Long Island, N. Y. Situated in the south-east part of the State, and contains 1500 square miles, lying between the Atlantic on the south, and Long Island Sound on the north. It contains three counties—Kings on the west end, Queens in the middle, and Suffolk on the east end of the island. A chain of hills runs from west to east, on the north of which the surface is somewhat hilly and broken; on the south it is level. The north shore is somewhat bold; on the south it is a beach of sand and gravel, inclosing bays, with various inlets, admitting vessels of 60 or 70 tons, and abounding with shell and other fish. At the east end is Gardiner's Bay and Island, and Montauk Point, a bold promontory, on which is a light-house. The north shore has several light-houses.

Longitude. By the term *geographical longitude*, is meant an arc which measures the inclinations of two terrestrial meridional planes, one of which passes through a known place as a place of reference, the other through any place whatever. It is sometimes also defined as the distance east or west, along the equator, of any place from a certain meridian. Longitude was determined by Hipparchus at Nice, who fixed the first degree in the Canaries, 162 B. C. Harrison made a time-keeper in A. D. 1759, which in two voyages was found to correct the longitude within the limits required by the act of Parliament, 12th Anne, 1714; and in 1763, he applied for the reward of £20,000 offered by that act, which he received. The celebrated Le Roi of Paris, in 1766, invented a watch that keeps time better; and the chronometers of Arnold, Earnshaw, and Bréguet, bring the longitude almost to the truth. Philosophers have sought the longitude in vain; but Newton has said it will yet be discovered by a fool. The selection of a station from which the longitudes of all other places are to be reckoned is entirely arbitrary; British astronomers and geographers have chosen the meridian of the Royal Observatory of Greenwich as their *first meridian*. The French and other continental nations refer the longitudes of all places to the meridian of their principal observatory. The longitude of a place may be expressed in hours, minutes, and seconds of time, or in degrees, minutes, and seconds of space; if it be given in either, it may be translated into the other. The reason of this is, that the earth revolves on its axis from west to east in 24 mean solar hours, thereby causing the first meridian to describe during that time a space equal to 360°, and therefore, in one hour, 15°. Hence, if the plane of the first meridian pass at the present moment through the sun, then the meridian of a place 15° west of the former, will pass through the sun exactly one hour after; if the place be 15° east of the first meridian, the plane of the former will pass through the sun one hour before the latter. The sun always

passes the meridian of any place when highest in the heavens, *i. e.*, at mid-day, or 12 o'clock mean solar time. Wherefore, places lying to the east of the first meridian will have every hour earlier, but places lying to the west of that meridian will have every hour later than it; so that if, while the meridian of one place is passing through the sun, the time be known before the meridian of another place pass through the sun, then the longitude of that place from the former is determined, the time being turned into space at the rate of 15° to the hour. Hence, therefore, places will have east or west longitude, according as they lie east or west of Greenwich Observatory, the longitude of the meridian of which is zero.

The problem of the longitude may be reduced to this—Given the hour by calculation at the place of observation, to find the hour at Greenwich Observatory corresponding to the same time; the difference of times gives the longitude of the place from Greenwich. The solution of this problem was attempted in very early times, dating even from the time of the ancient Egyptians, but the results obtained were very inaccurate. These results were deduced from tables of celestial phenomena calculated for a certain meridian, and then the times were compared with the times at which the same phenomena appeared at a different place; actual admeasurement was also employed. But it was not until after the invention of watches that the problem was rendered solvable. Harrison, in the 18th century, was the first who gave a true solution by a watch; but the first accurate resolution of the problem may be said to date from the discovery by Galileo of Jupiter's satellites, and his tables of their motions. The result of the problem at this period, as well as now, was, as Wolfius has expressed it, that the means might be found whereby the art of navigation might be brought to its utmost pitch of perfection. If the advantages of determining the longitude to a commercial and maritime people be considered, it will not appear surprising that princes and others should have held out high rewards for a true solution of the problem. Philip III., King of Spain, saw its value, and in 1598 offered a reward of 1000 crowns to the person who would solve it. The States of Holland imitated his example by a prize of 10,000 florins. In the year 1714, the British government offered a premium of £20,000 for any method whereby the longitude might be determined at sea to within 30 miles; £15,000, if the proposed method would give it to within 40 geographical miles; £10,000, if it would determine the longitude to within 60 miles. It was also enacted, that a reward of £5000 would be given to the inventor of any time-keeper which should enable a ship, during a voyage of six months, to keep her longitude to within 60 miles; £7500, if within 40 miles; and £10,000, if within 30 miles. If the method were by improved astronomical tables, the reward was to be £5000, the tables being compared with previous observations. France, also, in 1716, under the regency of the Duke of Orleans, offered a prize of 100,000 livres. In consequence of these rewards, many and various methods were proposed, the best of which, at least as respects frequency of observation and shortness of calculation, is the method of *Lunar Distances*.

Jean Werner of Nuremberg, appears to be the first who proposed, in his *Ptolemy's Geography*, 1514, a method of finding the longitude by the distance between the moon and a star. The lunar method was also recommended by Orondé Finé de Briançon, in his book *De Inveniendi Longitudine*; by Gemma Frisius, in his treatise *Structura Rationis Astronomici et Geometrici*, 1545; by Kepler, in his *Rudolphine Tables*; and by Christian Longomontanus, in his *Astronomia Danica*, 1622. Gemma Frisius is, moreover, said to have attempted the longitude by a watch some time after 1580. Carpenter, in his *Geography*, 1635, says that the lunar method is to be ascribed to Pierre Applan, a

German, born in 1495. John Baptiste Morin, in 1634, attempted to improve the lunar method, and received, in 1645, a pension of 2000 livres; but his improvements were useless, as Paschal declared, owing to the imperfect nature of the existing tables.

The tables of celestial observations previous to Flamsteed's time were imperfect and erroneous; those generally used were Tycho Brahe's, or Kepler's, and to show that they were of little value in determining the longitude, although invaluable in other respects, it may be stated that Flamsteed's observed differed from Tycho's computed places by $5'$, $6'$, or more; and the tabulated distances of the latter differed from the observed distances of the former by $15'$ or $20'$, which would cause an error in the longitude of about 15° , or 300 leagues. Tycho's *lunar theory*, and the tables grounded on it, were in error $12'$ and more. The uncertainty, then, of these tables being known, as well as the paucity of astronomical observations generally, a Frenchman, named Le Sieur de St. Pierre, contrived, in 1674, to get his pretensions to the discovery of the longitude brought under the notice of Charles II., of Britain and the court. Commissioners were appointed, and St. Pierre's data necessary to work the problem were as follows:—1. The heights of two stars, and on which side of the meridian they were; 2. The heights of the two limbs of the moon; 3. The height of the pole; all to be given in degrees and minutes; and 4. The year and day of observation. Flamsteed being in London at the time, was appointed, not only to act as a commissioner, but also to supply the necessary data. St. Pierre, having received the data which he required, refused to work the problem, because he alleged the observations given him were feigned. Flamsteed, on this, wrote to the commissioners, assuring them that the observations were genuine, and at the same time stated, that the longitude could not be solved by the conditions proposed; but if the tables of celestial observations, especially those of the moon, could be rendered more accurate, then the longitude might be determined by them. On the letter being shown to Charles, his majesty was startled at the assertion of the computed places not agreeing with the observed, and said with some vehemence, he must have them observed, examined, and corrected anew for the use of his seamen. It was this simple incident which led to the formation of the Royal Observatory of Greenwich, the foundation of which was laid by Flamsteed on the 10th of August, 1675; and it was in that building that Flamsteed labored for 44 years, under the most trying circumstances, to correct existing tables, and to commence the *British Catalogue*, one of the noblest monuments of British perseverance. So valuable were Flamsteed's observations to Newton, that they enabled him to form his *lunar theory*, which is now of such consequence in determining the longitude.

From the improvements made in watches by Huygens, Hooke, and others, previous to the year 1714, it was thought that the longitude would be solved by this machine. Hence, after 1714, the best artists applied themselves to the construction and improvement of watches. Henry Sully, an Englishman, but resident at Paris, tried in 1726 to determine the longitude by a *marine watch*, but without success. Julian Leroy, one of his pupils, would appear to lay claim to priority of invention; but it has never been disputed that the honor of solving the difficult problem of the longitude by means of a watch belongs wholly to Harrison. This ingenious workman began, at a very early period, to make experiments on pendulums made of different metals, in order to counteract the effects of heat and cold. In the year 1736 Harrison was brought into notice by a pendulum clock which he had made in 1726, and which, for ten successive years, kept remarkably exact time. This clock was tried in a voyage to Lisbon during August, 1736, when it corrected an error in the ship's reckoning of $1^\circ 30'$. At the special

request of the commissioners of longitude, who advanced him money, he continued his experiments on watches from 1757 till 1761, when he produced three watches, or time-keepers—the third the most accurate, and about 4 inches in diameter. This watch, or chronometer, was tried in a voyage to Jamaica as to its practicability in determining the longitude. The trial was eminently successful: the difference of time as shown by the chronometer indicating Greenwich or rather Portsmouth local time, and the local time of the place, being 4 seconds of time, which is equivalent to 1 nautical mile in the parallel of Jamaica. On the arrival of the vessel at Portsmouth, it was found that the error of the chronometer was only $1^{\circ} 53' 5''$, or $28^{\circ} 375'$ for the entire voyage, which, in the parallel of Portsmouth, would be equivalent to 18 nautical miles. Since this error was within the limit prescribed by the act, Harrison claimed the full reward of £20,000; but the commissioners, considering the matter in all its detail, came to the conclusion that the watch was not yet sufficiently tried. In order, however, to testify their appreciation of the invention, they gave Harrison a grant of £5000, and requested him to improve the watch still further against a second voyage. This voyage was undertaken, in 1764, to Barbadoes; and that no misunderstanding might ensue, Maskelyne and Green were also sent out to make the necessary astronomical observations at that place. The difference of longitude, as shown by the chronometer and that by astronomical observation, was $43''$ of time, which is equivalent to $10' 45''$ of space, or longitude. In consequence of the success attending this and the former trial, the House of Commons ordered one half of the reward promised by the act of 1714, or £10,000, to be paid to Mr. Harrison, the inventor of the *longitude clock*; the other half to be paid him when watches, constructed on principles stated by him, should determine by trial the longitude of any place to within 30 nautical miles. Another condition annexed to the payment of the other £10,000 was, that the inventor should give on an oath a full explanation of the principles on which the watch was constructed. This was done most willingly, and Harrison delivered over all his watches to government. The first watch made on Harrison's principles was that by Mr. Kendall; it was found to exceed the regularity of the best of its models. This instrument was committed to the care of Mr. Wales, in his voyage round the world with Captain Cooke, during the years 1772, 1773, etc., and such was its success, that in 1774 an appeal was made to the House of Commons to order the remaining sum to be paid to Mr. Harrison, which was accordingly done. Harrison realized by his invention alone upward of £24,000.

Several other parties received rewards for their improvements in chronometers. Arnold & Son received £3000, and Mudge £500.

Since Harrison's time, remarkable improvements have been made in time-keepers, or *chronometers*, as they are now termed; no one sustaining a good character that gains or loses more than a single second in one day.

But while watches were thus gradually being perfected, the tables of celestial motions were also attended to. Halley, on succeeding Flamsteed as astronomer-royal, continued improving what the latter had begun, so that for 1780, and consequently for the future, the *Caroline Tables* were presumed to give the true place of the moon within the compass of $2'$ of her motion. But however perfect such tables may be made, they will be useless without a proper instrument with which to take angles accurately at sea. Dr. Halley proposed to overcome this obstacle, by using on shipboard a telescope of five or six feet; but the error in such a case would nearly equal 2° , or under the equator the longitude would be in excess or defect about 40 leagues. But in 1761 Mr. Hadley communi-

cated to the Royal Society the nature of the *sextant*, which he had then invented. The sextant is an instrument for taking angles at sea with surprising accuracy; its principle depends on the law of the reflection of light. This instrument was tried in several voyages with wonderful success; but its results were most accurate when used with Professor Mayer's *Tables of the Moon*, computed for the meridian of Paris. These tables first appeared in the *Memoirs of Göttingen* for 1742, and a manuscript copy was sent in 1755 by Mayer to the Board of Longitude, setting forth, at the same time, his claim for some one of the rewards which he might be thought to merit. These tables were placed in the hands of Dr. Bradley, astronomer-royal, who compared several hundred computed longitudes of the moon with his own observed longitudes, and never found a greater difference than $1'.5$. Dr. Bradley showed the commissioners the value of these tables. Mayer died in 1762; but having in the interval greatly improved his tables, his widow sent them in 1763 to the Board of Longitude. These are the tables which, in consideration of their value in finding the longitude at sea, were, by act of Parliament, honored with a reward of £5000, which was paid, in 1765, to Mayer's widow. Dr. Maskelyne, astronomer-royal, was at the same time requested to improve and correct them as far as possible, so that they might be compiled, and form the basis of a *British Nautical Ephemeris*, or *Almanac*; and to print the same, in order to make the lunar tables of general utility. The first of the series of the *Nautical Almanac* and *Astronomical Ephemeris* was published in 1766, under the superintendence of Dr. Maskelyne. It was published yearly by the Commissioners of the Board of Longitude. The *Nautical Almanac* has been greatly improved, corrected, and extended, under the able superintendence of Mr. Airy, the present astronomer-royal; it is now published four or five years previous to the observations being made at Greenwich Observatory; hence in long voyages the set of tables may be taken out.

In consideration of Mayer having availed himself of Euler's *lunar theory*, the latter received from government £300.

The several methods for finding the longitude are the following:

To find the Longitude by a Chronometer.—Suppose that a chronometer is warranted to measure equal portions of time uniformly, and always indicates Greenwich local time; it is evident that, were this instrument carried to any station on the surface of the earth where also the local time is known, the local times of Greenwich and that place can be compared with each other. If the chronometer be carried to any station on the meridian of Greenwich, the chronometer and local time of the place will always coincide; but if it be carried to any station west or east of the meridian of Greenwich, then the time as shown by the chronometer will be in excess in the former case, but in the latter in defect of the local time of the place; the difference of local times gives the longitude of the place from Greenwich. The time may be converted into distance, at the rate of 15° to one hour. Chronometers can never be made perfect; they require, therefore, to be daily compared with the heavenly bodies in order to ascertain if their motion has been uniform.

To find the Longitude by Lunar Eclipses.—Since an eclipse of the moon is visible to one half of the earth at the same time, this would seem to be an excellent method of finding the longitude. The different steps of the process are—to compute the time at which an eclipse is to happen at the place of observation, and to compare this time with an accurate chronometer showing Greenwich time; or, in the absence of this, the Greenwich time of the happening of the phenomenon must be looked for in the *Nautical Almanac*; or it may

be compared by the observer from the lunar tables. But this method of determining the longitude is rarely used, owing to the difficulty of ascertaining the exact time of contact of the penumbra of the earth's shadow with the moon's limb at the beginning or ending of the eclipse. Sometimes, indeed, two observers of an eclipse at the same place, may differ more than two minutes in noting the time of contact; and hence the error from this cause alone would be about four minutes of time, which would be equivalent to nearly 1° of longitude. It was proposed in the *Philosophical Transactions* of 1786 to diminish this source of error, by observing the contact of the earth's shadow with some remarkable spot on the moon's face. But although this method were more accurate, the unfrequency of lunar eclipses at sea renders the method of little use.

To find the Longitude by the Eclipses of Jupiter's Satellites.—Ever since the discovery by Galileo of Jupiter's satellites the observation of their eclipses by their primary has been used as a method of finding the longitude. Tables of these eclipses were constructed by Galileo; and it was the disagreement of these tables with actual observation that led Roemer to the discovery of the gradual propagation of light. See LIGHT. The first astronomical solution of the great problem of the longitude really dates from the discovery of these *secondaries*, for the tables of their eclipses were framed on scientific principles. The three interior satellites of Jupiter pass through his shadow, and are eclipsed at every revolution; the fourth, or outer one, at times escapes eclipse, grazes the umbra, or is partially eclipsed. The computed times at which the eclipses are to happen at Greenwich Observatory are noted in the *Nautical Almanac*, published three or four years in advance; so that if these tables are in the hands of any one distant from Greenwich, he has but to observe the eclipse, and calculate the time at which it occurs, to find the difference of the local times between Greenwich and the place of observation, and thus ascertain the longitude. The times of immersion and emersion are noted with much greater accuracy than the contact of the moon's limb with the earth's shadow.

But before these eclipses can be observed with accuracy, a telescope of considerable power must be used; and as it is extremely difficult to direct a telescope properly on shipboard, the method is practically useless at sea. But, again, particular care is required in observing; for two observers at the same place, with telescopes of different magnifying powers and apertures, seldom agree within a second or two of each other; hence the mean of the results of immersion and emersion should be taken. But another source of error is, that no two or more observers will agree as to the instant of the total immersion, or of the complete emersion of the satellite; hence the only case in which this method is practically useful in determining terrestrial longitudes is that in which the instant of immersion and emersion are observed with the same telescope, and by the same observer, since in this manner he will find the precise instant of the satellite's opposition to the sun.

To find the Longitude by Signals.—If the difference of longitude between two places be small, it may be easily found by means of the bursting of a rocket, the oxy-hydrogen lime-ball light, or the explosion of gunpowder fired from the one place at a preconcerted time, and observed at the other place; the local times of these places being accurately ascertained, the longitude is known. These artificial signals, when fired from an elevated spot of country, may be seen, when the atmosphere is in a proper state, at distances varying from 80 to above 100 miles. An observer, therefore, distant from the spot at which the rocket or other signal is exposed, has only to observe the time when he sees it, and afterward compare this time with the

time when the rocket was set up, the difference of times giving the longitude of the one place from the other; if at one of the places the Greenwich time corresponding to that of the event is known, the longitudes of the places from that meridian are also known. It is here supposed that the gradual propagation of light leads to no appreciable error in the small distance between the two places.

If the distance between the two places be considerable, and if a rocket sent up at the one place can not be seen at the other place, the longitude of which is required, then a series of signals must be made and noted by observers, placed at stations intermediate to the two extreme places.

Thus, let A and E be the two places, the longitude between which is required; B, C, and D, observers at intermediate stations; w, x, y, z , signal places, and let these places be arranged in the following manner:

A w B x C y D z E.

Before the signals are sent up at the previously arranged hours from w, x, y, z , the local times of the places along the whole line AE are supposed to be accurately known. Let then a signal be sent up at w , and noted at A and B, the difference of times of observation, as noted by the chronometers at those two places, will give the longitude AB. Let, again, another signal be sent up at x , and the time of appearance noted at B and C, then the difference of times, as shown by the chronometers, gives the longitude between B and C; and therefore between A and C. Similar results will be found when signals are sent up from the stations y and z , to be observed at C and D, D and E; and, in this manner, the whole longitude AE between the extreme stations can be found. The longitude found on this principle, and the mode of deducing the most advantageous results from a combination of all the observations, is fully stated by Sir John Herschel in the *Philosophical Transactions*, 1826, on the *Difference of Longitudes of Greenwich and Paris*.

To determine the Longitude by Moon-culminating Stars.—This method consists in finding the increase of the moon's right ascension in the intervals between the passage of the moon over the meridian of Greenwich and over that place whose longitude is required. It is necessary to find the right ascension of the moon's bright limb, and of a star selected on, or as near as possible to, the moon's parallel of declination, and not differing much from her in right ascension at the two meridians; then, the moon's increase of right ascension being known, the difference of longitude is determined.

Let T , for example, be the time when the moon's enlightened limb transits the meridian of any place distant from Greenwich; t the time of passage of a star over the meridian of the same place; let also n be the error of the clock in the course of the day; then $24+n$ will be the interval of time elapsing between two successive transits of the same star, and $24+n: T-t=360^\circ$: the difference of right ascension of the moon's bright limb and the star at the instant of the limb being on the meridian; and if to this the right ascension of the star be added, the right ascension, $=\alpha'$, of the moon's bright limb when on the meridian is determined. Now the proper stars to be observed for this purpose, as well as the right ascension of the moon's bright limb when on the meridian of Greenwich, are given for every day of the year in the *Nautical Almanac*, from which the daily increment of right ascension may be determined. Let a be the right ascension of the moon's bright limb when on the meridian of Greenwich, e the increment of right ascension in the time between two successive transits over the same meridian; then, while the moon, by her relative motion, separates from the meridian of Greenwich by an angle of 360° , its real motion in right ascension is e ; and while it separates by an angle equal to the dif-

ference of longitude, the motion in right ascension is $a'-a''$; and therefore, supposing the change in right ascension uniform, the required longitude $= \frac{a-a''}{a} \cdot 360^\circ$.

Where greater accuracy is required, the difference of longitude corresponding to the increase of right ascension $a-a''$, must be determined by interpolation. This method is considered one of the best which can be adopted for determining the longitude of distant places, when the observer, furnished with a transit instrument, can obtain a landing.—HYMER'S *Astron.*, 1840.

To find the Longitude by the passages of the Moon over the Meridian.—If the sun, moon, and a star be supposed to be on the meridian of Greenwich at the present moment, then the next instant the three bodies will be separated from each other—the star will be found most advanced to the west, the moon least advanced from the meridian, while the sun will occupy an intermediate situation. The meridian itself also leaves these bodies, but will approach them with different degrees of velocity, and reach each of them after certain intervals of time. It will pass the star after the lapse of a sidereal day, or after having described 360° ; it will pass the sun at the end of a solar day, or after having described $360^\circ 59' 8'' \cdot 3$; and it will pass the moon after a time—the sum of 24 hours and the moon's retardation for that time, or after having described an angle—the sum of 360° and the moon's right ascension in 24 hours. This always takes place in the interval between two successive transits of the moon over the same meridian. So also a spectator on a different meridian will notice similar effects, but less in degree, and less proportional to the distance of his from the first meridian. The sun's right ascension will be increased (or the separation of the sun from the star), but less than $59' 8'' \cdot 3$; the moon's right ascension (or the separation of the moon from the star) will also be increased to the spectator, but less than its increase between two successive transits; consequently there will be an excess of increase of the moon's right ascension above that of the sun's, but less than the excess that takes place between two successive transits of the moon over the meridian of Greenwich. Wherefore, since the spectator at the second meridian may compute the respective increments of right ascension of moon and sun that take place between two successive passages of the moon over the meridian of Greenwich; then, since he is also able to compute, by actual observation, the right ascensions of sun and moon at the times of their passage over his own meridian, he has determined the longitude. The spectator may choose the sun and a star, the moon and a star, or the moon and sun; the two former are preferable.—WOODHOUSE'S *Astron.*, 1821.

To determine the Longitude by means of Eclipses of the Sun, or by Occultations of Stars by the Moon.—One of the most exact methods, and at the same time the simplest, for finding the longitude, is by means of solar eclipses and occultations. If the commencement and ending of an eclipse of the sun, or the immersion and emersion respectively of a star from the enlightened and dark limb of the moon or of a planet, be observed, it is only necessary to deduce the true time of conjunction for Greenwich and also for another place of observation; the difference of the times gives the difference of meridians, and therefore also of longitudes. Kepler employed this method, and it is one of the simplest.—KEPLER, *Astron. pars opt.* The only inconvenience of this method is the large amount of calculation required.

To find the Longitude by Lunar Distances; that is, by the distance of the Moon from a Star or the Sun.—This method supposes that the face of the heavens is a dial-plate, the stars marks apparently irregularly

distributed upon it, and the moon the hand movable among them and round the earth as a variable centre. Three things require particular notice about this clock: 1. The intervals of place separating the principal and secondary marks from one another and from the moving hand—the moon. 2. The exact amount of the eccentricity of the earth, the centre of motion of the hand. 3. The proper motion of both moon and earth at any part of their respective paths. When these data are properly known, the time as shown by this clock may be read. The time as pointed out on this dial-plate is generally read at Greenwich Observatory, and tabulated in the *Nautical Almanac*, 4 or 5 years beforehand, for every three hours. But this clock is supposed to be accurately seen by a spectator at the centre of the earth, and consequently, since observers are on the surface, the moving hand being rather near, and the marks immensely distant from the earth, it is evident that this movable hand will be displaced, or undergo a *parallax* with respect to the stars, which must be allowed for, ere the true place is known which she occupies in space, as seen from the centre of the earth. A reduction must also be made to the centre of the earth. The necessary steps for computing the longitude by this method are: (1.) Find by a sextant the distance between a star and one of the moon's limbs; or, between the limbs of the sun and moon; add or subtract, in the former case, the semi-diameter of the moon, and in the latter, the sum of the semi-diameters of sun and moon, which gives the distance of the moon's centre from the star, or that between the centres of sun and moon. (2.) When two observers are making the observations, one should take the above distance, while at the same instant the other takes the altitude above the horizon of the moon and star, or of the moon and sun. In the case of one observer, he must take the altitudes immediately before and after the distance has been found, and allow for the changes of altitude which may have taken place in the intervals between their observations and that of the distance. (3.) The true altitudes are derived from the apparent and observed, by correcting the latter for refraction and parallax; the *apparent* altitude being the observed altitude corrected for the dip of the horizon and instrumental errors. (4.) The observed is also an apparent distance, and must, like the altitude, be corrected for parallax and refraction in order to find the true distance. (5.) Since the true distance is found, the hour, minute, etc., of Greenwich time corresponding to it will also be found by the tables of the *Nautical Almanac*. (6.) The local time of the place of observation is now to be computed from the true and corrected altitude of a star or the sun, the sun's or star's north polar distance, and the latitude. (7.) The difference between this local time and Greenwich time gives the longitude.

To find the Longitude by the Electric Telegraph.—

This beautiful and ingenious application of electricity for recording astronomical observations is the latest method of finding the longitude, and was proposed by Mr. Bond of the Cambridge Observatory, United States. Mr. Airy, of the Greenwich Observatory, has also carried it into effect with great improvements. During the summer of 1847 experiments were made on the electric telegraph connecting New York, Philadelphia, and Washington, for the purpose of determining the differences of longitude between these three cities. A competent observer was stationed at each observatory. A continuous wire connected the three cities, so that telegraph signals might be exchanged between any two of them at pleasure. In some of the first experiments, signals were exchanged between Philadelphia and Washington, but it was found impossible to transmit signals from Jersey City to Washington, the power of the battery being inadequate to that distance. This, however, was remedied on the 29th of July, when 20 clock signals were given at Jersey City, and recorded both at Philadelphia and

Washington; 20 signals were given at Philadelphia and recorded at Jersey City and Washington; and 20 signals were given at Washington and recorded at Jersey City and Philadelphia. Thus the comparison of the three clocks was decisively made in a remarkably short period of time. The success of these experiments amply repaid the first unsuccessful efforts. The difference of longitude between Jersey City and Philadelphia is $40^m 3^s$; and between Jersey City and Washington, $12^m 8^s$; omitting in each case the small fractional part of a second, which was ultimately allowed for. The distance between New York and Washington is 225 miles, and the time required to make a communication pass betwixt these two places was a fraction of a second which can not be measured.

Soon after a system of telegraphic wires was erected on the principal English lines of railway, Mr. Airy had them put in communication with Greenwich Observatory, his object being to give *Greenwich time* on a given day to the United Kingdom. It was at first proposed that a ball should be dropped from the upper part of Greenwich Observatory, so as to touch a spring communicating with all the telegraphic wires in the kingdom, and then, by the striking of a bell, give instantaneously true Greenwich time to Liverpool, Manchester, and all the northern towns. But this method was found impracticable, owing to the non-completion of all the lines with Greenwich. On the 1st of December, 1847, true Greenwich time was communicated directly from the observatory to the several stations of the London and North-Western and Midland lines in connection with it; but to all other stations of these lines special messengers were sent with chronometers indicating true Greenwich time. Hence, since Greenwich time is used over the whole of the United Kingdom, if the local time of any place be known, its longitude from Greenwich is also determined. Since submarine cables connect Greenwich with Brussels and Paris, and these again with the principal cities of Europe, Mr. Airy was very lately enabled to correct the latitudes and longitudes of their observatories. Hence, also, when the submarine cables which are to connect India, Australia, and America, with Greenwich, shall have been completed, the true longitudes of the principal cities of the world will easily be determined.—E. B. See articles LATITUDE and LONGITUDE, EARTH and DEGREE.

Loo-Choo Islands, a group consisting of about 36 islands in the North Pacific Ocean, between Japan and Formosa. They lie between N. lat. 24° and $28^\circ 40'$, and E. long. 127° and 129° . They are small and insignificant, with the exception of Great Loo-Choo, which extends about 60 miles in a north-easterly direction, and has an average breadth of about 10 or 12 miles. This island is entirely encircled by coral reefs, which, however, do not appear above water. Along its centre runs a chain of hills, covered for the most part by forests of pine, and broken at intervals by rupt crags that bear seeming traces of volcanic action. Their slopes in many parts are covered with terraced gardens and fields of grain, and are watered by streams led in artificial channels. The valleys are well watered, fruitful, and covered with a luxuriant vegetation. The villages are almost completely hidden among groves of bananas, bamboos, banyans, and pines. Rows of trees overarch the roads, line the streets of the chief towns, and form a screen in front of the houses. There are large rich fields of rice, intermingled with crops of sugar-cane, wheat, millet, sweet potatoes, plums, oranges, cotton, and tobacco. The principal surface-rock is argillaceous, and is intersected at intervals by peculiar ridges of limestone. The disintegration of the former rock forms the chief ingredient of the rich adhesive soil which is most prevalent in the island. Situate within the range of the trade-winds, Loo-Choo has in general a mild climate. The domestic animals are, geese, ducks,

fowls, pigs, goats, a small species of black ox, and a nimble, and hardy breed of horses. Wild boars abound in the extensive forests. A striking trait in the zoology of the island is the scarcity of birds in the woods.

The dress, customs, but especially the language, of the Loo-Chooans, indicate a Japanese origin. Suspicious of strangers, they are, nevertheless, gentle and hospitable. They are diminutive in stature, and in complexion resemble the Chinese. They have dark eyes and black hair, plaited into a knot on the crown of the head; and the character of the hair-pin determines the sex as well as the rank of the wearer. The women wear single, and the men double hair-pins. Among the higher classes, these articles are made of gold or silver; among the lower, of brass, lead, or pewter. The highest grade of society includes the spies and officers of the government, and also the mechanics and small merchants. Immediately below them are the literary class, who pass the most of their time in smoking tobacco and drinking tea, and are supported by the subordinate rank of field-laborers. The meanest order are the public slaves, possessing no personal freedom, and no civil rights. Subjected from mere infancy to perpetual toil, closely watched by spies, and prevented from all intercourse with strangers, the lower classes are spiritless, uncomplaining drudges, subsisting upon two tenths of the produce they reap from the soil. In the same slavish labor the women also are engaged. The Loo-Chooans of one village seldom intermarry with those of another. Their dead are treated with great respect; and their capacious tombs, built of white limestone, appear at a distance like cottages, checkering the hill-sides. The huts are generally placed in the middle of well-cultivated gardens. Their floors, covered with thick mats, are used both for sitting and sleeping. A great part of the industrial population are engaged in weaving the grass-cloth that forms the ordinary garment, and in turning wooden implements and covering them with lacquer. There are also manufactured tobacco, sugar, and small quantities of salt. Saki, a strong intoxicating liquor, is distilled from rice. All the processes of agriculture, and especially that of irrigation, are carried on with great success. The entire trade of the island is with Japan, and consists chiefly of sugar, saki, and grass-cloth. The government of Loo-Choo seems to consist of an oligarchy of *literati* subject to Japan. Learning is limited to a knowledge of the Chinese character and the Confucian classics, and the principal means of disseminating it is home education. A few regular schools, however, are scattered over the island, and at Napakiang there is an advanced seminary. The Loo-Chooans have no native literature. Their religion is a hybrid between Confucianism and Buddhism. Concerning the history of the island nothing certain is known, but tradition reports that it was once subject to three distinct sovereigns.

The principal sea-port is Napa, or Napa-Keang, situated in latitude $26^\circ 13' N.$, and longitude $127^\circ 36' E.$ The harbor is secure, and the port is now open to American vessels, for the purposes specified in the convention concluded July 11, 1854, and proclaimed March 9, 1855. The government of Japan having virtually disclaimed any jurisdiction whatever over the Loo-Choo Islands, a separate compact was entered into between the United States and the kingdom of Loo-Choo. It is as follows:

"Hereafter, whenever citizens of the United States come to Loo-Choo, they shall be treated with great courtesy and friendship. Whatever articles these people ask for, whether from the officers or people, which the country can furnish, shall be sold to them; nor shall the authorities interpose any prohibitory regulations to the people selling; and whatever either party may wish to buy, shall be exchanged at reason-

able prices. Whenever ships of the United States shall come into any harbor in Loo-Choo, they shall be supplied with wood and water at reasonable prices; but if they wish to get other articles, they shall be purchasable only at Napa. If ships of the United States are wrecked on Great Loo-Choo, or on islands under the jurisdiction of the royal government of Loo-Choo, the local authorities shall dispatch persons to assist in saving life and property, and preserve what can be brought ashore, till the ships of that nation shall come to take away all that may have been saved; and the expenses incurred in rescuing these unfortunate persons shall be refunded by the nation they belong to. Whenever persons from ships of the United States come ashore in Loo-Choo, they shall be at liberty to ramble where they please, without hindrance, or having officials sent to follow them, or to spy what they do; but if they violently go into houses, or trifle with women, or force people to sell them things, or do other such like illegal acts, they shall be arrested by the local officers, but not maltreated, and shall be reported to the captain of the ship to which they belong, for punishment by him. At Tumai is a burial-ground for the citizens of the United States, where their graves and tombs shall not be molested. The government of Loo-Choo shall appoint skillful pilots, who shall be on the look-out for ships appearing off the island; and if one is seen coming toward Napa, they shall go out in good boats, beyond the reefs, to conduct her into a secure anchorage; for which service the captain shall pay the pilot five dollars, and the same for going out of the harbor, beyond the reefs. Whenever ships anchor at Napa, the officers shall furnish them with wood at the rate of 8600 copper cash (43 cents) per 1000 cattles; and with water at the rate of 600 copper cash for 1000 cattles, or 6 barrels full, each containing 80 American gallons."

Loom (Fr. *Metier a tisser*; Ger. *Weberstuhl*), is the ancient and well-known machine for weaving cloth by the decussation of a series of parallel threads, which run lengthwise, called the warp or chain, with other threads thrown transversely with the shuttle, called the woof or weft. See JACQUARD, article, WOOLEN MANUFACTURES.

Lorcha, the name of a coasting vessel used in the Chinese seas. One of those vessels, sailing under British colors, was, in 1856, boarded by the Cantonese, had her flag pulled down, and her crew forcibly carried off. Governor Yeh refused either reparation or apology, and this led to the conflict between Britain and China during the same year.

Lorient, one of the five great naval ports of France, and the principal town in the arrondissement of the same name in the Department of Morbihan, is situated on the northern shore of the Bay of Biscay, where the Rivers Scarf and Blavet, after mingling their waters, fall into the Bay of St. Louis. It is a large and flourishing town, strongly fortified, tolerably well built, but not very clean, standing in an angle between two creeks, one of which forms the naval, and the other the mercantile port. The port, which is large and commodious, is walled off from the town, thereby excluding all view of the water from the inhabitants. It is the seat of a maritime prefecture, of a civil tribunal, of a tribunal of commerce, of a college, and of a school of naval artillery. The dockyard is the first in France for the building and equipment of ships of war: there is accommodation on its slips for the simultaneous construction of 30 ships of war. It has an arsenal, a park of artillery, engineering works, masting-sheds and forges, etc. There is a good trade in sardines, marine stores, iron, wax, honey, etc. The town is quite modern. Founded by the French India Company, in the reign of Louis XIV., in 1664, it was not till the time of the Duke of Orleans that the company took full advantage of the accommodation of Lorient. The greater portion of the town

was then built, and the port fortified. In 1745 it contained 35 frigates, besides a very great number of ships, averaging from 900 to 1200 tons burden. In the comparatively short space of 80 years Lorient had risen to the first rank of towns. On the dissolution of the company in 1770, it was made one of the stations for the French navy. Its population and shipping declined during the unsettled period of the Revolution, but since the peace of 1815 it has been more than restored to its former activity. Population 25,700.

Los Angeles (*the City of the Angels*), capital of Los Angeles county, California, 350 miles south-south-east of San Francisco, and in a direct line 3,000 miles a little south of west from Washington. It contains a large Roman Catholic church, and 1620 inhabitants. This city was founded in 1781, by order of the Viceroy of New Spain, Balilio Frey, Antonio Bucareli y Urza, and is situated on the right bank of the Porcu-neula River, which copiously waters the highly fertile plain on which the city stands. Invited by a genial climate, the inhabitants have converted this plain into a delightful garden, covered with all sorts of native fruits, but especially the vine, which is cultivated with care and extraordinary success (the product of 1852 amounted to 2,250,000 pounds). This valley, famous for its wines and liquors, contains the missions of San Juan Capistrano, San Gabriel, and San Fernando, which but a few years since constituted the richest establishment in California, and numbered very nearly 500,000 head of cattle.

Lotteries, in their highest application, are institutions for raising the revenue of the country by granting to those who voluntarily contribute the chance of obtaining a reversion of part of the money collected. This reversion is determined by lot. The first mentioned in English history began drawing at the western door of St. Paul's Cathedral, January 11, 1569, and continued, day and night, until May 6 following. Its profits were for repairing the fortifications on the coast of England, and the prizes were pieces of plate. The first lottery mentioned for sums of money took place in 1630. Lotteries were established in 1693, and for more than 130 years yielded a large annual revenue to the crown. The Irish state lottery was drawn in Dublin in 1780. All lotteries were suppressed in France by a decree of the National Convention, November 15, 1793. They were abolished in England 1826; and an act was passed imposing a penalty of £50 for advertising foreign or any lotteries in the British newspapers, 1836. Abolished in Bavaria by unanimous vote of the deputies, October 19, 1847. They have long been abolished in New England: in New York they were prohibited about 1830. In nearly all the States there is a penalty against lotteries not specially authorized by the legislatures. The practice may be traced back to the Romans, who were accustomed, at least in the days of the empire, to enliven their festivals with the distribution of tickets, uniform in appearance, but entitling the holders to receive articles of various value. Instead of granting largesses to the leaders of the Plebs, the Emperor Augustus frequently distributed his gifts on the same principle; and Helio-gabalus has the merit of devising in sport a plan frequently resorted to in fraud to avoid the penalties against lotteries in England, of making prizes really worthless take the place of blanks. In the middle ages the same practice prevailed at the banquets of feudal princes, who distributed their presents economically, and without the fear of jealousy, by granting lottery tickets indiscriminately to their friends. The practice soon descended to the merchants; and in Italy, in the 16th century, this became a favorite mode of disposing of their wares. In 1530 the "Lotto" of Florence was established for the necessities of the State, and the example was quickly followed throughout Europe. The first lotteries with numbered tickets were instituted at Genoa. Mercantile lotteries were

established in France, under Francis I., in 1539, and a tax levied on each ticket; but these were supplanted in 1660 by lotteries of money, under the direct control of the king. The first lottery established in England was drawn in 1569. It consisted of 40,000 lots, which were sold at 10s. each. The prizes were pieces of plate; and the profits were devoted to the repairs of certain harbors in the kingdom. The printed plan of this scheme is still in possession of the Antiquarian Society of London. In 1612 a lottery was granted in behalf of the Virginia Company; and in 1680 the same privilege was accorded to a contractor who undertook to supply London with water. From this time forward the spirit of gambling increased so rapidly, and grew so strong, that, in the reign of Queen Anne, private lotteries had to be suppressed as public nuisances. The first parliamentary lottery was instituted in 1709; and from this period till 1824 the passing of a lottery bill was in the programme of every session. Up till about the close of the 18th century the prizes were generally paid in the form of terminable, and sometimes of perpetual, annuities. Loans were also raised by granting a bonus of lottery tickets to all who subscribed a certain amount. This gambling in annuities, however, despite the restrictions of an act passed in 1793, soon led to an appalling amount of vice and misery; and in 1808 a committee of the House of Commons urged the suppression of this ruinous mode of filling the national exchequer. In October, 1826, the last public lottery was drawn in Britain. In France, State lotteries have been abolished, but they still exist in most of the continental States; and although demonstrably a source of loss to those who embark in them, they are upheld as a very ready mode of procuring money from the poor, the miserly, and the adventurous. The Hamburg lottery affords the most favorable representation of the system, as in it all the money raised by the sale of tickets is re-distributed in the drawing of the lots, with the exception of 10 per cent. deducted in expenses and otherwise. In the United States, lotteries were established by Congress in 1776, but with the exception of the southern States, heavy penalties are now imposed on persons attempting to establish them. Private lotteries are now illegal at common law in Great Britain and Ireland; and penalties are also incurred by the advertisers of foreign lotteries. Some years ago it became common in Scotland to dispose of merchandise by means of lotteries; but this is specially condemned in the statute 42d Geo. III., c. 119. An evasion of the law has been attempted by affixing a prize to every ticket, so as to make the transaction resemble a legal sale; but this has been punished as a fraud, even when it could be proved that the prize equaled in value the price of the ticket. This decision rested upon the plea, that in such a transaction there was no definite sale of a specific article.

In 1844 art-unions began to be established in Britain; and as the principle on which they are founded involves that of the lottery, their operations, which are in reality illegal, were immediately suspended by order of government. In the following year, however, an act was passed to indemnify those who had embarked in them for the losses which they had incurred by the arrest of their proceedings; and since that time they have been tolerated under the eye of the law without any express statute being framed for their exemption. —E. B.

Lotus. The lotus (*Nympha lotus*) is a native of the lakes of the Cashmere, and its stems serve as an article of food. In autumn, after the plate of the leaf has begun to decay, the stem has arrived at maturity, and being boiled till tender, furnishes a wholesome, nutritious diet, which is said to support 5000 persons in Cashmere for nearly eight months in the year. This plant would probably succeed well in the muddy bottoms of the coves, creeks, and sloughs of our lakes and

streams; and, if not relished as human food, doubtless its products would serve to nourish animals.—*Patent Office Rep.*, 1855.

Lough, an Irish term, synonymous with the Scotch *loch*, but not with the English *lake*: for loch and lough are applied to designate arms of the sea, as well as collections of fresh water, which lake is not.

Louis d'Or, a French coin, first struck in the year 1640, under the reign of Louis XIII. By the French mint regulations it was at length made equal to 24 livres, or £1 sterling. This, however, was underrating it as compared with silver; and hence, as every one preferred paying their debts in the over-valued coin, silver became the principal currency of France—the gold coins being either sent to the melting-pot or exported. In Great Britain the process was reversed, gold having, for a long period, been overvalued by their mint.

Louisiana, one of the southern United States, lies between 29° and 35° N. lat. It is 240 miles long from north to south, and 216 broad, containing 41,346 square miles. Population in 1810 was 76,566; in 1820, 153,407; in 1830, 215,575; in 1840, 352,411; and in 1850, 511,974. The State is divided into 47 parishes. Robert de la Sale, when he reached the mouth of the Mississippi (1682), introduced the name *Louisiane*, in honor of the great king, as the name of the country along the great river, "from the Illinois to the Gulf of Mexico." (CHARLEVOIX, tom. i.) Many other points and locations were vowed round the same gulf to the same name, king and his saint. La Sale (1685) vowed to the saint and to the king "the Bay of St. Louis" (Matagorda Bay), discovered by him on the coast of Texas. When Iberville, on the 12th of April, 1699, discovered that little bay opposite Cat Island, on the coast of the continent, he introduced this name again into the Mississippi country, by naming the harbor "*La Baye de St. Louis*." In the year 1701 Mr. Bienville, when he evacuated Billoxi, and removed the French head-quarters to Mobile Bay, called his fort there "*Fort de St. Louis*," and this name, Fort St. Louis, then designated, for more than 20 years, the central settlement or capital of the French Mississippi colony. It is curious that the name "*Louisiane*" seems not to have been much used before 1712. We do not find it, for instance, a single time mentioned in the *Memoirs* of M. DE SAUVOLLE, written in this colony in the beginning of the 18th century. In the year 1712 King Louis XIV. adopted officially the name "*Louisiane*" for that province, which seemed now promising and important enough for such a grace. He pronounces that the countries at the mouth of the Mississippi shall henceforward be called "*La Province de la Louisiane*." He at the same time changes also the name of the Mississippi, and says that it shall at present be called "*Riviere de St. Louis*" (the St. Louis River). The French extended the name of Louisiana over the whole Mississippi valley, between the Alleghany Mountains, the Lakes of Canada, Mexico, and the Rocky Mountains, and south they went as far with their pretensions as the Rio Bravo, including all Texas. All the old French maps go with their "*Louisiane*" as far south as the Rio Bravo. On some maps even the peninsula of Florida was called "*La Peninsule de Louisiane*," so that, according to these French pretensions, the name "*Louisiane*" comprehended the whole coasts of the Gulf of Mexico which belong now to the United States.

The Spaniards, on the other hand, went with their name "*Mexico*" as far as Red River and the western shore of the Mississippi, and they kept in Texas their ground. They also kept up their old dominion in the Floridas; so that, in time, the name "*Louisiane*" was on the French maps more contracted. When the Spaniards acquired (1763) from France the dominion of Louisiana, they retained that name, changing it only to "*Louisiana*," or sometimes also to "*Lusiana*,"

and even to "Luciana." They put the eastern limit of their Mexican provinces and of Texas at the River Mermentau, quite near to the Mississippi Delta; and the western limit of the Floridas was, as well at the time of the English dominion in the Floridas (1763-1783) as after the retrocession of these provinces to Spain (1783), considered to be at the easternmost branch of the Mississippi (Riviere, Iberville and the Lakes Pontchartrain, etc.); so that during this time (1763-1800) the name "Luciana" comprised only a very small part of the coasts of the Mexican Gulf. When the United States acquired the dominion of Louisiana (1802) this name was at first quite extinguished on the shores of the Gulf. The whole southern part of old Louisiana was called "The Territory of New Orleans." The old name was, however, revived again in the year 1812, when a part of the old French colony was admitted into the Union under the name of the "State of Louisiana." After the final settlement of the boundaries of this State, the name Louisiana comprised all the shores between the mouth of Pearl River to the east and that of Sabine River to the west, the whole Mississippi Delta, and on both sides a little more. We may remark that the orthography of the name Louisiana, which we have adopted, is half Spanish, half French. Purely French it ought to be "Luisiane," and purely Spanish, "Luisiana."—J. G. KOHL.

Physical Features, etc.—Below the mouth of Red River, the Mississippi divides into several branches or outlets, which, diverging from each other, slowly wend their way to the Gulf of Mexico, and divide the south-west part of the State into a number of large islands. The western of these outlets is the Atchafalaya, which leaves the main stream at the mouth of Red River, and inclining eastward, flows into Atchafalaya Bay, in the Gulf of Mexico. About 128 miles below the Atchafalaya is the outlet of Plaquemine, the main stream of which unites with Atchafalaya, but other portions of it intersect the country in different directions. 31 miles below the Plaquemine, and 82 above New Orleans, is the outlet of La Fourche, which communicates with the Gulf of Mexico by two mouths. Below the La Fourche, numerous other small streams branch off from the river at various points. On the east side of the Mississippi the principal outlet is the Iberville, which communicates with the Gulf of Mexico through Lakes Maurepas, Pontchartrain and Borgne. The whole territory between the Atchafalaya on the west, and Iberville, etc., on the east, is called the Delta of the Mississippi, from its resemblance in shape to the Greek letter of that name. A large extent of country in this State is annually overflowed. The alluvial margin along the Mississippi has a breadth of from one to two miles, and is of great fertility. To prevent the river from inundating the valuable tracts in the rear, an artificial embankment has been raised on the margin of the river, called the Levee. On the east side of the river this embankment commences about 40 miles below New Orleans, and extends up the river for a distance of 180 miles. On the west side it continues with little interruption to the Arkansas line. Along this portion of the river there are many beautiful and finely-cultivated plantations, and a continual succession of pleasant residences. The south-western part of the State consists of sea marsh on the margin of the Gulf, but further inland of extensive and fertile prairies, which contain many flourishing settlements. The surface is elevated from 10 to 50 feet above high tide. The country between the Mississippi, Iberville, and Pearl Rivers, in its southern parts, is generally level and highly productive in cotton, sugar, corn, rice, and indigo. The northern part has an undulating surface and a heavy natural growth of white, red, and yellow oak, hickory, black walnut, sassafras, magnolia, and poplar. In the north-western part, the Red River, after entering the State by a

single channel and flowing about 80 miles, spreads into a number of channels, forming many lakes, islands, and swamps, over a space of 60 miles long and 6 broad. The bottoms on the river are from 1 to 10 miles wide, and very fertile. The timber is willow, cotton-wood, honey-locust, pawpaw, and buckeye; on the rich uplands, elm, ash, hickory, mulberry, black walnut, with a profusion of grape vines. On the less fertile and sandy uplands of the State are white pitch and yellow pines, and various kinds of oak. There were in this State in 1850, 1,590,025 acres of land improved, and 3,939,018 of unimproved land in farms. Cash value of farms, \$75,814,398; and the value of implements and machinery, \$11,576,938.

Live Stock.—Horses, 89,514; asses and mules, 44,849; milch cows, 105,576; working oxen, 54,968; other cattle, 414,798; sheep, 110,333; swine, 597,301. Value of live stock, \$11,152,275.

Agricultural Products, etc.—Wheat, 417 bushels; rye, 475; Indian corn, 10,266,373; oats, 89,637; buckwheat, 3; peas and beans, 161,732; potatoes, 95,632; sweet potatoes, 1,428,453; rice, 4,425,349 lbs. Value of products of the orchard, \$22,359; produce of market gardens, 148,329. Pounds of butter made, 683,069; of cheese, 1,957; sugar, hhd's, 226,001; maple sugar, 255 pounds; molasses, 10,931,177 gallons; bees' wax and honey, 96,701 pounds; wool, 109,897; cotton, 178,787; silk cocoons, 29; hops, 125; tobacco, 26,878; hay, 25,752 tons; clover seeds, 2 bushels; other grass seeds, 97 bushels; and there were made 15 gallons of wine. Value of home-made manufactures, 139,232; of slaughtered animals, \$1,458,990.

Rivers, etc.—The Mississippi River forms the boundary of the State for a considerable distance, and in its lower part runs wholly within the State, and enters the Gulf of Mexico by several channels. It is navigable for vessels of the largest size. Red River enters the State near the north-west corner, and passes through in a south-east direction, discharging a vast amount of water into the Mississippi, 236 miles above New Orleans. The Washita runs in a south direction in the north part of the State, and enters Red River a little above its junction with the Mississippi. Bayou La Fourche and Atchafalaya are large outlets of the Mississippi. The other rivers and streams are the Black, Tensas, Sabine, Calcasieu, Mermanteau, Vermilion, Teche, Pearl, Amite, Iberville, etc.

Manufactures.—There were in this State in 1850, 8 establishments with a capital of 225,000, employing 347 persons, and making 1,570 tons of castings, etc., valued at 312,500; 96 flouring and grist mills, 120 saw mills, 16 tanneries, 47 printing offices, 60 newspapers—11 daily, 6 tri and semi-weekly, 37 weekly—and one monthly publication; aggregate number of copies issued annually, 12,416,224. Capital invested in manufactures, \$5,304,924; value of manufactured articles, \$7,045,814. On the 1st of January, 1856, there were 7 railroads, with 111 miles of track finished and in operation.

The principal places in the State are Baton Rouge, the capital, New Orleans, Jackson, St. Francisville, Opelousas, Grand Coteau, Alexandria, Natchitoches, and Shreveport. There were, January 1st, 1853, 7 banks in the State, with an aggregate capital of \$12,000,000. Tonnage, same year, 156,273 tons. Total value of exports of American and foreign produce, 1852, \$49,058,885. Value of imports, \$12,057,724.

Louisiana was first explored by the French, and received its name in 1682 from M. La Salle, in honor of Louis XIV., and a settlement was attempted in 1684, but failed. In 1699 a more successful attempt was made by M. Iberville, who entered the Mississippi and founded a colony. His efforts were followed by Crozat, who held the exclusive trade of the country for a number of years. About 1717 he transferred his interest to a chartered company, at the head of which

was the notorious John Law, whose national bank and Mississippi speculation involved half the French nobility. In 1731 the company resigned the concern to the crown, who, in 1762, ceded the country of Louisiana to Spain. In 1800 Spain re-conveyed the province to France, from whom, in 1803, the United States

purchased the entire territory for \$15,000,000. The portion now included in the State formed a constitution, and was admitted into the Union in 1812. A second constitution was adopted and went into operation in 1845, and the third and present one was formed and adopted in 1852.

FOREIGN COMMERCE OF THE STATE OF LOUISIANA, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Tonnage Cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821.....	\$6,907,599	\$864,578	\$7,272,172	\$3,379,717	53,312	21,323	16,244	38,114
1822.....	7,803,461	675,184	7,978,645	3,517,233	37,838	20,716	.....	.....
1823.....	6,769,410	1,009,662	7,779,072	4,283,125	53,258	26,445	.....	.....
1824.....	6,442,946	1,485,874	7,928,820	4,539,769	54,139	21,996	.....	.....
1825.....	10,965,234	1,617,690	12,582,924	4,290,094	51,692	25,776	.....	.....
1826.....	9,043,506	1,235,874	10,284,880	4,167,521	68,144	22,943	.....	.....
1827.....	10,602,832	1,126,165	11,728,997	4,531,445	89,793	30,240	.....	.....
1828.....	10,163,342	1,784,053	11,947,400	6,217,831	85,341	38,731	.....	.....
1829.....	10,598,183	1,457,377	12,386,060	6,537,209	87,637	33,172	.....	.....
1830.....	13,042,140	2,445,952	15,488,092	7,599,083	106,017	36,317	.....	.....
Total.....	\$92,144,253	\$13,232,909	\$105,377,162	\$49,638,222	692,151	277,659	.....	.....
Sept. 30, 1831.....	\$12,835,531	\$3,926,453	\$16,761,989	\$9,766,693	96,753	53,553	16,408	38,999
1832.....	14,105,113	2,425,312	16,530,930	8,571,633	88,236	59,020	.....	.....
1833.....	16,183,457	2,807,916	18,941,373	9,590,505	86,021	60,580	.....	.....
1834.....	23,759,607	2,797,917	26,557,524	13,781,809	112,330	71,599	.....	.....
1835.....	31,265,015	5,005,808	36,270,823	17,519,814	137,391	58,778	.....	.....
1836.....	32,226,565	4,953,263	37,179,828	15,117,649	147,338	43,110	.....	.....
1837.....	31,546,275	3,792,422	35,338,697	14,020,012	175,568	45,528	.....	.....
1838.....	30,077,534	1,424,714	31,502,248	9,496,808	139,722	43,184	.....	.....
1839.....	30,995,936	2,185,231	33,151,167	12,064,942	177,257	54,772	.....	.....
1840.....	32,993,159	1,233,377	34,226,536	10,678,196	277,021	73,850	.....	.....
Total.....	\$255,533,097	\$30,533,418	\$286,066,515	\$120,903,081	1,438,132	569,074	.....	.....
Sept. 30, 1841.....	\$32,865,618	\$1,521,385	\$34,387,003	\$10,253,350	244,988	72,577	54,792	91,007
1842.....	27,427,422	976,727	28,404,149	8,033,590	244,110	73,668	.....	.....
1843.....	26,658,924	736,500	27,395,424	8,170,015	292,473	80,697	.....	.....
June 30, 1844.....	29,442,734	1,055,573	30,498,307	7,826,789	237,179	101,056	.....	.....
1845.....	25,341,311	1,316,154	27,157,465	7,354,397	243,543	129,561	.....	.....
1846.....	30,747,633	523,171	31,270,804	7,223,090	233,463	110,023	.....	.....
1847.....	41,733,303	263,330	42,051,633	9,222,969	274,112	166,763	.....	.....
1848.....	39,350,143	1,621,213	40,971,356	9,380,439	287,387	143,612	.....	.....
1849.....	36,957,118	654,549	37,611,667	10,050,697	293,456	194,234	.....	.....
1850.....	37,698,277	407,073	38,105,350	10,760,499	211,300	158,137	.....	.....
Total.....	\$328,772,838	\$9,081,155	\$337,853,993	\$88,273,335	2,568,011	1,235,333	.....	.....
June 30, 1851.....	\$33,968,013	\$445,950	\$34,413,963	\$12,523,460	292,954	128,612	31,153	172,126
1852.....	43,308,169	250,716	43,558,885	12,037,724	370,741	173,741	.....	.....
1853.....	67,763,724	233,934	68,292,658	13,630,636	440,736	190,034	.....	.....
1854.....	60,636,537	275,265	60,931,802	14,422,154	445,499	155,256	.....	.....
1855.....	55,036,094	311,563	55,367,657	12,900,521	430,502	123,900	.....	.....
1856.....	30,576,632	233,423	30,810,055	16,632,322	536,747	156,415	.....	.....

New Orleans is the principal port on the Mississippi, and the natural dépot for the commerce of the great central valley. It is situated on the left bank of the river, 100 miles from the Gulf of Mexico, in lat. 29° 58', and long. 90° 7'. Its site is low and marshy, and in the summer and fall very sickly. Two railroads connect it with Lake Pontchartrain, and thence steamboats connect with Mobile, etc. It communicates northward by the New Orleans, Jackson, and Great Northern Railroad, and westward by the New Orleans, Opelousas, and Great Western Railroad. Its commerce by river is carried on by steamboats in constant succession, and these traverse the great river and tributaries for thousands of miles. By these means it receives and distributes its merchandise. The average value of produce received from the interior, is about \$120,000,000. Its foreign trade is co-extensive, and with regard to cotton and sugar, it is the first port of the Union. The depth of water in the river, opposite New Orleans, is at a medium of 70 feet, and it maintains soundings of 30 feet until within a mile of its confluence with the sea. The river has four principal passes. The tonnage of the port in 1856, was 163,308 tons.

Lowell, an important manufacturing town in Middlesex county, Massachusetts, on the right bank of the Merrimack River, at its junction with the Concord, 25 miles north north-west of Boston. Although the site of the town has considerable inequality of surface, its streets are regularly laid out, and intersect each other at right angles. The private residences are spacious, and many of them elegant buildings. Among the

public edifices, the chief are the court-house, the mechanics' hall, a sick hospital for operatives, and a market-house. The literary institutions of the town are very efficient, and have been of considerable service to the community. The Mechanic Association, incorporated in 1825, has a valuable library of about 6000 volumes, and a scientific apparatus; while the city school library contains 9500 volumes, and is open to all on a small yearly payment. The great advantage which Lowell enjoys for a manufacturing town is derived from a descent of 30 feet made by the Merrimack, and known as the Pawtucket Falls, which, by means of canals and locks, provides abundance of water-power. Besides these there is a spacious reservoir, placed on an elevation eastward of the city, which furnishes an immense supply of water at all times in case of fire. The principal goods manufactured here are cotton, wool, and iron. The first is made into cotton cloth and calico; the second into carpets, cloth, and coarse stuffs; and iron into machinery and wire fences. Besides these, however, bleaching is carried on extensively, as well as the preparation of dyes, glue, and other essentials of the cotton and wool manufactures. In January, 1855, there were 12 manufacturing companies in Lowell, owning 52 mills, and working 371,838 spindles, and 11,407 looms. The aggregate quantities produced every week were 2,230,000 yards of cotton cloth, 30,000 yards of woolen cloth, 25,000 yards of carpeting, and 50 rugs. In the same year, \$14,500,000 of capital was invested in the whole manufactures of the place; while the number of hands employed amounted to

8723 females, and 4542 males. Every attention is paid by the mill-owners to the health and morality of their operatives. One of the best proofs of the general good conduct of the mill-workers here is shown in the large amounts deposited by them in the savings-bank; and also in the interest they take in the literary and scientific associations connected with the factories.

In the rapidity of its growth, and in the extent of its manufactures, it stands pre-eminent; it has attained its present position altogether from the extent of its manufacturing facilities. A tract of 400 acres, constituting the most central part of the present city, was laid out in 1821. It was purchased for \$100,000, and the owners were incorporated the following year, under the title of *Merrimack Manufacturing Company*, and the first mill erected. Population 1820, about 200; 1830, 6,477; 1836, 17,330; 1840, 20,796; 1850, 33,383; and in 1854, 40,000. In 1834, Belvidere village was added to it, making a territory of nearly 5 square miles, and in 1836 it was incorporated as a city. Lowell lies on the right bank of Merrimack River, at the junction of Concord River, and at the intersection of several lines of railroads. It was originally known as Pawtucket Falls. The water power is very extensive, and easily available. A canal, 100 feet wide, 15 feet deep, and $1\frac{1}{2}$ miles in length, supplies the factories with water, taken from the Concord River, at Pawtucket Falls. The entire descent is 31 feet. The proprietors of the "Locks and Canals Company," acting under a charter granted in 1792, with a capital of \$600,000, supplies the water power to the different manufacturing establishments. The *Merrimack Manufacturing Company*, was chartered in 1822, has a capital stock of \$2,000,000; with 5 cotton factories, with 67,965 spindles, and 1,920 looms, employs 1,600 males, and 645 females; manufactures 18,000 yards of prints and sheetings annually. Connected with this Company is an extensive print works. The *Hamilton Manufacturing Company*, chartered in 1825, with a capital stock of \$1,200,000, has 3 cotton factories, with 36,228 spindles, and 1,002 looms, employs 875 females, and 360 males; manufactures 10,000,000 yards of prints, dannels, and sheetings annually. It also has an extensive print works. The *Appleton Company* was incorporated in 1828, with a capital of \$600,000; has 2 cotton factories, with 17,920 spindles, and 538 looms; employs 480 females, and 120 males; manufactures 6,500,000 yards sheetings and shirtings annually. The *Lowell Manufacturing Company* was chartered in 1828, with a capital of \$1,300,000; has a cotton factory, 7,142 spindles, 244 looms, and a carpet factory, 4,300 spindles, and 80 looms, the whole employing 500 females, and 225 males; manufacturing 4,940,000 yards rugs, carpeting, and cotton cloth, annually. The *Middlesex Manufacturing Company* was chartered in 1830, with a capital of \$1,000,000; has 3 mills, with 13,000 spindles, 45 broadcloths, and 375 cassimere looms, and 3 dye-houses, employing 950 females, and 820 males; manufacturing 950,000 yards of broadcloths and cassimeres annually. The *Suffolk Manufacturing Company*, chartered in 1830, with a capital of \$600,000, has 2 factories.—See STATISTICS OF MASS., 1855, for further items.

Lowering, among distillers, a term employed to express the debasing the strength of any spirituous liquor by mixing water with it. The standard and marketable price of these liquors is fixed in regard to a certain strength in them called *proof*; or, that strength which makes them, when shaken in a phial or poured from on high into a glass, retain for some time a froth or crown of bubbles. In this state spirits consist of about half pure, or totally inflammable spirits, and half water; and if any foreign or home spirit be exposed for sale and found to have that proof wanting, scarcely any body will buy it until it has been distilled again and brought to the proper strength; and if it be above that strength the proprietor usually adds water

to bring it down to the standard. There is another kind of lowering among the retailers of spirituous liquors to the vulgar, by reducing it under the standard proof. Whoever has the art of doing this without destroying the bubble-proof, which is easily done by means of some addition which gives a greater tenacity to the parts of the spirits, will deceive all who judge by this proof alone. In this case, the best way to judge of liquors is by the eye and the tongue, and especially by the instrument called the hydrometer.

Lubber, a contemptuous name, given by sailors to those who know not the duty of a seaman. *Lubber's Hole* is the vacant space between the head of a lower mast and the edge of the top. It is so termed from a supposition that a lubber, not caring to trust himself up the futtock shrouds, will prefer that way of getting into the top.

Lubec, one of the free cities of northern Germany, and nominally the chief of the Hanse Towns, is the capital of a small territory, is situate on a gentle ridge between the rivers Trave and Wakenitz, 10 miles from the mouth of the former at Travemünde, and 36 miles north-east of Hamburg. Lubec is the capital of the four free or Hanseatic towns, and the seat of their supreme court of appeal. The court consists of six members, one of whom is chosen by each of the free towns; Frankfort and Bremen nominate the fifth; while the sixth is named alternately once by Lubec and twice by Hamburg. The president is chosen annually by the senates of the four towns. The present city of Lubec was founded in 1143 by Adolphus II., Count of Holstein and Schaumburg, by whom it was ceded in 1158 to Henry Duke of Saxony, surnamed the Lion. In 1226 it was made a free imperial city by Frederic II. At this time it was an important commercial city, and was rapidly increasing. In 1241 it entered into treaty with Hamburg, and thus laid the foundation of the Hanseatic League, of which it became the head about 1260. For four centuries Lubec continued in a flourishing condition, and is said to have at one time contained 200,000 persons. After the dissolution of the League, which took place in 1632, it gradually fell into decay, and has never again attained its former importance. After the battle of Jena in 1806, the Prussian general Blucher, with the remains of his army, took refuge in Lubec, which was then stormed by the French, and sacked and pillaged for three days. In 1810 it was annexed to the French empire, and so remained till after the battle of Leipzig in 1813, when it was restored to its political independence, and subsequently joined the German Confederation as a free city. It has one vote in the full council; but in the select council it has only one in conjunction with the other free towns. Lubec is one of the most picturesque old towns in Germany. Its streets are generally straight and regular, and its public buildings, which are mostly of brick, have undergone little change since the 15th century. Many of the houses are in the old-fashioned style, with their quaint gables toward the street; and not a few of them are remarkable for the richness of their architecture. The old ramparts of the town have been laid out in public walks. The finest building in Lubec is the Marienkirche, founded in 1304. It is in the pointed Gothic style, constructed almost entirely of brick, and surmounted by two towers with spires rising to the height of 430 feet. It has three naves; the roof of the centre one rising to the unusual height of 134 feet. It contains numerous monuments and paintings—the latter by Holbein, Vandyck, Overbeck, etc. The "Dance of Death," dated 1463, is remarkable as representing the costumes of the period. This church possesses a very fine organ, and has also a curious old astronomical clock, constructed in 1405. The Domkirche, or cathedral, built between 1170 and 1341, is almost entirely of brick, and has two towers surmounted by spires 300 feet high. It contains numerous

monuments to bishops and others connected with Lubeck. The screen of the choir is a master-piece of wood-carving of the early German school. In one of the side chapels is a painting by Memling representing the Passion of our Saviour in 23 distinct groups. The town-house, on the market-place, is a curious old Gothic brick building, completed in 1517. Here in ancient times deputies from 85 cities in Germany composing the Hanseatic League, held their sittings. The educational and charitable institutions are numerous; besides which there are an exchange, mint, arsenal, public library with 37,000 volumes and a theatre.

Lubeck is still a place of considerable commercial importance. It trades largely with Hamburg by means of the Trave and a canal, and also with Russia, Denmark, Sweden, and Finland. A branch line connects it with the Hamburg and Berlin railway. Regular steam communication is kept up with Copenhagen, Stockholm, and St. Petersburg. Vessels drawing not more than nine feet of water can come up to the town, but larger vessels load and unload by means of lighters at Travemünde, between which and Lubeck small steamers are constantly plying. The chief exports are—corn, cattle, wool, iron, and timber; imports—wines, silks, cottons, hardware, colonial products, and dye-stuffs. In 1855, 972 vessels, carrying 55,266 lasts, entered; and 958 vessels, carrying 54,246 lasts, left the port. The manufactures are numerous, but not large or important. Among the chief are woolen, linen, cotton, and silk goods; tobacco, soap, paper, playing-cards, musical instruments, hats; and iron, copper, and brass wares.

Its trade is principally carried on with the Baltic States, to which it exports corn, cattle, wool, fish, iron, and timber. Its imports comprise wines, silks, cottons, hardwares, and other manufactured goods; also colonial produce, dye-stuffs, etc. The territory belonging to Lubeck is about 20 miles in length, by 3 miles in breadth, containing a population of 54,166, chiefly employed in the rearing of live stock. In 1852 there entered the port of Lubeck 2086 vessels, measuring 262,724 tons, viz.: sailing vessels, 1699, of an aggregate tonnage of 170,096 tons, and 387 regular steam-packets, of an aggregate of 92,628 tons. Russia holds the first rank in the trade of Lubeck. Of the whole number of vessels entered in 1852 (2085), there were under the Russian flag 456 vessels, with an aggregate of 85,730 tons. The total imports into this port in 1852 reached, in weight, 122,000,000 kilos. (2·20 lbs. each), viz.: by sea, 94,000,000 kilos.; by land, 28,000,000 kilos. This was a falling off from the preceding year of 10,000,000 kilos.

Among the imports of 1852 were: tobacco, 1,049,132 kilos.; cotton, drugs, and dye-stuffs, 4,034,849 kilos.; coffee, 2,291,526 kilos.; sugar, 4,278,066 kilos.

The total imports in 1851 amounted to 132,333,000 kilos.; but the increase of 10,000,000 kilos. was attributable to the heavy stock of material introduced by those engaged in the construction of the railroad between Lubeck and Hamburg. A comparison with the preceding years of regular trade will show a steady, though a gradual increase. In 1850 the total imports reached 120,000,000 kilos., or 2,000,000 less than in 1852.

The general imports of Lubeck are thus classified: *Manufactures*.—Including, principally, liquors, watches, jewelry, hardware, gunpowder, piece-goods, glass-ware, 13,954,580 kilos. *Colonial, or trans-Atlantic Merchandise*.—Consisting of coffee, cotton, drugs, dye-stuffs, sugar, tobacco, and tea, 11,708,795 kilos. *Animal Substances*.—Consisting of butter, cheese, wax, oils, wool, peltry, silk, 2,827,453 kilos. *Metals*.—Chiefly of iron and copper, 6,121,736 kilos. *Miscellaneous*.—Including salted fish, tallow, grains, timber, pot-ashes, etc., 88,424,913. Total, 123,037,477 kilos. Manufactures represent 11½ per cent., colonial, or

trans-Atlantic merchandise 9½ per cent., metals 5 per cent., and all other imports 74 per cent. of the total trade.

Statement showing the Steam Navigation between Lubeck and the Baltic Ports, from 1849 to 1852.—1849.—Between Travemünde (the port of Lubeck) and Copenhagen—voyages, 67; passengers, 1955; receipts, 152,046 francs. 1850.—Between Travemünde, Copenhagen, and Gothenburg—voyages, 61; passengers, 2858; receipts, 194,738 francs. 1851.—Between Travemünde, Copenhagen, and Gothenburg—voyages, 37; passengers, 3,415; receipts, 137,884 francs. 1852.—Between Lubeck, Copenhagen, and Gothenburg—voyages, 20; passengers, 3061; receipts, 114,360 francs.

The merchant marine of Lubeck in 1853 consisted of 65 vessels, of 13,300 tons aggregate, viz., 60 sailing vessels, of 11,826 tons, and 5 steamers. The once extensive and flourishing trade of Lubeck had dwindled down to the mere shadow of its former greatness. The tardy communication with Hamburg (a city on which it depends almost exclusively for its commercial activity) by canal navigation, contributed much to depress its commercial enterprise; and, hence, its merchants have, for a long period, been strenuous and unremitting in their efforts for the construction of a railroad that would connect them with that city. Denmark, however, jealous of any enterprise that would be likely to create a rival for the trade of Kiel, which town is also connected by railroad with Hamburg, long refused permission to construct the contemplated railroad across any portion of its territories. The difficulties were, however, adjusted, the road constructed, and during the past few years the trade of Lubeck has risen to considerable importance. In 1850, before the connection by railroad was established, the merchandise which passed between the two cities amounted to but 26,000 quintals of 106·85 lbs. each; in 1853, after the railroad was opened, it ascended to 267,380 quintals, viz., 89,575 Hamburg merchandise, and 177,805 foreign merchandise, forwarded *via* Hamburg. The United States has no direct trade with Lubeck, such of its staples as reach that market being supplied either from Hamburg or Altona, chiefly the former.

The tariff is that of December 5th, 1851.

Monies.—1 marc = 16 schillings Lubeck courant = 28·79 cents.

Weights and Measures.—1 ship-pound = 2½ cwt. of 112 lbs. English, each = 280 lbs. 1 lis-pound = 14 lbs.

Duties on Imports.—All goods, whether of foreign or home production, pay ½ of 1 per cent. ad valorem, as given in the invoices, except the following articles, which are free of import duties: Transit goods re-exported within three months after entry; effects of travelers; household furniture used; wool brought for the Lubeck fair, and delivered at the wool warehouse; goods on board of vessels not consigned to Lubeck; wares on board of ships entering the port of Travemünde in distress.

None but citizens have the privilege of clearing goods in the custom-house; American vessels, however, are exempt from this regulation.—*Com. Rel. U. S.*

Lucia, St., one of the British West India Islands, Windward group, lying about 30 miles north of Martinique, in lat. 13° 50' N., long. 60° 58' W. It is 32 miles in length from north to south, by 12 in extreme breadth, and has an area of about 235 square miles, or 150,000 acres. It is longitudinally divided by a chain of mountains, generally from 1200 to 1800, and in some cases 2000 feet high, densely clothed with the finest timber. These are of volcanic formation, and assume the most fantastic forms, abounding in deep chasms and pointed eminences. From either side of this chain branches of lesser altitude go off toward the coast, forming plains and valleys of various sizes. At

its southern extremity are two mountains of volcanic origin, called the Sugar Loaves, which rise nearly perpendicularly from the sea, in the form of parallel cones, to the height of about 2700 feet; they are covered with evergreen foliage, and mark the entrance into the deep and beautiful Bay of Soufrière. The valleys throughout the island, as well as the plains upon the coast, are fertile, being well watered by numerous streams, and are under good cultivation. The island is divided into two territories—Basseterre, the low or leeward portion, which is well cultivated, and the most populous, though the prevalence of stagnant waters and morasses renders the climate very unhealthy; and Capisterre, the high or windward territory, which is also very unhealthy, but is becoming less so as the wood on the high lands is being cleared away. The climate is very moist, as the trees on the mountains attract the clouds, and hence render the island subject to frequent and heavy rains for 9 or 10 months in the year.

The extent of land under each description of crop in 1854, and the three preceding years, was:

	1851.	1852.	1853.	1854.
	Acres.	Acres.	Acres.	Acres.
Canes.....	3,015	3,563	3,489	3,290
Coffee.....	155	187	180	97
Cocoa.....	184	109	89	87
Provisions....	1,013	1,136	2,423	1,154

The quantities of various articles produced in each of the above years were:

	1851.	1852.	1853.	1854.
Sugar.....lbs.	6,691,800	7,130,560	6,739,700	7,414,100
Coffee..... "	18,620	25,983	6,051	10,250
Cocoa..... "	15,143	40,358	21,600	17,480
Rum.....galls.	45,058	66,929	53,343	77,751
Molasses. " "	159,540	206,695	214,712	208,625

The quantities and value of articles exported in 1854 were:

Articles.	Quantities.	Value.	To United Kingdom.	To British colonies.	To foreign States.
Cocoa.....lbs.	148,988	£1,491	£67	£1,424	....
Goods, Brit. manu- fact.....packages	861	1,417	35	1,280	£151
Logwood.....tons	1,093	2,368	1,057	....	1,311
Molasses.....galls.	116,490	2,934	1,655	1,279	....
Rice.....cwt.	40	30	....	30	....
Rum.....galls.	14,364	1,428	1,428	....	....
Sugar, Mus.....cwt.	59,242	41,463	41,462	6	....
Other articles.....	4,700	300	2,699	2,702	....
Total value....	.....	£255,886	£46,004	£6,668	£8,164

The total value of imports in 1854 (principally articles of British manufacture, flour, dried fish, butter, live stock, lumber, salted meat, olive oil, wine, rice, and tobacco) was £96,309; being £41,996 from the United Kingdom, £27,880 from British colonies, and £26,433 from foreign States. The nett amount of the general revenue in 1854 was £14,098; being, custom duties on imports, £6482; on tonnage, £744; assessed and other taxes, £6872. The nett expenditure for that year was £13,565. The total population in 1854 was 24,123, of whom 480 were male and 517 female whites, 11,081 male and 12,095 female persons of color. The chief town of the island is Castries, which contains about 3000 persons. St. Lucia was first colonized by English settlers in 1639, but these were soon after driven off by the Caribs. About 1650 the French effected a settlement, and from that time to 1803, when it was finally captured by the English, it belonged alternately to France and England. The government is administered by the commanding officer of the troops, a lieutenant-governor, and an executive council, consisting of the colonial secretary, the attorney-general, and the second military officer. There is also a legislative council, composed of five official and five non-official members, in which the colonial secretary and attorney-general have seats and votes, and of which the commanding officer is president. The

laws of St. Lucia, except in so far as they have been altered by orders of council, are the laws of France, antecedent to the Code of Napoleon.

Luff, the order from the pilot to the steersman to put the helm toward the lee side of the ship, in order to make the ship sail nearer the direction of the wind. Hence, luff round, or luff a-lee, is the excess of this movement, by which it is intended to throw the ship's head up in the wind in order to tack her. A ship is also said to *spring her luff* when she yields to the effort of the helm by sailing nearer to the line of the wind than she had done before. **Luff Tackle**, a name given by sailors to any large tackle that is not destined for any particular place, but may be variously employed as occasion requires. It is generally somewhat larger than the jigger tackle, although smaller than those which serve to hoist the heavier materials into and out of the vessel; which latter are the main and fore-tackles, the stay and quarter-tackles, and so forth.

Lug-Sail, a square sail, hoisted occasionally on the mast of a boat or small vessel, upon a yard which hangs nearly at right angles with the mast. These sails are more particularly used in the barca-longas navigated by the Spaniards in the Mediterranean.

Lumber. One of the distinguishing characteristics of the United States is the quantity of wood and lumber they furnish. Of the well-wooded countries of the world, Russia, Sweden, Norway, and America, this country, no doubt, ranks as first. A discriminating writer, Volney, once described this country as "one vast forest, diversified occasionally by cultivated intervals." If this is less true than it was a century or even half a century ago, it applies in the main at the present moment. Even the oldest States of the Union, such as New Hampshire, New York, and the Carolinas, are still famous for both the quality and quantity of their lumber. And Maine, that had something like settlements before any other portion of New England, is to this day the great lumber State of the land. Hence, perhaps, the name it sometimes gets—the Pine-tree State. The trees of any country are valuable for at least four distinct purposes, for fuel, for shelter, for the food many of them afford, and for ornament. In the last point of view, which is generally considered the least important, trees are of much consequence. England has obtained the name of an extensive garden, very much through its beautiful shade trees and shrubbery. One half of the beauty of many of our New England villages would be lost in the warm season without their elegant natural screens in the shape of trees. It was Lord Bacon who said that "a tree in full leaf is a nobler object than a king in his coronation robes." No artist would ever think of presenting a fine landscape without trees. And so important are trees regarded as objects of beauty and shade, that ornamental tree associations are springing up in different parts of the country, whose objects are to adorn streets and highways with our beautiful elms, maples, and evergreens.

It is stated by Michaux that in the United States there are 140 species of forest trees which attain a greater height than 30 feet, while in France there are only 18 of the same description. And we suppose that the comparison would be similar if extended to Great Britain, Spain, or Germany. No wonder, then, that our forest scenery so much surpasses that in the west and south of Europe, and that European travelers think that it is worth while to cross the Atlantic to see our forest scenery as painted by the invisible artist every autumn.

So great is the interest in portions of Europe to promote the growth of forest trees that associations have been formed in Germany and other countries to plant forests upon soil adapted to their growth. The vast amount of forest trees annually used by such a country as Great Britain may be estimated by the fact that to build a 70 gun ship 40 acres of ship timber are re-

quired. In the light of such a fact, it may be seen that it is none too early for the people of this country to exercise due economy with regard to the use of for-

ests already existing, and to promote the growth of others—on the waste lands that already abound in various sections of the country.

STATEMENT SHOWING THE EXPORTS OF LUMBER (SPECIFYING THE EXPORTING DISTRICTS) FROM THE UNITED STATES, FOR THE YEAR ENDING JUNE 30TH, 1856.

Districts.	Shingles.		Boards, planks, and scantling.		Sawn timber.		Other lumber.	Oak bark and other dye.	All other manufactures of wood.
	M. feet.	Dollars.	M. feet.	Dollars.	Tons.	Dollars.	Dollars.	Dollars.	Dollars.
Passamaquoddy.....	844	1,416	8,485	86,241	....	....	4,692	....	19,258
Machias.....	259	624	3,681	48,442	....	....	501	....	540
Frenchman's Bay.....	....	....	....	....	....	....	....	....	5,696
Penobscot.....	53	71	1,093	27,821	....	....	196	....	3,474
Wiscasset.....	....	....	2	32	....	....	....	....	19,852
Bath.....	58	83	1,718	21,881	....	....	56,042	....	1,047
Portland and Falmouth.....	256	639	8,913	118,906	....	....	120,575	....	419,657
Saco.....	....	....	....	....	....	....	....	....	6,554
Belfast.....	....	....	2,165	27,673	....	....	56	....	27,183
Bangor.....	4,008	12,261	8,122	106,418	....	....	3,516	....	23,652
Vermont.....	....	....	....	....	....	....	....	....	10,078
Newburyport.....	65	275	86	1,858	....	....	89	....	....
Gloucester.....	....	....	103	1,704	....	....	....	....	4,410
Salem.....	397	892	617	14,697	....	....	78	....	21,854
Boston and Charlestown.....	8,275	11,880	11,766	226,964	286	5,857	243,572	5,568	410,404
Fall River.....	....	....	....	....	....	....	1,401	....	....
New Bedford.....	....	....	13	270	....	....	....	....	611
Providence.....	151	606	419	6,506	....	....	....	....	22,499
Bristol and Warren.....	....	....	157	2,688	....	....	....	....	28,150
Newport.....	....	....	199	4,040	....	....	....	....	11,189
New London.....	....	....	443	11,076	....	....	368	....	42,661
New Haven.....	....	....	....	....	....	....	1,446	....	16,671
Sackett's Harbor.....	....	....	....	....	....	....	....	....	50
Genesee.....	....	....	53	8,702	....	....	....	590	87,758
Oswego.....	....	....	502	6,659	....	....	....	8,597	4,905
Niagara.....	8	17	66	66	....	....	13,091	....	84,458
Buffalo Creek.....	....	....	191	2,887	....	....	....	500	34,840
Oswegatchie.....	....	....	....	....	....	....	....	350	4,075
New York.....	2,581	14,312	27,469	554,911	....	....	55,724	87,694	778,788
Champlain.....	....	....	947	6,681	....	....	1,229	768	60,800
Cape Vincent.....	....	....	....	....	....	....	....	....	41,579
Philadelphia.....	168	1,848	1,569	27,741	....	....	....	31,480	164,579
Presque Isle.....	....	....	115	3,450	....	....	....	....	200
Delaware.....	....	....	....	....	....	....	723	....	....
Baltimore.....	1,580	8,995	2,193	38,483	....	....	9,880	34,943	113,640
Georgetown, D. C.....	....	....	146	2,547	....	....	....	....	....
Norfolk and Portsmouth.....	2,993	18,600	22	399	....	....	3,383	....	69,719
Richmond.....	....	....	....	....	....	....	2,250	....	8,613
Camden.....	5,738	19,803	....	....	....	....	....	....	....
Plymouth, N. C.....	5,684	15,863	....	....	....	....	....	....	....
Washington, N. C.....	5,856	18,340	852	11,559	....	....	....	....	....
Newbern.....	1,884	4,849	530	6,795	....	....	65	....	....
Ocracoke.....	....	....	....	....	....	....	....	....	125
Beaufort.....	51	167	209	2,905	....	....	....	....	....
Wilmington.....	5,043	19,826	7,913	111,441	520	8,470	....	....	....
Charleston.....	105	781	2,476	43,353	3,197	20,003	13,975	....	1,929
Georgetown, S. C.....	232	923	1,590	24,555	....	....	....	....	....
Savannah.....	11	44	3,388	62,586	26,978	189,167	19,985	....	135
St. Mary's.....	8	40	2,623	36,125	....	....	....	....	....
Brunswick.....	....	....	3,106	49,724	....	....	....	....	....
Mobile.....	....	....	5,161	58,878	982	7,756	128,938	....	19,322
Pensacola.....	74	264	4,885	58,773	....	....	1,520	....	....
Key West.....	....	....	....	....	....	....	....	....	7
St. John's.....	107	535	8,436	109,853	....	....	405	....	....
Apalachicola.....	....	....	360	501	....	....	14,500	....	....
New Orleans.....	714	4,192	1,700	41,113	....	....	81,818	600	23,040
Miami.....	....	....	105	1,050	781	2,616	125	....	....
Detroit.....	1,077	2,971	4,013	34,436	....	....	323	....	....
Chicago.....	....	....	....	....	....	....	....	....	....
Oregon.....	82	247	285	3,059	....	....	215	....	....
Puget's Sound.....	348	1,646	2,286	35,448	1,666	1,590	25,389	....	....
San Francisco.....	1,983	9,717	75	1,515	....	....	43,264	....	14,311
Total.....	45,173	166,207	126,830	1,987,302	84,260	234,959	803,684	121,080	2,501,583

This table shows the singular fact, that Chicago, the greatest lumber market in the world, exports directly no lumber to foreign countries.

The State of Maine, as the head-quarters of the lumber and ship building trade, has for a long time excited much interest. The season for cutting the timber and bringing it to market commences in December or earlier, and closes in March or April.

According to a careful estimate of George W. Cram, Esq., surveyor-general of lumber for Boston, the amount sold at that port in 1854, was 131,900,000 feet. The descriptions were 40,000,000 of white pine lumber, 18,000,000 southern pine, 25,000,000 spruce, 10,000,000 hard wood, 1,800,000 mahogany, 2,100,000 clapboards, 10,000,000 shingles, 20,000,000 laths, 4,000,000 hemlock, 1,000,000 pickets.

The following is a careful estimate of the lumber business. The number of men employed in getting the lumber to market is 120,000; number of cattle

and horses, 80,000; number of saw-mills, 3000; number of vessels, 1000. Pine, spruce, and hemlock lumber is principally obtained from Bangor, Ellsworth, the Kennebec River, Calais, Machias, Cherryfield, Maine, and St. John, New Brunswick, while the larger portion of the hard pine grows in North and South Carolina, Georgia, Florida, and Alabama. Pine and spruce, too, are brought from Canada to Portland, and is thence shipped to this and other markets. The lumber secured from St. John is of a superior quality. Lumber is obtained also from the States of New York, Ohio, and Michigan. The two last States furnish black walnut, cherry, ash, white wood, and basswood; while New York and Pennsylvania furnish a share of the same. The railroads bring to market, oak timber from Massachusetts and New Hampshire. The southern and western States grow a portion of the same, and furnish considerable live oak. New York yields a large quantity of pine. Delaware and Maryland

more sparingly. It is stated that the best hard pine for ship-building grows on the Altamaha River in Georgia, and on the Waccamaw River in South Carolina. It is but a few years since hard pine has been used in ship-building. It is now employed extensively in New England, and is considered as good for many parts of a ship as oak. During the year 1854 a commission house of this city sold about 23,000,000 of feet, to be used mostly in Massachusetts and Maine. It will be perceived that this house sold 5,000,000 feet more than all that was surveyed in the city for that year, showing how large a part of the lumber sold here is not surveyed under our surveyor-general. Formerly there was no hard pine obtained at the South except what grew immediately upon the rivers. But within five or six years the timber upon the margin of the streams has become scarce, so that now it is conveyed for several miles to the rivers, and in some cases is floated 800 miles to some sea-port, from whence it is shipped to the North or to foreign ports.

The reciprocity treaty that has recently been effected between the United States and the British possessions in North America is quite sure to increase our lumber trade, as Canada and the other provinces abound in this great staple. A few statistics will give some idea of the wealth and activity of the British provinces in this department. In 1832 the new ships built in the British colonies were of 32,778 tons burden; while in 1841 the tonnage of the ships built amounted to 108,038 tons, and in 1850 to 112,787 tons. Most of these ships were built for the British market. In the city of Quebec, according to Andrews's Report on Colonial and Lake Trade, there are about 25 ship-building establishments, and 8 or 10 floating docks. The vessels built there average from 500 to 1500 tons. In 1849, 114 vessels were built in New Brunswick, of 36,534 tons burden. Most of the ships built in New Brunswick are constructed in St. John and St. Andrews.

DOMESTIC EXPORTS OF LUMBER AND NAVAL STORES FROM THE UNITED STATES.

	1853.	1854.	1855.
Staves, shingles, boards, etc.	\$2,578,149	\$5,122,834	\$4,609,665
Other lumber.....	123,743	165,178	677,659
Masts and spars.....	129,628	180,522	306,643
Oak bark and dye.....	118,894	95,863	99,168
All manufactures of.....	2,294,122	2,587,270	3,683,420
Naval stores, tar, pitch, rosin, etc.....	1,406,438	2,066,806	2,049,456
Ashes, pot and pearl.....	884,321	322,728	448,499
Total.....	\$6,935,845	\$10,740,701	\$11,874,510

Of these exportations, more than half of the naval stores go to England, and more than half of the lumber to Cuba.

The ship-building interest alone of Massachusetts consumes a vast amount of lumber. In 1837 the vessels built in the State were estimated to be worth \$1,370,649, and the agricultural and domestic articles consuming lumber were worth \$2,952,317. The persons employed in this handiwork were 3950. The estimated value of ships built in this State in 1854 was \$5,000,000. If the value of agricultural and other articles requiring timber advanced in the same ratio the value was fully \$10,000,000 for that year.

There were built in the United States in 1854, 1774 vessels of all descriptions, with a tonnage of 535,636. About a sixth of the value of the whole we find to have been built in Massachusetts. The value of the whole, then, in round numbers, may be stated at \$30,000,000. It is true that the demand for vessels was unusual, and the prices obtained the same. What destruction of forests was made by the ship-building of that single year!

The lumber trade of this country is immense. It costs \$30,000,000 a year to build our ships, and we may form some idea of the cost of all the buildings erected in the country for a year, and then of the cost of all other articles made of wood, and of the cost of the lumber material required.

STATEMENT SHOWING THE EXPORTS OF LUMBER (AND TO WHAT COUNTRIES EXPORTED) FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whither exported.	Hewn timber.		Other lumber.	Oak bark and other manufactures of dye.	All kinds of wood.
	Tons.	Dollars.	Dollars.	Dollars.	Dollars.
Russia on the Baltic & North Seas.	.....	.....	.....	.....	200
Sweden and Norway	.....	.....	.....	487	647
Swedish West Indies	.....	.....	.....	.....	918
Danish West Indies.	.....	.....	723	.....	20,717
Hamburg.....	.....	.....	1,464	5,194	80,565
Bremen.....	362	2,382	18,252	9,934	59,104
Other German ports.	.....	.....	.....	.....	469
Holland.....	958	7,066	24,104	10,289	4,831
Dutch West Indies.	.....	.....	.....	.....	2,379
Dutch Guiana.....	80	600	4,135	.....	4,848
Dutch East Indies.	.....	.....	1,270	.....	398
Belgium.....	587	7,004	9,334	762	3,202
England.....	12,151	84,237	76,936	50,073	162,786
Scotland.....	3,116	22,133	140	6,555	13,135
Ireland.....	1,113	8,097	665	.....	110
Gibraltar.....	.....	.....	397	.....	1,739
Malta.....	.....	.....	.....	.....	448
Canada.....	781	2,616	14,816	10,805	280,582
Other Br. N. A. pos.	6,525	46,557	9,065	464	57,198
British West Indies.	341	2,661	4,027	2,442	52,489
British Honduras.....	.....	.....	166	.....	6,578
British Guiana.....	.....	.....	600	.....	8,915
British pos. in Africa	.....	.....	3,573	.....	10,480
British Australia.....	.....	.....	21,660	.....	218,190
New Zealand.....	.....	.....	.....	.....	616
British East Indies.	73	1,033	12,531	.....	12,444
France on the Atlan.	1,619	11,725	98,557	16,278	27,255
France on the Med.	.....	.....	18,199	5,676	1,791
French N. Amer. pos.	.....	.....	178	.....	8,106
French W. Indies.....	172	1,300	288	.....	217
French Guiana.....	.....	.....	36	.....	1,463
Spain on the Atlantic	305	3,225	11,144	152	458
Spain on the Medit.	879	6,105	16,711	.....	527
Canary Islands.....	.....	.....	1,140	.....	62
Philippine Islands.....	.....	.....	.....	.....	1,900
Cuba.....	1,123	6,635	351,235	665	1,127,834
Porto Rico.....	.....	.....	12,361	.....	107,241
Portugal.....	.....	.....	41	514	4,706
Madeira.....	.....	.....	860	.....	510
Cape de Verd Islands	.....	.....	46	.....	1,120
Azores.....	90	1,561	46	.....	.....
Sardinia.....	.....	.....	.....	200	406
Papal States.....	.....	.....	.....	400	.....
Two Sicilies.....	.....	.....	.....	.....	324
Austria.....	.....	.....	.....	140	.....
Turkey in Europe.....	.....	.....	.....	.....	800
Turkey in Asia.....	.....	.....	.....	.....	110
Other ports in Africa	20	290	1,799	.....	28,426
Hayti.....	.....	.....	3,085	.....	11,202
San Domingo.....	.....	.....	.....	.....	102
Mexico.....	.....	.....	3,290	.....	16,286
Central Republic.....	.....	.....	.....	.....	8,149
New Granada.....	.....	.....	6,050	.....	23,961
Venezuela.....	24	824	.....	.....	18,560
Brazil.....	685	4,671	3,050	.....	37,848
Uruguay.....	646	5,168	2,259	.....	6,311
Buenos Ayres.....	500	3,899	7,555	.....	24,660
Chili.....	.....	.....	11,732	.....	33,831
Peru.....	.....	.....	1,972	.....	19,825
Ecuador.....	.....	.....	2,000	.....	.....
Sandwich Islands.....	986	1,190	4,830	.....	23,911
China.....	869	4,400	24,293	.....	8,823
Whale Fisheries.....	.....	.....	16,763	.....	52,880
Total.....	34,260	234,969	808,634	121,030	2,501,588

Lute, a substance used for making vessels or apparatus air-tight, by closing the apertures of their joints, or for coating, so as to enable them to bear a higher temperature, or for repairing a fracture. Clay is the basis of many lutes; whence the term, from *lutum*, clay. Among the principal lutes are *Stonewbridge clay*, in fine powder, made into a paste with water; *Windsor loam*, a natural mixture of clay and sand; *Willis's lute*, a thin paste made of a solution of borax, in boiling water, with slacked lime. Mixtures of borax and clay also form useful lutes. What is called *fat lute* is a mixture of pipe-clay with drying linseed-oil. Caustic lime furnishes, by admixture with other bodies, a variety of lutes. A mixture of lime and white of egg, or glue, forms a powerful cement. *Iron cement* is useful for making joints tight, as is also white lead ground up with oil and spread on strips of cloth. Among the other substances used as lutes, may be mentioned moistened bladder, paste, and paper; paper prepared with a mixture of wax and turpentine, linseed-meal, and caoutchouc. The last named substance is in exten-

sive use for making chemical joints or elastic connectors, getting rid of that rigidity which, in a complicated arrangement of apparatus is so liable to lead to accident.

Lute, a stringed instrument of music, long since superseded by the harp and the guitar, but for centuries very fashionable in Europe. The music for the lute was written in tablature.

Luxury. The instances of extravagance and luxury are numerous in the history of almost all countries, ancient and modern, and many laws have been enforced to repress them. Horace mentions fowls dressed in Falernian wine, muscles and oysters from the Lucrine lake and Circean promontory, and black game from the Umbrian forests.—*Lardner*. Lucullus, at Rome, was distinguished for the immoderate expenses of his meals. His halls were named from the different gods; and when Cicero and Pompey attempted to surprise him, they were amazed by the costliness of a supper which had been prepared upon the word of Lucullus, who merely ordered his attendants to serve in the hall of Apollo. This feast for three persons casually met would have sufficed for 300 nobles specially invited. In England, luxury was restricted by law, wherein the prelates and nobility were confined to two courses every meal, and two kinds of food in every course, except on great festivals. The law also prohibited all who did not enjoy a free estate of £100 per annum from wearing furs (see **FURS**), skins, or silks: and the use of foreign cloth was confined to the royal family alone: to all others it was prohibited A. D. 1387. An edict was issued by Charles VI. of France, which said: "Let no man presume to treat with more than a soup and two dishes." 1340.—*Haydn*.

Lying-to. A nautical term denoting the state of the ship when the sails are so disposed as to counteract each other, and thereby retard or destroy the progressive motion of the vessel. The fore and main stay-sails and mizzen try-sail serve very well for this purpose, as they cause but little way, and have sufficient power to keep the ship heeled over, and therefore steady, with her decks turned from the sea. When the sea runs very high, the lower sails are liable to be becalmed by the waves, and therefore to suffer the ship to roll to windward; the maintop-sail is then used.

Lyons (Fr. *Lyons*, ancient *Lugdunum*), the capital of the French Department of Rhône, and till recently ranking, in point of population and commercial importance, as the second city of the empire; but the last census returns show that in the former of these respects it has been exceeded by Marseilles. It is situated at the junction of the Saône with the Rhône, and on the Paris and Marseilles Railway, 316 miles from the former, and 218 from the latter city; lat. 45° 45' 45" N., long. 4° 49' 35" E.; elevation above the level of the sea, 963 feet. The Rivers Rhône and Saône being both navigable, it enjoys great facilities for trade; but it is as a manufacturing city that it is chiefly celebrated; and in this respect it is justly entitled to the name of the French Manchester. The staple articles of manufacture are silk stuffs of all descriptions, and which for richness and beauty are unequalled. In this manufacture about 100,000 of the population are either actively or indirectly concerned. There are no exact statistics of the silk manufacture at Lyons; but the following extract from a letter by the President of the Chamber of Commerce at Lyons, dated December 19, 1853, is said to give very nearly the exact results: "During the present year, and the two preceding, the manufacturers of silk at Lyons have employed about 60,000 machines (*metiers*), scattered over a district of about 40 miles. These machines have consumed about 2,500,000 kilogrammes of silk (5,500,000 lbs.), valued at 160,000,000 francs (\$22,000,000); and the manufac-

tured stuffs at 250,000,000 francs (\$50,000,000). It is estimated that the home consumption amounts to one fourth or one third of that quantity. The balance is exported to all parts of the civilized world; but by far the largest foreign market is found in the United States." The silk manufacture in Lyons is not carried on in large factories, but on the domestic system, in the dwellings of the master-weavers, each of which has usually from two to six or eight looms, which, with their fittings, are generally his own property. Himself and as many of his family as can work are employed on these looms, and frequently also one or more *compagnons*, or journeymen. The number of master-weavers in the city and suburbs is estimated to be about 9000. The silk merchants, of whom there are about 600 in Lyons, supply the silk and patterns to the owners of looms, who are intrusted with the task of producing the web in a finished state. The weaving population, though earning comparatively good wages, are an ignorant and degraded race, living in a disgracefully filthy state, and showing little desire to improve their condition. Few of the journeymen ever raise themselves to be master-weavers. The silk manufacture was established here by Italian refugees in the middle of the 15th century. It was nearly ruined by the revocation of the edict of Nantes, which dispersed most of its best workmen to Spitalfields, Amsterdam, Crefeld, and other places. Lyons has numerous dye-works, printing establishments, founderies, glass-works, potteries tan-yards, breweries, chemical works, boat-building yards, etc.; but these are all insignificant compared with its chief branch of industry. The commerce carried on by means of the rivers is very considerable. The town is built principally on the tongue of land, or peninsula, between the Rhône and Saône, each of which is crossed by eight or nine bridges communicating with extensive suburbs lying to the east and west. The old portion of Lyons consists chiefly of narrow, crooked, and dirty streets, rendered dark and gloomy by the great height of the houses on each side, which are generally seven or eight stories high. About three fourths of a century ago, the point of confluence of the two rivers was removed about a mile further south, and on the additional territory thus acquired the suburb of Perrache was formed. This has been laid out on a regular plan, and now contains many elegant streets and some very agreeable promenades. The suburb of La Croix Rousse, to the north of the town, and that of Fourvières, on the right bank of the Saône, are chiefly inhabited by silk-weavers. Those of Brotteaux and Guillotière are on the left bank of the Rhône. The best view of the town and neighborhood is obtained from the summit of the steep hill of Fourvières, on the right bank of the Saône. The fortifications of Lyons consist of 18 detached forts, arranged in a circle of 12½ miles around the town, crowning the heights of St. Croix and Fourvières, and of Croix Rousse, above the suburb of that name, and including in its circuit the suburbs of Brotteaux and Guillotière. These fortifications are required more to quell insurrections among the inhabitants than to withstand attacks from without. In 1831, 1834, and 1837, formidable riots took place, in which many lives were lost. Both banks of the Saône and the left bank of the Rhône are lined with quays, some of which are planted with trees, and afford very agreeable promenades.

In the revolution of 1793, the people of Lyons having declared against the revolutionary party, the city was taken by the conventional army after a siege of upward of two months, and almost reduced to ruins. It suffered severely from the inundations of its two rivers in June, 1866. Population in 1851, 156,169.—E. B.

M.

Macadam, John Loudon, the introducer of macadamized road-making, was descended from an old and respectable family in Kirkcudbrightshire, and was born in Ayrshire, Scotland, in 1756. His plan of road improvement occurred to him when acting as trustee for a district of roads in Ayrshire, and was first carried into practice on the Bristol roads, of which he had been appointed surveyor-general in 1815. He explained his system fully in two works—*A Practical Essay on the Scientific Repair and Preservation of Public Roads*, London, 1819; and *Remarks on the Present State of Road-making*, London, 1820. In 1827 he was appointed general surveyor of roads; and for the large sums which he expended while performing the duties of this office, he was afterward compensated by two grants from government, amounting together to £10,000. The honor of knighthood, which he declined, was conferred upon his son in 1834. Macadam died in 1836.

Macao, a sea-port and settlement belonging to the Portuguese, on the island of the same name, at the mouth of the Canton River, in China, in lat. $22^{\circ} 12' 45''$ N., long. $113^{\circ} 35'$ E. The situation of Macao strikingly resembles that of Cadiz. It is built near the extremity of a peninsula projecting from the south-west corner of the island of Macao, to which it is joined by a long narrow neck. Across this isthmus, which is not more than 100 yards wide, a wall is erected, with a gate and guard-house in the middle for the Chinese soldiers. The greatest length of the peninsula belonging to the Portuguese, from north-east to south-west, is under three miles, and its breadth under half a mile. The broadest part, to the north of the town, is flat, and of a light, sandy soil; but is well cultivated, principally by Chinese, and produces all sorts of Asiatic and European culinary vegetables. Provisions are obtained from the Chinese part of the island or from the main land; and whenever the Portuguese do any thing to offend the Chinese authorities, the provisions are cut off till they are obliged quietly to submit. They are seldom allowed to pass beyond the narrow precincts of the territory assigned to them. The population of the peninsula may amount to from 12,000 to 13,000, of whom considerably more than half are Chinese. The functionaries belonging to the East India Company's factory at Canton resided here during the whole of the dead season. The Portuguese obtained possession of Macao in 1586. It was for a considerable period the seat of a great trade carried on not only with China, but with Japan, Siam, Cochin-China, the Philippine Islands, etc.; but for these many years past it has been of comparatively little importance, though it is probable that, if it belonged to a more enterprising and active people, it might still recover most part of its former prosperity. The public administration is vested in a senate composed of the bishop, the judge, and a few of the principal inhabitants; but all real authority is in the hands of the Chinese mandarin resident in the town.

The harbor is on the west side of the town, between it and Priest's Island; but the water in it not being sufficiently deep to admit large ships, they generally anchor in the roads on the other side of the peninsula, from five to ten miles east south-east from the town. All vessels coming into the roads send their boats to the Portuguese custom-house on the south side of the town. When a ship arrives among the islands, she is generally boarded by a pilot, who carries her into Macao roads. As soon as she is anchored, the pilot proceeds to Macao to inform the mandarin of the nation she belongs to. If there be any women on

board, application must be made to the bishop and senate for leave to send them on shore, as they will not be permitted to proceed to Whampoa in the ship. As soon as the mandarin has made the necessary inquiries, he orders off a river pilot, who brings with him a *chop* or license to pass the Bocca Tigris, or mouth of the Canton River, and carries the ship to Whampoa.

The Chinese regulations do not permit any vessels, except such as belong to Portuguese or Spaniards, of which there are very few, to trade at Macao. But the Portuguese inhabitants lend their names, for a trifling consideration, to such foreigners as wish to be associated with them for the purpose of trading from the port. Independently, however, of this, vessels of other nations usually experience no difficulty in obtaining the connivance of the Chinese officers to the landing or receiving of goods in the roads by means of Portuguese boats. At intervals the prohibitory regulation is strictly enforced. Vessels of other nations, if in distress, and not engaged in the contraband trade, are admitted into the harbor for repairs, on application to the senate.

The following summary exhibits the direct trade between the United States and Macao during the years 1854 and 1855—the latter year up to March 6th: Arrived, 3 barks and 1 ship, measuring 1828 tons, laden with rice, sundries, salt provisions, and miscellaneous goods. The return cargoes were chiefly Coolies.

Port Charges.—The measurement duty paid by Spanish and Portuguese vessels is moderate. When a vessel has once paid the full amount, and is admitted on the list of registered ships belonging to the port (limited by the Chinese to 25), she is liable only to a third of the original charges, on every subsequent occasion of her entering, so long as she continues on the register. Portuguese vessels from Europe do not possess this privilege, unless they be registered as belonging to a morador of Macao. The rates of measurement duty, which vary, as at Canton (which see), on three classes of vessels, are the following: On vessels of 164 covids and upward, 6.223 taels per covid; on vessels from 120 to 154 covids, 5.72 taels per covid; on vessels from 90 to 120 covids, 4 taels per covid.

These rates are nearly the same as those levied on Canton junks trading with foreign countries, and ought, in fact, to be entirely so. The dimensions are taken and calculated in the manner formerly practiced at Canton; but the Chinese, at both places, speak not of the covid, but of the chang of 10 covids. However, as this is only a decimal increase, it makes no difference in the method of calculation. The following additional charges, to be calculated on the amount of measurement duty, are the same on every class of vessels, viz.: 2 per cent. for inspectors; 8 per cent. for difference in weight by the treasury scales; 10 per cent. for loss in melting; 17 per cent. for making sycee. Also the sum of 70 taels for the "public purse," or hoppo's treasury.

In addition to these, the following are the charges levied by the hoppo (collector of customs), or his deputy: On a 1st class vessel from Europe, 250 taels; if belonging to Macao or Manilla, 50 taels. On a 2d class vessel from Europe, 240 taels; if belonging to Macao or Manilla, 40 taels. On a 3d class vessel from Europe, 170 taels; if belonging to Macao or Manilla, 30 taels. Ships importing rice are exempt from the measurement duty, and pay only \$50, as fees to the procurador of Macao and the officers of his department. Portuguese vessels from Europe, in addition to the measurement duty, have to pay to the Canton

hong merchants a charge, termed by the Portuguese, Hanistagem, or Consoo charge, which is usually a matter of specific bargain, varying from about \$200 on a vessel of 200 tons to \$3500 and upward on those of 500 tons, and of larger sizes. The charges on goods carried by the inner passage, between Canton and Macao, being generally less than those paid on goods to and from Whampoa; and the duties levied by the Portuguese, on articles of merchandise imported by vessels belonging to Macao, being very moderate; the Chinese are often led to engage in speculations on board the Macao vessels, the risk being so much less than in native junks. If the ship owners could manage their expenses so as to be satisfied with only the same freight as is charged by English vessels, it would probably induce many more Chinese to make remittances in this way.

Opium.—The trade in opium is prohibited at Macao by the Chinese government, as well as throughout the rest of the empire. It was, nevertheless, formerly carried on to a great extent by the Portuguese moradores, or citizens, to the exclusion of all others, even Portuguese who were not citizens. But this restriction, having occasioned the decline of the trade, it was abolished in 1823, when the senate passed a regulation throwing open the trade to all, without distinction, whether Portuguese or foreigners; securing to the latter "hospitality and the utmost freedom in the speculations." At present, however, very little opium is imported, in consequence, it is said, of the heavy bribes demanded by the Chinese officers, to insure their connivance. The trade is now principally carried on at Lintin, about 30 miles from Macao.

Imports.—Goods imported pay at the Portuguese custom-house a duty of 6 per cent. on a fixed valuation, besides some fees, and Coolie hire. The following are a few articles extracted from the tariff:

Articles.		Valuation.	Duty.
		Taels.	Taels.
Cotton.....	per picul	4	0.240
Broad cloth, middling.....	per covid	1.600	0.096
" better than ordinary	"	0.800	0.048
" ordinary or coarse	"	0.450	0.025
Camlets.....	"	1.250	0.016
Betel nut.....	per picul	1.200	0.072
Tin.....	"	8	0.450
Birds' nests, 1st sort.....	per catty	22.400	1.344
Rattans.....	per picul	1.200	0.072
Saltpetre, Bengal.....	"	4	2.240
" coast of Goa.....	"	1.600	0.096
Pepper.....	"	4	0.240
Opium imported in Portuguese ships.....	per chest	104	drs.
" foreign ships.....	"	154	"

Gold and silver, whether in coin, in bullion, or manufactured, pay, on importation, 2 per cent.; except in Spanish vessels from Manila, when the charge is 1½ per cent.

Exports.—No duty is levied by the Portuguese on goods exported from Macao; nor does the custom-house take any cognizance of them.

Duties and Charges on Goods landed at Macao.—Macao is a place without any manufactures or commerce of its own. Prices are, in consequence, generally dependent on those of Canton. Money is usually paid at 72 taels per \$100. It is a point of some interest to ascertain the internal duties and expenses to which goods landed at Macao are liable before coming into the Chinese purchaser's hands at Canton. But the subject is so involved in mystery and uncertainty, the charges varying according to the quantity of goods laden in one boat, etc., that it is scarcely possible to arrive at any accurate information respecting it. We believe, however, that the following may be considered as a pretty close approximation to the real amount of charges incurred on cotton landed at Macao:

Portuguese duty, fees, etc., 2-6 mace per picul; duties and charges on conveyance to Canton, 6-8 mace per picul; Canton charges, difference of weight,

brokerage on sale, etc., 8 mace per picul; total, about 2 taels 6-9 mace. The duties and charges on conveyance from Macao to Canton are, for pepper, 9 mace per picul; rattans, 4-5 mace per picul; betel nut, 4-5 mace per picul.

The hoppo's examiner charges 90 taels per boat of 1000 piculs, the largest quantity allowed to be conveyed by a single boat; but the same charge of 90 taels is levied, although the boat should only contain 100 piculs. The duty on exporting goods from Canton to Macao is in some cases less, in other cases greater, than the Whampoa duty. Thus, nankeens to Macao pay \$2 per 100 less than to Whampoa. Most descriptions of silk piece goods also pay less duty. On the other hand, tea, paper, China ware, etc., pay a higher duty to Macao than to Whampoa.

For details as to the *Weights, Measures, etc.*, used at Macao, see CANTON.

For further particulars, see HAMILTON's *East India Gazetteer*, art. MACAO; MILBURN's *Orient. Com.*; and the *Anglo-Chinese Kalendar Companion to the Almanac*, Macao, 1832.

Macaroni, a species of wheaten paste formed into long, slender, hollow tubes, used among us dressed with cheese, and in soups, broths, etc. Macaroni is the same substance as vermicelli; the only difference between them being that the latter is made into smaller tubes. Both of them are prepared in the greatest perfection in Naples, where they form the favorite dish of all classes, and the principal food of the bulk of the population. The flour of the hard wheat (*grano duro*) imported from the Black Sea is the best suited for the manufacture of macaroni. Being mixed with water, it is kneaded by means of heavy wooden blocks wrought by levers, till it acquires a sufficient degree of tenacity; it is then forced, by simple pressure, through a number of holes, so contrived that it is formed into hollow cylinders. The name given to the tubes depends on their diameter; those of the largest size being macaroni, the next to them vermicelli, and the smallest fedelini. At Genoa, and some other places, the paste is colored by an admixture of saffron; but at Naples, where its preparation is best understood, nothing is used except flour and water; the best being made of the flour of hard wheat, and the inferior sorts of the flour of soft wheat. When properly prepared and boiled to a nicety, Neapolitan macaroni assumes a greenish tinge. It is then taken out of the caldron, drained of the water, and being saturated with concentrated meat gravy, and sprinkled with finely-grated cheese, it forms a dish of which all classes, from the prince to the beggar, are passionately fond. But the macaroni used by the poor is merely boiled in plain water, and is rarely eaten with any condiment whatever. The macaroni usually served up in England is said, by those familiar with that of Naples, to be a disgrace to the name it bears. When properly prepared, macaroni is nutritious and easy of digestion. The lazzaroni pique themselves on the dexterity with which they swallow long strings of macaroni and vermicelli without breaking them.

Mace (Ger. *Macis*, *Muskatenbluthe*; Du. *Foelie*, *Foely*, *Muscaatbloom*; Fr. *Macis*, *Fleur de muscade*; It. *Mace*; Sp. *Macio*; Port. *Maxcis*, *Flor de noz moscada*; Lat. *Macis*), a thin, flat, membranous substance, enveloping the nutmeg; of a lively, reddish yellow color, a pleasant aromatic smell, and a warm, bitterish, pungent taste. Mace should be chosen fresh, tough, oleaginous, of an extremely fragrant smell, and a bright color—the brighter the better. The smaller pieces are esteemed the best. The preferable mode of packing is in bales, pressed down close and firm, which preserves its fragrance and consistence. It is imported from the Moluccas, where the best is to be found. The import trade in mace for home consumption in Great Britain for three years ending with

31st December, 1856, was: in 1854, 25,584 lbs.; in 1855, 28,563 lbs.; in 1856, 27,299 lbs. The present (1857) duty on mace imported into Great Britain is 1s. per lb. A production is met with on the coast of Malabar, so like mace, that at first it is not easy to be distinguished; but it has not the least flavor of spiciness, and when chewed has a kind of resinous taste.

STATEMENT SHOWING THE IMPORTS OF MACE INTO THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Pounds.	Dollars.
Holland.....	8,543	4,981
Dutch West Indies.....	640	377
Dutch East Indies.....	4,524	1,818
England.....	5,244	3,408
British West Indies.....	8	8
British East Indies.....	25,826	13,496
China.....	180	81
Total.....	44,415	28,909

Machinery. The effects produced upon the world by the interposition and general use of machinery, are very important. Serious obstacles were at first presented and objections made by the masses, upon the ground that the use of machinery was opposed to the interests of labor. Gradually these objections wore away, it being found that there was, and still is, employment for all classes, even with the extraordinary facilities added by the many improvements in machinery. These questions have been fully discussed by some of the ablest writers in England and the United States. As to the "effects of machinery and accumulations," see *Edin. Rev.*, xxxv., p. 102, lvi., 313; *Quar. Rev.*, xxxi., 391; *Fraser*, viii., 167, ii., 419; *Am. Monthly*, iii., 24; *Westm. Rev.*, v., 101, xiv., 191; *North Am. Rev.*, xxxiv., 220, xiv., 401; *Am. Quar.*, xii., 300.

Macintosh Cloth. The manufacture of the Macintosh cloth is a singular one. The material is merely two layers of cotton cemented with liquid India-rubber; but the junction is so well effected, that the three become, to all intents and purposes, one. The stout and well-woven cotton cloth is coiled upon a horizontal beam, like the yarn beam of a loom; and from this it is stretched out in a tight state and a nearly horizontal position. A layer of liquid, or rather paste-like, solution is applied with a spatula, to a considerable thickness, and the cloth is drawn under a knife edge, which scrapes the solution and diffuses it equally over every part of the cloth, which may be 30 or 40 yards long. The cloth is then extended out on a horizontal framework to dry; and, when dried, a second coating is applied in a similar way; and a third and fourth may be similarly applied if necessary. Two pieces, thus coated, are next placed face to face with great care, to prevent creasing or distortion; and, being passed between two smooth wooden rollers, they are so thoroughly pressed as to be made to unite durably and permanently. Cloth, thus cemented and doubled and dried, may be cut and made into garments which will bear many a rough trial and many a deluging before rain or water can penetrate.

Madder (Ger. *Färberöthe*; Du. *Mee*; Fr. *Alizari*, *Garance*; It. *Robbia*; Sp. *Granza*, *Rubia*; Rus. *Mari-ona*, *Krap*; Hind. *Munjih*), the roots of a plant (*Rubia tinctorum*), of which there are several varieties. They are long and slender, varying from the thickness of a goose-quill to that of the little finger. They are semi-transparent, of a reddish color, have a strong smell, and a smooth bark. Madder is very extensively used in dyeing red; and though the color which it imparts be less bright and beautiful than that of cochineal, it has the advantage of being cheaper and more durable. It is a native of the south of Europe, Asia Minor, and India; but has been long since introduced into and successfully cultivated in Holland, Alsace, Provence, etc. Its cultivation has been attempted in England, but without any beneficial result. Our supplies of madder were, for a lengthened period,

almost entirely derived from Holland (Zealand); but large quantities are now imported from France and Turkey. Dutch or Zealand madder is never exported except in a prepared or manufactured state. It is divided by commercial men into four qualities, distinguished by the terms *mull*, *gamen*, *ombro*, and *crops*. The roots being dried in stoves, the first species, or mull, consists of a powder formed by pounding the very small roots, and the husk or bark of the larger ones. It is comparatively low priced, and is employed for dyeing cheap dark colors. A second pounding separates about a third part of the larger roots; and this, being sifted and packed separately, is sold here under the name of *gamene*, or *gemeene*. The third and last pounding comprehends the interior, pure, and bright part of the roots, and is sold in Holland under the name of *kor krops*, but is here simply denominated *crops*. Sometimes, however, after the mull has been separated, the entire residue is ground, sifted, and packed together, under the name of *onberoefde*, or *ombro*. It consists of about one third of *gamene*, and two thirds of *crops*. Prepared madder should be kept dry. It attracts the moisture of the atmosphere, and is injured by it. The Smyrna or Levant madder (*Rubia peregrina*), the *alizari* or *lizary* of the modern Greeks, is cultivated in Boeotia, along the border of Lake Copais, and in the plain of Thebes. It also grows in large quantities at Kurdar near Smyrna, and in Cyprus. The madder of Provence has been raised from seeds carried from the latter in 1761. Turkey madder affords, when properly prepared, a brighter color than that of Zealand. It is, however, imported in its natural state, or as roots; the natives, by whom it is chiefly produced, not having industry or skill sufficient to prepare it like the Zealanders, by pounding and separating the skins and inferior roots; so that, the finer coloring matter of the larger roots being degraded by the presence of that derived from the former, a peculiar process is required to evolve that beautiful Turkey red which is so highly and deservedly esteemed.—*THOMSON'S Chemistry*; *BANCROFT on Colors*, vol. ii., pp. 221-278; see also *Beckmann, Hist. of Invent.*, vol. iii., art. *Madder*.

In France, madder is prepared nearly in the same manner as in Zealand. The following details are in regard to its cultivation, price, etc., in Provence.

This town (Avignon) is the centre of the madder country, the cultivation of which was introduced here about the middle of the 18th century, and, with the exception of Alsace, is still confined (in France) to this Department (Vaucluse). The soil appears to be better adapted for its cultivation here than anywhere else, and it has long been the source of great wealth to the cultivators. Of late years, however, the prices have fluctuated so much, that many proprietors have abandoned, or only occasionally cultivated this root, so that the crop, which was formerly estimated to average 500,000 quintals, is now supposed not to exceed from 300,000 to 400,000. The root is called *alizari*, and the powder (made from it) *garance*. The plant is raised from seed, and requires three years to come to maturity. It is, however, often pulled in 18 months without injury to quality; the quantity only is smaller. A rich soil is necessary for its successful cultivation; and when the soil is impregnated with alkaline matter, the root acquires a red color; in other cases it is yellow. The latter is preferred in England, from the long habit of using Dutch madder, which is of this color; but in France the red sells at 2 francs per quintal higher, being used for the Turkey red dye. It is calculated that when wheat sells at 20 francs per hectolitre, *alizari* should bring 85 francs per quintal (poids de table), to give the same remuneration to the cultivator. That is, wheat 63s. per English quarter, and *alizari* 34s. per English cwt. The price has, however, been frequently as low as 22 francs per quintal. Prices undergo a revolution every 7 or 8 years, touch-

ing the minimum of 22, and rising as high as 100 francs. As in every similar case, the high price induces extensive cultivation, and this generally produces its full effect 4 or 5 years after. The produce of Alsace, which is inferior both in quantity and quality to that of Vaucluse, is generally sold in Strasburg market. England employs both the root and the powder, according to the purpose for which they are intended. The Dutch madder is more employed by the woolen dyers, and the French by the cotton dyers and printers. In making purchases of *garance*, it is essential to employ a house of confidence, because the quality depends entirely upon the care and honesty of the agent. The *finest* is produced from the roots after being cleaned and stripped of their bark. The *second* by grinding the roots without cleaning. A *third* by mixing the bark of the *first* while grinding; and so on to any degree of adulteration.

STATEMENT SHOWING THE IMPORTS OF MADDER INTO THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30TH, 1856.

Whence Imported.	Pounds.	Dollars.
Holland.....	4,266,822	881,807
Belgium.....	501,662	84,972
England.....	184,668	10,800
Malta.....	7,750	480
British West Indies.....	80	2
France on the Atlantic.....	836	29
France on the Mediterra.....	15,868,081	1,287,946
Turkey in Asia.....	68,122	5,819
Total.....	20,847,472	1,671,805

Madagascar, a large and important island in the Indian Ocean, about 300 miles from the coast of Africa, from which it is separated by the Mozambique Channel. Cape Amber, its northern extremity, is situate in S. lat. 12°, whence it extends southward, slightly inclining to the west, about 937 English miles, to Cape St. Mary, in S. lat. 25° 40'. Its extreme western shore is in E. long. 43° 10', and its most easterly cape in E. long. 50° 30'. The breadth of the island increases gradually from the northern point to the centre, where it is widest, being about 350 miles across; while the average breadth of the southern portion is about 250 miles. It has been estimated to contain 150,000,000 or even 200,000,000 acres of land; and though such estimates, in the absence of actual measurements, can only be regarded as approximations to its actual extent, its surface is equal to three fourths of the territory of France, and larger than Great Britain and Ireland combined.

The coasts of Madagascar contain a number of bays and harbors, some of them spacious and sheltered, and capable of affording excellent and secure anchorage for shipping of the largest dimensions. Among these may be specified Diego Saurez Bay, or British Sound, near the north-eastern extremity of the island; Port Loquez, Antongil Bay, and the Bay of St. Luce, on the eastern coast. Samatave and Foule Point, though the most frequented ports on this side of the island, are only open roadsteads, protected by reefs of coral. St. Augustine's Bay, a port of frequent resort for vessels trading on the north-west coast and ships engaged in the whale fishery, Tolia Bay, Boiana, Bambetoka, Majambo, Nareenda, Pasandava, and Chimpaykee Bays, are the most important on the western coast. There are several small islands adjacent to the northern shores of Madagascar, of which St. Mary's, 31 miles long, and 2 or 3 miles broad, on the eastern coast, and Nosibé, a somewhat larger and more compact island, on the north-west coast are the most important. Both these small islands are now occupied by the French—the latter having been taken possession of by them in 1840.

The commerce of the island, though at present but trifling, is capable of almost unlimited extension. The chief articles of export are cattle, poultry, rice, rufia cloth, matting; a kind of grass hat, woven by hand, light and durable; gums, and bees' wax. Coffee

would grow well in many parts of the island; indigo might be produced to almost any extent; and both might furnish valuable articles of export. Good sugar has been made, but at present the cane is only cultivated for purposes of food, or for distilling from its juice a strong, fiery sort of arrack, the use of which is extended among the people, especially at the ports, and threatens to produce the most disastrous consequences. Other articles of export might be produced in a country so fertile and extensive; and rice might, with but comparatively little additional labor, be raised in much larger quantities than it is produced at present. It is scarcely possible to conceive of a soil more adapted for the cultivation of rice than that of many parts of Madagascar, or more fertile than, in favorable seasons, it often proves—a single bushel of seed yielding, under the most skillful modes of culture, in a favorable season, 100 bushels of grain. The crop, when ripe, is reaped, dried, and thrashed on the ground. Their process of thrashing consists in taking up large handfuls of rice and straw, and beating the ears on a stone or portion of rock fixed in the midst of a dry, hard, thrashing-floor, prepared for that purpose in some central spot easily accessible from the cultivated fields. When the grain is thrashed, it is carried on the heads of slaves to the granaries of their owners. These granaries vary in structure in different parts of the island. On the eastern coast and to the southward, the grain is stored in small houses raised on posts, with projecting ledges, to prevent the access of rats and mice. At the capital and some of the central provinces, the rice is preserved in granaries built of clay, in the form of a cone, with only one aperture on the summit. Some of these granaries are built above ground adjacent to the dwellings of their owners; others are constructed of the same form and dimensions under ground—the aperture at the top, generally about a foot below the surface, being covered with a stone, and then the hollow filled up with earth composing the surface of the court-yard, in which the underground granary is usually sunk. Rice, by these means, is often preserved for a great length of time in excellent condition. With land so fertile and adapted for the growth of such abundant crops of rice as the plantations in the interior often yield, it might be raised for exportation to almost any extent; but the absence of canals and public roads, and all means of land carriage, precludes the possibility of conveying the produce of many of the provinces to the sea-ports, excepting in comparatively small quantities, and thus impedes very materially the development of the resources of the island. The government has been deterred from constructing or encouraging the formation of public roads, from an apprehension of the facilities they would afford to a hostile force invading the country and seeking to penetrate the interior. The want of good roads, therefore, though detrimental to their commercial interests, is preferred by them as a means of security. This disadvantage might be, to a great extent, compensated in some of the provinces by greater attention to the means of carriage by water. The late Radama commenced the work of connecting some of the principal lakes on the eastern coast by means of a canal, but since his death the work has been discontinued. Boats, better adapted for conveying grain in larger quantities to the places adjacent to the ports, and accessible by water, might be constructed, and would assist in augmenting the exports from the island. Their imports are chiefly cotton and woolen goods, wearing apparel, articles of domestic use, fire-arms, ammunition, wines and liquors; and to these other articles will doubtless be added as their means of purchasing them increase. The Hovas, the paramount race in the country, exhibit many of the elements of a thoroughly commercial people; keenness in trade seems to be intuitive with many, and the love of bartering almost a passion among all; scarcely any

engagement interferes with the market, and multitudes employ themselves in hawking goods of foreign or domestic manufacture about the country for sale. In this occupation many persons of rank and property employ their slaves, giving them a percentage on the amount or the profit of their sales. The dealings of the Hovás are seldom transactions of barter or exchange, but usually money purchases. The only coins they use are Spanish dollars, and very recently five-franc French pieces. For all the cattle exported, these silver coins alone are received in payment. The Malagasy have no native currency; and for ordinary use among themselves, the Spanish dollar is cut into halves, quarters, eighths, and smaller portions, even to the 1-72d part of a dollar. The cut pieces of the dollar are weighed in every instance, and a pair of money scales with their appropriate iron weights, are not only considered essential in every house, but are often seen thrust into the girdles of the men when employed in their ordinary avocations. Money-changers are a distinct class among the traders, and the rate at which whole dollars and cut silver are exchanged fluctuates almost daily at the capital and other principal places, as the one or the other are most in demand. In other parts of the island, especially those remote from the capital or the ports visited by shipping, the trade among the inhabitants is carried on to a great extent by exchange, or barter. Several attempts have been made by the foreign traders to induce the natives to receive gold coin in payment for cattle and other articles, but hitherto without success. The Hovás are not ignorant of the relative value of gold and silver, but at present seem only to value the former for the manufacture of jewelry and other articles of personal ornament.

Madeira. The Madeira Isles are a group in the Atlantic Ocean, belonging to Portugal, from the south-west coast of which they are distant 660 miles south-west. They consist of the islands of Madeira and Porto Santo, and the islands called the Desertas, situated between $32^{\circ} 23' 15''$ and $33^{\circ} 7' 50''$ N. lat., and $16^{\circ} 18' 30''$ and $16^{\circ} 38' 38''$ W. long. The largest island, Madeira, is 31 miles long and 12 miles broad. Population, 1850, 108,464. Capital, Funchal. It consists of a mass of volcanic rocks, which, in Pico Ruivo, rise to 6056 feet in elevation. From the central mass, steep ridges extend to the coast, where they form precipices of 1000 to 2000 feet in height. The only plains are a small portion of the west coast, and the tableland of Paul de Serra in the interior. The roads are very steep and unfit for carriages. Oxen are the only beasts of draught, and ponies are used in traveling. Climate remarkably equable, and celebrated for its salubrity, on which account numerous visitors, afflicted with disease of the lungs, constantly resort to Madeira. The soil, which on the south side extends $2\frac{1}{2}$ miles inland, is well watered, and extremely productive. Sugar, once extensively cultivated, is now neglected. Coffee is grown of superior quality, and the arrow-root is excellent. The orange, banana, and guava, are abundant. Wheat, maize, beans, and barley, are cultivated to a small extent, but quite insufficient for home consumption. The failure of the potato, formerly the chief support of the population of the villages and remote districts, has added to the existing distress, and the condition of the lower orders is that of squalid poverty. Madeira was settled by the Portuguese in 1431.

It is said that plants of the vine were conveyed from Crete to Madeira in 1421, and have since succeeded extremely well. There is considerable difference in the flavor and other qualities of the wines of Madeira; the best are produced on the south side of the island. The method of cultivation most generally followed is to trench the ground from three to seven and seven to nine feet deep, according to the nature of the soil, and lay a quantity of loose and stony earth at the bottom,

to prevent the roots from reaching the clayey soil beneath, which would otherwise oppose their growth. The ground is watered three times if the summer has been very dry, the sluices being left open until the ground is pretty well saturated; the less the ground is watered, the stronger the wine, but the quantity is diminished in proportion. The vines are found to bear fruit as high as 2700 feet, but no wine can be made from it. Adjacent to Madeira is the island of Porto Santo, about six miles long, and two and a half broad. It is high and rocky, composed principally of sand-stone, and a calcareous tuffa of a greenish gray color. The vine is cultivated in considerable quantities, and the soil yields good crops of wheat, Indian corn, barley, and beans. The population is estimated at 1400, and there are 800 militia. It possesses a good roadstead, but the landing-place is bad. The Desertas are small, uninhabited islands, which, with Madeira and Porto Santo, form the group called the Madeiras.

The manufactures of Madeira are insignificant; their chief object being to satisfy some of the simple wants of the poorer classes. Baskets, straw hats, coarse linen and woollen articles, and shoes, are the principal objects. Artificial feathers, flowers, and sweatmeats are made for sale by the nuns. A good deal of needle-work embroidery has been executed of late years by the women of Funchal for exportation, and a few fancy articles are made of the fibre of the *Agave Americana*. The bulk of the laboring population is employed in agricultural pursuits. Wine has hitherto been the chief article of export, but this branch of trade will soon cease. The rearing of the cochineal insect has been lately undertaken, in the hopes of its supplying the loss of the grape. Many of the coopers employed during the existence of the wine trade have emigrated; the rest earn a precarious subsistence. The casks they made possessed repute for excellence of construction. The chief artisans of Funchal at present are boot and shoemakers, cabinet-makers, carpenters, and stone-masons. The number of merchant ships anchoring at Funchal (which is the only foreign port) during 1855 was 242, of which 121 were British, and 91 Portuguese. The chief imports are, manufactured goods, iron ware, grain, salt, and timber. In 1855, of grain there was imported 195,765 bushels, principally from the neighboring coast of Africa, and from the Azores. In the same year 27,800 bushels of salt entered. The official returns of the imports of manufactured goods can not be relied on. The total receipts of the custom-house in 1855 amounted to rather more than £17,000. There is no bank on the island; the gold and silver coin in circulation is not Portuguese, but British, American, and Spanish. Accounts are made out in *reis*, imaginary coins, 4800 of which are equal by law to the pound sterling. Spanish and American dollars are current, at the value of 1000 *reis*, or 4s. 2d. British money. Funchal is a coaling station for the British mail steamers from England to Brazil and the African coast, which touch here once a month on their outward voyages, and again on their return. The Portuguese and French steamers to Brazil likewise touch here. Besides these vessels, two English sailing-packets are continually plying between London and Madeira, and a Portuguese packet-brig to and from Lisbon.

COMMERCE OF THE UNITED STATES WITH PORTUGAL AND MADEIRA IN 1856.

National character.	Vessels entered.		Vessels cleared.	
	No.	Tonnage.	No.	Tonnage.
From Portugal.				
Portuguese.....	18	3,727	15	3,898
British.....	8	2,420	1	201
Swedish.....	1	830	4	1,249
Danish.....	1	809	2	524
Prussian.....	..	..	1	286
Bremen.....	1	648	..	..
United States.....	..	10,879	..	6,232
From Madeira.				
Portuguese.....	2	284	8	870
United States.....	..	..	1	890

COMMERCE OF THE UNITED STATES WITH MADEIRA, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
Sept. 30, 1821.....	\$198,414	\$26,667	\$225,081	\$190,289	\$2,000	\$10,288	8,082	....
1822.....	186,952	4,662	191,614	188,757	....	5,600	5,699	111
1823.....	117,685	8,976	126,661	244,268	485	19,363	4,973	....
1824.....	315,896	26,947	342,843	247,510	....	29,271	8,059	....
1825.....	122,840	55,896	178,736	361,016	58,050	850	5,561	185
1826.....	119,058	25,549	144,607	224,883	12,150	5,200	4,220	....
1827.....	100,158	18,281	118,439	229,288	....	21,424	4,083	....
1828.....	101,948	9,985	111,933	168,610	1,167	7,791	4,387	211
1829.....	175,074	15,059	190,133	408,056	500	9,660	6,091	669
1830.....	155,719	12,853	168,572	239,652	1,638	5,000	6,080	....
Total.....	\$1,588,789	\$198,240	\$1,787,029	\$2,497,268	\$70,990	\$100,895	57,485	1,126
Sept. 30, 1831.....	\$171,568	\$5,728	\$177,296	\$177,369	....	\$8,667	5,168	....
1832.....	143,054	929	143,983	228,818	....	5,136	4,623	124
1833.....	119,341	15,642	134,983	319,349	\$5,482	....	8,501	369
1834.....	100,910	43,595	144,505	424,699	....	2,000	4,089	600
1835.....	78,893	28,595	107,488	581,266	5,674	2,595	3,700	241
1836.....	38,945	17,398	56,343	366,210	4,011	95	2,414	....
1837.....	82,747	18,522	101,269	672,782	14,498	....	4,250	....
1838.....	86,422	4,535	90,957	366,274	8,166	....	3,464	....
1839.....	64,082	15,046	79,128	539,800	14,143	....	4,273	....
1840.....	93,819	22,858	116,677	309,524	14,612	8,695	3,963	....
Total.....	\$927,389	\$172,843	\$1,100,232	\$3,985,591	\$61,581	\$22,188	89,740	1,427
Sept. 30, 1841.....	\$107,905	\$20,370	\$128,275	\$229,519	\$19,920	\$5,200	4,626	827
1842.....	48,054	1,980	50,034	146,182	1,822	100	2,258	....
9 mos. 1843.....	87,649	3,856	91,505	7,160	2,606	....	1,657	....
June 30, 1844.....	44,768	7,523	52,291	22,904	8,685	....	2,404	122
1845.....	59,312	1,784	61,096	168,674	2,000	....	2,081	491
1846.....	60,948	3,257	64,205	127,070	1,600	....	3,585	477
1847.....	105,031	1,389	106,420	95,837	....	....	3,848	1,046
1848.....	110,542	7,407	117,949	9,432	592	....	4,524	1,444
1849.....	117,878	759	118,637	73,759	4,300	....	3,744	1,678
1850.....	186,374	6,527	192,901	114,729	868	....	4,132	1,379
Total.....	\$824,251	\$54,802	\$879,053	\$995,286	\$42,333	\$5,300	82,304	6,959
June 30, 1851.....	\$94,589	\$7,176	\$101,765	\$102,448	\$9,626	....	3,879	1,814
1852.....	87,982	7,480	95,462	90,068	7,000	....	4,171	596
1853.....	101,524	15,574	117,098	77,598	15,902	....	3,707	948
1854.....	47,708	....	47,708	30,007	2,000	....	821	256
1855.....	48,502	5,261	53,763	25,938	2,286	\$260	1,894	311
1856.....	27,655	932	28,587	19,768	....	....	390	370

The cereal crops of Madeira are scarcely equal to one third the consumption; and hence, and owing also to the general poverty of the inhabitants, a decree was passed in 1843 reducing the duties on the leading foreign imports to one half the duties levied in Portugal. This decree is in force at this time, and, consequently, but half the duties fixed in the tariff of Portugal are now levied on foreign imports into Madeira. In 1843 the imports from the United States amounted to \$59,900, and the exports from Madeira to the United States to \$2750, employing 38 vessels, with an aggregate tonnage of 8533 tons. The commerce of this island with foreign nations, and especially with the United States, is declining, and must continue to decline so long as the vines remain diseased, as wine is the only article of export from Madeira.

See *Am. Jour. Science*, xxiv., 237; *North Brit.*, vii., 73; *North Am. Rev.*, xli., 336 (by J. W. WEBSTER). For Madeira Wine, see WINE.

Madeira Nut, or Persian Walnut (*Juglans regia*), originally a native of Persia, or the north of China, has been somewhat extensively distributed, and appears to be well adapted to the climate of the middle and southern latitudes of the United States. A tree of the "Titmouse" or "thin-shelled" variety (*Juglans regia tenera*), about 20 years planted, 45 feet in height, and 15 inches in diameter, standing on the premises of Colonel Peter Force, in the city of Washington, is perfectly hardy, and bears yearly an abundance of excellent nuts. This is considered the most valuable of all the walnuts, as the tree begins to bear in eight or ten years from planting the seed; and the fruit is very delicate, keeps well, and is rich in oil. In Cashmere, where the walnut is the subject of careful cultivation, there are four varieties: The "Kanak," or wild, the nut of which is diminutive, with a thick shell and scanty kernel; the "Wantu," having a large nut, with a thick and hard shell, a deficient kernel; the "Denu," also a large nut, with a thick and rather

hard shell, and a kernel large, good, and easily extracted; and the "Kaghazi," so called from its shell being nearly as thin as paper. The latter, which may be readily broken by the hand, is the largest of all, having a kernel easily extracted, and producing an excellent oil. Its superiority is said to be attributable to its having been originally engrafted, but it is now raised from seeds alone, and does not degenerate. The nuts, after being steeped in water eight days, are planted in the beginning of March, and the shoot generally makes its appearance in about 40 days. If reared by grafts, the process is performed when the plant is five years old. The head being cut off horizontally, at a convenient height, the stock is partially split, or opened, and the scion inserted in a similar manner to that adopted by our cleft method, in grafting the apple or pear; but clay-mortar, worked up with rice-husks, is put round it, and kept from washing away by being enveloped in broad slips of birch-bark.—*Patent Office Report*, 1855.

In Cashmere, the walnut-tree begins to fruit, ordinarily, when seven years old; but two or three years more elapse before it is in full bearing. The average annual number of nuts, brought to maturity on a single tree, often amounts to 25,000. It has been observed that, after a few seasons of full bearing, the trees fall off in producing fruit, and run, with great luxuriance, to leaf and branch. To this latter condition the Cashmereans apply the appellation of "must," and to remedy the evil, cut off all the small branches, bringing the tree to the state of a pollard. The year following, shoots and leaves alone are produced, which are succeeded the next season by an abundant crop of nuts. The cut ends of the branches swell into knots, or knobs, which are somewhat unsightly in the tree, until they are concealed by the growth of the young branches and leaves. When ripe, the fruit of the Wantu walnut is retailed in the city at the rate of about 2 cents a 100. The nuts

of the Danu are sold for about 3 cents per 100; and of the Kaghazi, at about 4 cents per 100. It is a common practice for the country people to crack the walnuts at home, and carry the kernels alone to market, where they are sold to oil-pressers, for extracting their oil. The kernels yield half their weight in oil; and the other half, which consists of oil-cake, is much valued as food for cows in winter, when it is usually exchanged for its weight of rough rice. About 1,150,000 pounds of walnut kernels are annually consigned to the oil-press in Cashmere, producing a large amount of oil and cake, besides a considerable quantity eaten by man, or consumed by other modes. Walnut oil, in that country, is preferred to linseed oil, for all the purposes to which the latter is applied. It is employed in cookery, and also for burning in lamps, without much clogging the wick or yielding much smoke. It is exported to Thibet, and brings a considerable profit. By ancient custom, the crop of nuts was equally divided between the government and the owner of the tree, but at present, the former takes three fourths; yet, even under this oppression, the cultivation of this product is extended, and Cashmere, in proportion to its surface, produces a much larger quantity of nuts than any other portion of the globe. Estimating the product of each tree at a bushel of nuts, and supposing that it will produce that quantity in 12 or 15 years after planting, and considering that the amount imported into this country is valued at least at \$100,000 per annum, the inducements for its culture by the farmers and planters of the middle and southern States would appear to be sufficiently ample for their immediate attention.—*Patent Office Report.*

Madras, the principal emporium of the coast of Coromandel, or western shore of the Bay of Bengal; latitude of light-house $13^{\circ} 5' 10''$ N., long. $80^{\circ} 20'$ E. It is the seat of the government of the second presidency of British India, having under it a territory, including the tributary States, of 187,482 square miles, with a population, according to the census of 1850-51, of 27,054,672, paying a gross annual revenue of nearly £4,900,000 sterling. The town is situated in the Carnatic province, a low, sandy, and rather sterile country. It is without port or harbor, lying close upon the margin of an open roadstead, the shores of which

are constantly beat by a heavy surf. Besides these disadvantages, a rapid current runs along the coast; and it is within the sphere of the hurricanes or typhoons, by which it is occasionally visited. In every respect, indeed, it is a very inconvenient place for trade, and its commerce is consequently greatly inferior to that of either Calcutta or Bombay. It has been in the possession of the English above two centuries, having been founded by them in 1639, and retained ever since. Fort St. George is a strong and handsome fortification, lying close to the shore. The Black Town of Madras, as it is called, stands to the north and eastward of the fort, from which it is separated by a spacious esplanade. Here reside the native, Armenian, and Portuguese merchants, with many Europeans unconnected with the government. Like most other Indian towns, it is irregular and confused, being a mixture of brick and bamboo houses. Madras, like Calcutta and Bombay, is subject to English law; having a Supreme Court of Judicature, the judges of which are named by the crown, and are altogether independent of the local government and the East India Company. The population is not exactly ascertained, but there are said to be about 400,000 persons within a radius of $2\frac{1}{2}$ miles round Fort St. George.

Madras is the seat of all the chief government offices for the President of the Supreme Court, Boards of revenue, admiralty, education, etc.; and though having less foreign trade than the capitals of the other presidencies, its commerce is still considerable, as it is the chief emporium of the Coromandel coast, and trades direct with Great Britain and the other European countries, the United States, Ceylon, and south-east Asia. Principal imports are rice and other grains, chiefly from Bengal; cotton piece goods, twist, and metallic wares from Great Britain; raw silk, areca, betel, gold dust, spices, and teak timber from Pegu; spirits and wines, coral beads, horses, drugs, to the total value, in 1851-52, of £1,958,736. Exports of cotton stuffs and wool, indigo, pepper, timber, coffee, and other native produce, amounted in the same year to £3,075,103. The site of the city formed the first territorial acquisition by the British in India, permission to erect a fort here having been obtained in 1639.

SUMMARY OF THE EXTERNAL COMMERCE OF MADRAS BY SEA, IN 1849-50 AND 1850-51.

For the years 1849-50.	Private trade.			Company's trade.			Grand total.
	Merchandise.	Treasure.	Total.	Merchandise.	Treasure.	Total.	
Imports.....	Co.'s rupees. 1,32,17,742	Co.'s rupees. 42,36,514	1,74,54,256	Co.'s rupees. 2,36,539	.....	2,36,539	1,76,90,795
Exports.....	2,36,38,359	9,10,427	2,45,48,786	81,944	59,70,000	60,51,944	3,06,00,730
Total.....	3,68,56,101	51,46,941	4,20,03,042	3,18,483	59,70,000	62,88,483	4,82,91,525
For the years 1850-51.							
Imports.....	1,84,47,091	60,42,437	1,94,89,528	97,833	.....	97,833	1,95,87,361
Exports.....	2,61,22,274	11,97,691	2,73,19,965	1,31,078	33,00,000	34,31,078	3,07,51,033
Total.....	3,95,69,365	72,40,128	4,68,09,493	2,28,906	33,00,000	35,28,906	5,03,38,399

In Madras roads, large ships moor in from 7 to 9 fathoms, with the flagstaff off the fort bearing W.N.W., 2 miles from shore. From October to January is generally considered the most unsafe season of the year, in consequence of the prevalence, during that interval, of storms and typhoons. On the 15th of October the flagstaff is struck, and not erected again until the 15th of December; during which period a ship coming into the roads, or, indeed, anywhere within soundings on the coast of Coromandel (reckoned from Point Palmyras to Ceylon), vitiates her insurance, according to the conditions of the policies of all insurance offices in India. The cargo boats used for crossing the surf, called *Massula* boats, are large and light; made of very thin planks sewed together, with straw in the seams instead of caulking, which it is supposed might render them too stiff. When within the influence of the surf, the coxswain stands up, and beats time in great agitation with his voice and feet, while the rowers work their oars backward, until overtaken

by a strong surf curling up, which sweeps the boat along with frightful violence. Every oar is then plied forward with the utmost vigor to prevent the wave from taking the boat back as it recedes; until at length, by a few successive surfs, the boat is thrown high and dry upon the beach. The boats belonging to ships in the roads sometimes proceed to the back of the surf, and wait for the country boats from the beach to come to them. When it is dangerous to have communication with the shore, a flag is displayed at the beach-house, which stands near the landing-place, as a caution. The fishermen and lower classes employed on the water use a species of floating machine of a very simple construction, named a *catamaran*. It is formed of 2 or 3 logs of light wood, 8 or 10 feet in length, lashed together, with a small piece of wood inserted between them to serve as a stem-piece. When ready for the water, they hold generally 2 men, who with their paddles impel themselves through the surf, to carry letters, or refreshments in small quantities,

to ships when no boat can venture out. They wear a pointed cap made of matting, where they secure the letters, which take no damage. The men are often washed off the catamaran, which they regain by swimming, unless interrupted by a shark. Medals are given to such catamaran men as distinguish themselves by saving persons in danger.

The limited extent of the trade of Madras as compared with that of Calcutta and Bombay, is partly ascribable to the badness of its port or roadstead, the want of any navigable river or other easy means of communication with the interior, and the backward state of the provinces of which it is the capital, in consequence of the heavy and fluctuating land tax to which they are subject. In 1839-40, there arrived at Madras no fewer than 5,426 vessels (including their repeated voyages of the aggregate burden of 835,465 tons. But by far the greater number of these were of very small burden; 2,832 being country craft from Bombay, 853 from Ceylon, and 585 from Goa. In the course of the same year 31 vessels arrived from the United Kingdom.—HAMILTON'S *East India Gazetteer*; *Geog. Dict.*, art. *Madras*; *Madras Almanac* for 1839, 1840, and 1845; *Official Returns of the Trade of Madras*, etc.

Maelstrom, or Moskoe-Strom, a whirlpool in the North Sea, near the Island Moskoe. In summer it is but little dangerous, but it is very much so in winter, especially when the north-west wind restrains the reflux of the tide. At such times the whirlpool rages violently so as to be heard several miles, and to engulf small vessels, and even whales, which approach it. See LOFODEN ISLANDS. See also FRASER'S *Mag.*, x., 267.

Magellan, or Magalhaens, Straits of, divide the continent of South America from the Island Tierra del Fuego; the east entrance is formed by Cape de la Virgines, on the mainland, and by Cape del Espiritu Santo (Queen Catharine's Foreland), on one of the largest islands composing Tierra del Fuego. Length nearly 300 miles, extending between lat. 52° 10' and 55° S., and long. 68° 20' and 75° W. Navigation difficult. Discovered in 1520 by Fernando Magalhaens. Ferdinand De Magellan, or Magalhaens, the discoverer of the straits that bear his name, was by birth a Portuguese. He served with honor in the East Indies, and in 1510 distinguished himself at the battle of Malacca. He entered into the employment of Charles V., King of Spain, and in conjunction with Ruy Foloero, formed the bold design of discovering a new passage by the west to the Molucca Islands. On the 20th September, 1519, he sailed from San Lucas, with five ships and 236 men. After many exertions, he induced two of his ships to prosecute the entire voyage; and entering upon the straits which now bear his name, he soon reached the South Sea. The weather was so uniformly temperate, and the sea so calm, that they called the ocean Pacific. Magellan visited places seen for the first time by Europeans; and in visiting Matan, the natives gave battle, and Magellan was slain, in the year 1521. But for this he would have been the first circumnavigator of the world, which honor was secured by Cano, who brought his ships home by the East Indies.

Magnesia (Fr. *Magnésie*; Ger. *Gebraunte Magnesia*; It. *Magnesia*), one of the primitive earths, having a metallic basis. It is not found native in a state of purity, but is easily prepared. It is inodorous and insipid, in the form of a very light, white, soft powder, having a specific gravity of 2.3. It turns to green the more delicate vegetable blues, is infusible, and requires for its solution 2000 parts of water at 60°. See MAGNESE.

Magnet. Sturmius, in his *Epistola*, dated at Altorf, 1682, observes that the attractive quality of the magnet has been taken notice of from time immemorial; but that it was Roger Bacon, of Ilchester, in

Somersetshire (he died the 17th June, 1294), who first discovered its property of pointing to the north pole. The Italians discovered that it could communicate its virtue to steel or iron. The variation not being always the same was taken notice of by Hevelius, Petil, and others. Flavio Gioja, of Naples, invented or improved the mariner's compass in 1302. The important discovery of the inclination or dip of the magnetic needle was made about 1576 (published 1580) by Robert Norman, of London. Dr. Gilbert's experiment was made in 1600. Artificial magnets were invented, or rather improved, in 1751. A magnetic clock, invented by Dr. Locke, of Ohio, announced at Washington, January 5, 1849. See COMPASS.

Magnolia. The *magnolia conspicua*, or lily-flowered magnolia, as its name indicates, is a beautiful and showy tree, and distinguishable from all others of the genus by the expanding of the flowers before any of the leaves. A full-grown tree, in its native country, is said to attain a height of forty or fifty feet, and it has arrived at nearly the same elevation in Europe and America. The tree was first introduced into England by Sir Joseph Banks, in 1789; but it was many years before it attracted much attention, being considered merely as a green-house or conservatory plant. Within the last 20 years, it has been discovered to be nearly as hardy as the American magnolias, and is now most extensively cultivated in the nurseries of Britain, continental Europe, and the United States. It flowers freely every year, as a standard in the neighborhood of London, New York, and Philadelphia, when the wood has been properly ripened during the preceding summer; and at White Knights, in England; at Fromont, and various other places in France; and at Monza, in Italy, and Brooklyn, in New York, it has ripened, seeds from which young plants have been raised. *Properties and Uses.*—Besides the value of the *magnolia conspicua* as an ornamental plant or tree, the Chinese pickle the flower-buds, after having removed their calyxes, and use them for flavoring rice. Medicinally, the seeds are taken in powder, in colds, and inflammations of the chest. It is also regarded as stomachic; and water, in which it has been steeped, is used for bathing the eyes when inflamed, and for clearing them of gum.

Geography and History.—The *magnolia glauca* has the most extensive range, especially near the sea, of any of the genus. It abounds from Massachusetts to Louisiana and Missouri. Its most northern boundary may be considered a sheltered swamp in Manchester, Cape Ann, about 30 miles northerly of Boston. It here attains but a small size, and is frequently killed to the ground by severe winters. In the maritime parts of the Floridas and lower Louisiana, it is one of the most abundant among the trees which grow in morasses or wet grounds. It is not usually met with far interior, nor to the west of the Alleghanies. In the Carolinas and Georgia it grows only within the limits of the pine-barrens. This species was introduced into England by Rev. John Banister, who sent it to Bishop Compton, at Fulham, in 1688. It was soon afterward generally propagated by American seeds, and became known throughout Europe many years before any of the other species. At Woburn Farm, Chertsey, there was formerly a row of these trees 20 feet high, and nearly a century old, which frequently ripened their seeds. In France, and southern Europe generally, this species is not very abundant, from the great heat of the summers, and the general dryness of the air. At Versailles and the Petit Trianon, as well as in Belgium, it has attained the height of 15 feet. In the north of Germany, and in Sweden and Russia, it is a green-house plant. At Monza, in Italy, it is found in all of its varieties. In general, this tree can only be used for ornamental purposes, and no collection should be without it. The wood, however, is sometimes employed for making

joiners' tools; and the bark is also used in some parts of the country, like that of the cinchona, in the case of intermittent and remittent fevers. It is aromatic and pungent, apparently more so than the other species. When distilled, it has a peculiar flavor, and an empyreumatic smell. In a dry state it affords a little resin. The aroma is volatile, and probably contains an essential oil, or a variety of camphor. The bark, seeds, and cones, are employed in tincture, in chronic rheumatism. That from the cones is very bitter, and is sometimes used to cure coughs and pectoral diseases, and for preventing autumnal fevers. The flowers in a dried state may be used in drawing-rooms for *pot pourri*, as a substitute for those of the lily of the valley.—BROWNE'S *Trees of America*.

Mahogany, the wood of a tree (*Swietenia Mahoganii*) growing in the West Indies and Central America. There are two other species of *Swietenia* found in the East Indies, but they are not much known in this country. Mahogany is one of the most majestic and beautiful of trees: its trunk is often 40 feet in length, and 6 feet in diameter; and it divides into so many massy arms, and throws the shade of its shining green leaves over so vast an extent of surface, that few more magnificent objects are to be met with in the vegetable world. It is abundant in Cuba and Hayti, and it used to be plentiful in Jamaica; but in the latter island, most of the larger trees, at least in accessible situations, have been cut down. The principal importations into Great Britain are made from Honduras and Campeachy. That which is imported from the islands is called Spanish mahogany; it is not so large as that from Honduras, being generally in logs from 20 to 26 inches square and 10 feet long, while the latter is usually from 2 to 4 feet square and 12 or 14 feet long, but some logs are much larger. Mahogany is a very beautiful and valuable species of wood; its color is a red brown, of different shades, and various degrees of brightness; sometimes yellowish brown; often very much veined and mottled, with darker shades of the same color. The texture is uniform, and the annual rings not very distinct. It has no larger septa; but the smaller septa are often very visible, with pores between them, which in the Honduras wood are generally empty, but in the Spanish wood are mostly filled with a whitish substance. It has neither taste nor smell, shrinks very little, and warps or twists less than any other species of timber. It is very durable when kept dry, but does not last long when exposed to the weather. It is not attacked by worms. Like the pine tribe, the timber is best on dry rocky soils, or in exposed situations. That which is most accessible at Honduras grows upon moist, low land, and is, generally speaking, decidedly inferior to that brought from Cuba and Hayti; being soft, coarse, and spongy, while the other is close-grained and hard, of a darker color, and sometimes strongly figured. Honduras mahogany has, however, the advantage of holding glue admirably well; and is frequently used as a ground on which to lay veneers of the finer sorts.

Not long since, Messrs. Broadwood, the piano-forte manufacturers of London, gave the immense sum of £3000 for three logs of mahogany! These logs, the produce of a single tree, were each about 15 feet long, and 38 inches square; they were cut into veneers of eight to an inch. The wood was particularly beautiful, capable of receiving the highest polish, and, when polished, reflecting the light in the most varied manner, like the surface of a crystal; and, from the wavy form of the pores, offering a different figure, in whatever direction it was viewed. Dealers in mahogany generally introduce an auger before buying a log; but, notwithstanding, they are seldom able to decide with much precision as to the quality of the wood, so that there is a good deal of lottery in the trade. The logs for which Messrs. Broadwood gave so high a price were brought to England with a full knowledge of

their superior worth. Mahogany was used in repairing some of Sir Walter Raleigh's ships at Trinidad, in 1597; but it was not introduced into use in England till 1724. The duty on foreign mahogany used to be £7 10s. a ton, on Honduras, £1 10s., and on Jamaica mahogany, £4—its effect being to force the consumption of the inferior in preference to the superior article. Luckily, however, the duty on foreign and colonial mahogany, after being reduced in 1845 to 20s. and 5s. a ton, was wholly repealed in 1845. There has been, in consequence, a very great increase in the consumption of the superior sorts of mahogany for upholstery purposes, while the cheaper varieties are now largely employed, notwithstanding the difficulties thrown in the way by Lloyd's regulations, in the construction of ships, and in coarser fabrics. In 1840 the imports amounted to 23,115, and in 1852 to 41,090 tons, the re-exports during the latter year being only 2755 tons. Honduras, Cuba, and Hayti, are the great sources of supply; the timber brought from the first being the cheapest and by far the most abundant. See TREDGOLD'S *Principles of Carpentry*, p. 204; *Library of Entertaining Knowledge*, volume on *Timber-trees and Fruits*; EDWARDS'S *West Indies*, vol. iv., p. 208, ed. 1819, etc.; and the *Mahogany Tree*, by Messrs. CHALONER and FLEMING; *Living Age*, xxix., 354.

The imports of mahogany and other woods into the United States for the fiscal year ending June 30th, 1856, were as follows:

Imports.	Manufactured.	Unmanufactured.
Cabinet furniture.....	\$46,781	.....
Cedar, mahogany, etc.....	22,307	\$440,246
Willow.....	125,808	86,554
Cork.....	302,567	9,180
Dye woods.....	.....	796,802
Others not specified.....	429,915	25,157
Total.....	\$827,378	\$1,807,889

There are several varieties of mahogany, much admired, and sought after, for the beauty of their figures, and the gradations of their colors, which may be described as follows:

1. **PLAIN MAHOGANY.** *Acajou uni* of the French, the wood of which is of one color, and equal throughout. 2. **VEINY MAHOGANY.** *Acajou veiné*, French. The wood of this variety is veined longitudinally with the grain, displaying alternately dark and light streaks, continuous, interrupted, or re-appearing. 3. **WATERED MAHOGANY.** *Acajou moiré*, French. This variety is known by the transverse waves which exhibit to the eye an effect similar to those of a watered ribbon. 4. **VELVET-CORD, or CATERPILLAR MAHOGANY.** *Acajou chenillé*, French. This variety is distinguished by its whitish lines, accompanied by a figured shade of fragments of roseate sprigs, here and there disposed diagonally, longitudinally, interrupted, or crossing one another. 5. **BIRD'S-EYE MAHOGANY.** *Acajou moucheté*, French. This variety is besprinkled with little oval knots, which, when duly proportioned, render the wood half light and half dark. 6. **FESTOONED MAHOGANY.** *Acajou ronceux*, French. This variety offers in its color a mixture of light and shade usually resembling sheaves of wheat, feathers, wreaths, festoons, or figures of shrubs. As the wood of mahogany is generally hard and takes a fine polish, it is found to serve better than that of any other tree for cabinet-making, for which purpose it is universally admired. It is very strong, and answers well for beams, joists, planks, boards, and shingles, for which it was formerly much used in Jamaica. Its adaptation to ship-building we have already mentioned in the history of this tree.—BROWNE'S *Trees of America*.

Maine, the most north-easterly State of the republic of the United States of America, extends from lat. 43° to 47° 24' N., and between long. 6° and 10° E. from Washington, and contains an area of 85,000 square miles. Population in 1790 was 96,540; in 1800, 161,719; in 1810, 228,705; in 1820, 298,395; in 1830, 399,995; in 1840, 501,793; and in 1850, 583,088.

Sebastian Cabot, who was, after the time of Columbus, the first European navigator along the coasts of Maine and its vicinity, appears not to have given a name to the countries discovered by him. The eldest and greatest name in these parts of North America is that of "*Baccalaos*"—a name given by the Biscay fishermen at first to Newfoundland, and then also to all the countries which they found near this island. On some old maps the name "*Baccalaos*"—that is to say, the cod-fish coast—reaches over a great part of the eastern coast of America, but it appears more particularly in the regions of our State of Maine. Stephen Gomez was the first Spanish navigator who discovered (1525) and explored the coasts to the west and to the north of Cape Cod a little more particularly, and we therefore see on the Spanish maps these regions designated with the name of "*Tierra de Gomez*" (Gomez's Land). So, for instance, at first on that of Ribiero (1529), and afterward on many others. After the middle of the 16th century, when Gomez was more and more forgotten, another name was introduced for these regions—that of "*Norumbec*." We can not exactly point out the occasion at which this name was invented; but we find it in the latter half of the 16th and in the beginning of the 17th century, on nearly all the maps of these regions. The name seems to be of Indian origin, like the name of Kennebec, Quebec, and different others which have *bec* for the last syllable. Perhaps some unknown sailors heard it pronounced by the Indians, and introduced it among the geographers, who were always fond of new names. It was, however, changed and spelled in many different ways: Norubec, Norumbec, Arambec, Norumberge, Norumberque, Norimbequa, etc.

The savans of the time supposed that there was in the interior of this northern country a large city of the same name, like that old famed "*Temistitan*," in Mexico, and that through this city was running a large broad river, which was also called the River of Norumberge. It is probable that with this name our Penobscot Bay and its rivers were designated. They from this, therefore, called the whole country "*La Terre de Norumberque*," or the coasts of Arambec.

English Settlers.—At the same time the English introduced here another name, that of Virginia, under which they comprised, since 1584, pretty much the whole Atlantic coast of North America. Custom and use already introduced very soon a division in the Southern and the Northern Virginia coast. The royal patent of 1606, by which the two Virginia companies were established, made this custom legal and official. After this patent the whole section of the country north of the 40th degree of latitude, comprising our Maine, was designated as "Northern Virginia," or also, since some attempts at settlement, "the Northern Plantations," or also "the Second," or "Plymouth Colony," because the king had given this latter name to that particular society of merchants who had taken upon themselves the exploration and settlement of Northern Virginia. In the year 1616 the name of "New England" was introduced. The celebrated Captain John Smith was no doubt the inventor of it, and Prince Charles approved of it. Smith says this himself in his history of New England, and states that he gave this name, which made some opposition against the neighboring French name of "New France" and the French pretensions; and, secondly, he did it in contraposition to the country on the Pacific side of America which was discovered by Drake, and named by him New Albion, and which was under the same latitude.

Sir Fernando Gorges gave, in the year 1636, to the territory between Piscataqua and Kennebec Rivers, the name of "New Somersetshire," from the shire in England where he was born. Sometimes the whole vast region was therefore then called "Somersetshire;" and we find, even when the name of Maine was already introduced, once the expression "Maine

or Somersetshire." In the same way the whole of Maine was also sometimes called "Lacona," from a part of the country to which this name was given for a time. We find on a map by Seller, of the beginning of the 18th century, written with great letters, "the Province of Lacona or Maine." The early English settlers on the coast of New England had for Maine the popular name of "the Eastern shore," or "the Eastern country."

The name Maine was first introduced in the year 1639, when King Charles I. granted to Sir Fernando Gorges all the land from Piscataqua River to Sagadahoc, to which tract of land he gave the name "Province of Maine," "in compliment to the Queen of Charles I. who was a daughter of France, and owned as her private estate the province of Maine in France." This, at least, is the opinion of the first good historian of Maine, Mr. Sullivan. But Sullivan gives no authority for this opinion, which has, however, been adopted as a pretty general and popular one. The truth seems to be that it can not be proved that Queen Henrietta Maria had any rights at all in Maine. An old author on Maine observes, "it is very curious that the name of our country has been made shorter by an 'e' than the French Maine." In fact the word is, in old documents, very commonly written "Main" or "Mayn." From this, one could be induced to suppose that the name originated in the English expression for *terra firma* or continent: "Main" or "Mainland." Nearly all the first English trading and fishing establishments along the shore were on the numerous islands of the coast. From there the explorers made excursions "to the Main," to trade with the Indians and to explore the country. There are innumerable allusions, in their traveling reports, to "the Mayn." Could not from this have grown the custom of calling the country "Main?" From similar reasons and circumstances the north coast of South America is called by the inhabitants of the Antilles and Caribbean Islands, "*Costa firme*," or "*Tierra firme*."—J. G. KOHL.

The name Maine extended at first only a small distance along the coast. By degrees, and in the course of time, in consequence of growing settlements and of many treaties and grants, it was subsequently extended as far east as Penobscot Bay, and at last as far as St. Croix River, and in the year 1819 the "Province of Maine" was erected into the "State of Maine."

There were in this State in 1850, 2,039,596 acres of land improved, and 2,515,797 of unimproved land in farms; cash value of land in farms, \$54,861,748; and the value of implements and machinery, \$2,284,557. *Live Stock.*—Horses, 41,721; asses and mules, 45; milch cows, 133,556; working oxen, 83,893; other cattle, 125,890; sheep, 451,577; swine, 54,598; value of live stock, \$9,705,726.

Agricultural Products, etc.—Wheat, 296,259 bushels; rye, 102,916; Indian corn, 1,750,056; oats, 2,181,037; barley, 151,781; buckwheat, 104,523; peas and beans, 205,541; potatoes, 3,436,040; value of products of the orchard, \$342,865; produce of market gardens, \$122,387; pounds of butter made, 9,243,811; of cheese, 2,434,454; maple sugar, 93,542 pounds; molasses, 3,167 gallons; beeswax and honey, 139,618 pounds; wool, pounds produced, 1,864,034; flax, 17,081; silk cocoons, 252; hops, 40,120 pounds; hay, tons of, 755,889; clover seeds, 9,097 bushels; other grass seeds, 9,214; flax seed, 580 bushels; and were made 724 gallons of wine; value of home-made manufactures, \$513,599; of slaughtered animals, \$1,646,773.

Rivers, Lakes, etc.—It has been estimated that one sixth part of the surface of Maine consists of water. There are numerous lakes, the largest and most noted of which are Moosehead, Sebago, Chesuncook, and Umbagog. A part of the waters of the latter extend into New Hampshire. Some of these lakes are justly celebrated for the picturesque beauties of their scenery. A steamboat has been built to ply on the waters

of Moosehead Lake. The Kennebec and the Penobscot are the two most important streams; the former is navigable to Augusta, and the latter to Bangor. Their shores are adorned with villages, and the *intervals* along their margins are the most fertile and best cultivated in the State. The Saco, Androscoggin, and St. Croix Rivers enter the Atlantic. St. John, and its confluent, the Wallowastook, Allagash, and Aroostook, drain the northern part of the State. The St. John forms a part of the northern part of the State by the late treaty of Washington, and its waters are open to the free navigation of both nations. The principal bays are Casco, Penobscot, Machias and Passamaquoddy.

Manufactures.—There were in this State in 1850, 13 cotton factories, with a capital invested of \$3,347,700, employing 849 males and 3,072 females, producing 83,168,556 yards of sheeting valued at \$2,630,616; 45 woolen factories, with a capital of \$644,200, employing 388 males and 390 females, manufacturing 2,926,320 yards of cloth, and 1,200 lbs. of yarn, valued at \$934,928; 1 establishment making pig-iron, with a capital of \$214,000, employing 71 persons, producing 1,484 tons of pig-iron, etc., valued at \$36,616; 25 establishments, with a capital of \$150,100, employing 244 persons, and making 3,691 tons of castings, valued at \$265,000; 163 flouring and grist mills, 752 saw

mills; 213 tanneries, with a capital of \$782,447, employing 780 persons; value of products, \$1,620,636; 45 printing offices, 4 daily, 3 tri-weekly, 4 semi-weekly, 43 weekly, and 1 monthly publication; aggregate number of copies published annually, 4,203,064. Capital invested in manufactures, \$14,700,452; value of manufactured articles, \$24,644,430.

There were, January 1856, 11 railroads in this State; 494 miles completed and in operation, and 90 miles in course of construction. The only canal in the State is the Cumberland and Oxford, 20½ miles long, connecting navigation from Portland to Sebago, and by a lock in Saco River, navigation is extended to Long Pond, 30 miles further.

The receipts on the principal lines of railroad in Maine, during the last four years, have been as follows:

	Length.	1853.	1854.	1855.	1856.
	Miles.	Dollars.	Dollars.	Dollars.	Dollars.
A. and St. L.....	147	316,138	470,647	552,488	565,158
And. and Kennebec.	55	154,106	178,353	196,342	212,998
Androscoggin.....	20	19,152	29,396	None run	23,805
Bangor and Oldtown.	13	43,189	44,889	46,170	35,698
Calais and Baring..	6	28,038	31,640	37,172	39,380
Ken. and Portland..	72½	177,083	297,857	228,064	223,290
Penobscot and Ken..	55	New.	.....	.....	112,702
Portland, S. and P'a.	51	262,077	270,300	277,502	264,180

There were, January, 1854, 60 banks, with an aggregate cash capital of \$5,918,870.

FOREIGN COMMERCE OF THE STATE OF MAINE, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Tonnage Cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821.....	\$994,228	\$46,925	\$1,041,148	\$980,294	111,854	520	60,534	76,188
1822.....	1,013,873	22,769	1,036,642	943,775	105,880	4,452	.....	.....
1823.....	895,046	30,545	895,591	801,644	70,773	1,379	.....	.....
1824.....	870,371	29,324	900,195	765,643	98,477	774	.....	.....
1825.....	994,664	66,463	1,081,127	1,169,440	118,331	3,250	.....	.....
1826.....	1,001,875	50,700	1,052,575	1,245,235	115,060	2,240	.....	.....
1827.....	1,038,095	37,099	1,070,134	1,333,390	94,660	2,896	.....	.....
1828.....	1,003,642	15,875	1,019,517	1,246,809	95,066	1,785	.....	.....
1829.....	729,106	8,726	737,832	742,781	83,718	2,705	.....	.....
1830.....	643,435	27,087	670,522	572,666	91,629	6,165	.....	.....
Total.....	\$9,119,770	\$335,513	\$9,455,283	\$9,805,177	982,448	26,166	.....	.....
Sept. 30, 1831.....	\$799,743	\$5,825	\$805,573	\$941,407	61,582	49,372	69,753	93,314
1832.....	907,286	74,157	981,443	1,123,326	67,123	64,720	.....	.....
1833.....	989,157	80,644	1,019,881	1,380,303	65,438	98,735	.....	.....
1834.....	815,277	18,890	834,167	1,060,121	62,859	99,674	.....	.....
1835.....	1,044,951	14,416	1,059,367	833,389	63,048	64,031	.....	.....
1836.....	886,074	14,912	850,986	980,086	71,155	74,586	.....	.....
1837.....	947,276	8,676	955,952	801,404	81,898	74,160	.....	.....
1838.....	915,076	20,456	935,532	899,142	54,816	66,715	.....	.....
1839.....	873,434	17,051	890,485	932,724	77,968	61,097	.....	.....
1840.....	1,009,910	8,350	1,018,269	623,762	82,534	75,055	.....	.....
Total.....	\$9,143,219	\$213,386	\$9,356,605	\$9,680,669	658,476	728,645	.....	.....
Sept. 30, 1841.....	\$1,073,633	\$12,932	\$1,091,565	\$700,961	90,764	56,679	115,819	139,971
1842.....	1,043,172	7,351	1,050,523	606,864	86,827	58,721	.....	.....
1843.....	680,432	2,459	682,891	250,260	60,453	35,974	.....	.....
June 30, 1844.....	1,164,964	11,171	1,176,135	570,824	91,020	61,929	.....	.....
1845.....	1,167,640	87,465	1,255,105	855,645	88,602	62,901	.....	.....
1846.....	1,318,099	10,269	1,328,368	787,092	96,739	72,053	.....	.....
1847.....	1,614,071	20,132	1,634,203	574,056	104,169	69,603	.....	.....
1848.....	1,397,006	20,389	1,397,395	795,565	152,026	39,443	.....	.....
1849.....	1,279,898	7,288	1,286,681	721,409	127,368	66,081	.....	.....
1850.....	1,536,818	29,094	1,565,912	856,411	111,123	91,014	.....	.....
Total.....	\$12,820,228	\$208,550	\$13,028,778	\$6,719,087	1,009,091	614,408	.....	.....
June 30, 1851.....	\$1,517,457	\$33,551	\$1,551,438	\$1,176,590	120,987	74,854	357,380	178,985
1852.....	1,663,274	49,544	1,717,818	1,094,977	171,993	8,853	.....	.....
1853.....	1,761,299	278,858	2,040,787	1,886,559	179,569	62,614	.....	.....
1854.....	1,980,031	659,010	2,599,041	2,361,900	198,758	62,627	.....	.....
1855.....	2,543,014	2,303,193	4,851,207	2,927,443	251,535	62,005	.....	.....
1856.....	2,259,947	708,094	2,968,041	1,940,778	250,203	50,737	.....	.....

1. The principal ports are *Portland*, city and port of entry, situated on a peninsula at the western extremity of Casco Bay; lat. (Mount Joy), 43° 39' 52" N., long., 70° 13' 34" W. The harbor is capacious and safe, and among the best on the Atlantic coast. It is protected by islands from storms, seldom obstructed by ice, and has a good entrance. The water is deep enough for vessels of the largest class. The tonnage of the port in 1856, was 136,154 tons. 2. *Bath*.—On the Kennebec, 12 miles from the ocean, is one of the principal towns of the State, and the largest ship-

building port in the world. A branch of the Kennebec and Portland Railroad connects the city with Portland. The tonnage of the port is the largest in Maine, and in 1856 amounted to 193,320 tons. 3. *Belfast*.—At the head of Belfast Bay, 30 miles from the ocean, has an excellent harbor, and a considerable trade in lumber and fish. Its chief industry, however, is ship-building. Steamboats ply to Portland and Boston. The tonnage of Belfast, in 1856, was 76,812 tons. 4. *Bangor*, on the Penobscot. Tonnage in 1856, 38,048 tons.

Finances of the State.—The whole amount of the funded debts of the State, December 31, 1856, was \$699,000; of that sum \$30,000 became due March 1, 1857, and the current expense of the year will be discharged, without resorting to other means than the usual tax imposed by the Legislature. No Legislature will be required to provide for the payment of that sum. Receipts and disbursements for the year ending December 31, 1856. Receipts, balance from year 1855, \$39,130 37. From all other sources, \$593,312.04. Total, \$632,442 41. Disbursements, \$486,165. Balance in the treasury, \$146,277 41. See *North Am. Rev.*, lviii., 299 (SABINE), xxxvii., 419 (LEONARD), iii., 362 (RAND); *NILES's Reg.*, xl., 399 (H. CLAY); *HUNT's Mag.*, ii., 313 (LANMAN), xvii., 577; *Jo. of Sc.*, xxxvii., 143; *Am. Quar. Reg.*, v., 105, x., 154, xiv., 148, xlii., 144; *Am. Whig Rev.*, ii., 262; *De Bow*, xii., 603; *New Eng. Mag.*, ii., 394.

Maize, or Indian Corn (*Fr. Bled de Turquie*; *Ger. Türkisch korn, Mays*; *It. Grano Turco o Siciliano*; *Sp. Trigo de Indias, Trigo de Turquía*), one of the cereal grasses (*Zea Mays*), supposed to be indigenous to South America, being the only species of corn cultivated in the New World previously to its discovery. It was introduced into the Continent about the beginning, and into England a little after the middle of the 16th century. Its culture has spread with astonishing rapidity; being now extensively grown in most Asiatic countries, and in all the southern parts of Europe. It has the widest geographical range of all the cerealia, growing luxuriantly at the equator, and as far as the 50th degree of north, and the 40th of south latitude. It has been raised in England, in nursery gardens near the metropolis, for more than a century; and recently it has been attempted to raise it in the fields, but with indifferent success. Like other plants that have been long in cultivation, it has an immense number of varieties. The ear consists of about 600 grains, set close together in rows, to the number of 8, 10, or 12: The grains are usually yellow; but they are sometimes red, bluish, greenish, or olive-colored, and sometimes striped and variegated. The maize of Virginia is tall and robust, growing 7 or 8 feet high; that of New England is shorter and lower; and the Indians further up the country had a still smaller sort in common use. The stalk is jointed like the sugar cane. The straw makes excellent fodder; and the grain, as a bread corn, is liked by some; but though it abounds in mucilage, it contains little or no gluten, and is not likely to be much used by those who can procure wheat or even rye bread. See CORN.

Malachite. Until 1851, so little was known about it, except to mineralogists, that the public knew not whether it was a stone or a composition. The industrial history of the substance, however, is exceedingly curious. Malachite is a peculiar variety of green carbonate of copper, found in a few localities in Siberia and South Australia. It is softer but heavier than marble, and much more difficult to work. It can rarely be found in masses weighing more than from 10 to 20 pounds; and the finer specimens have a very high value. There is a mine in Siberia, where a mass of malachite, supposed to weigh 500,000 pounds, lies imbedded at a depth of 280 feet in a copper mine; and there is every indication that the malachite has been formed by the solidification or petrefaction of a liquid carbonate of copper, on some such principle as the stalactites in the Derbyshire caves. The material breaks so readily, that it is generally pieces of only two or three pounds' weight that can be brought safely to light.

MM. Demidoff, the owners of this valuable mine, have established a malachite manufactory at St. Petersburg. The production of large doors, or vases, or other articles in this substance, is exceedingly difficult. The fragments of malachite are first sawn into

thin plates, the thickness of which varies from a twelfth to an eighth of an inch. The cutting is effected by vertical circular saws, controlled by very delicate machinery, and moistened with sand and water. For curved surfaces, the malachite is cut by bent saws of a peculiar kind, the working of which is extremely precarious and difficult. The malachite has markings in different tints of green, which give to the material no small part of its beauty. The artistic workman determines what convolution or pattern these markings shall present in the finished article; and he so selects the veneers or small pieces as to attain that end. The pieces are cut at the edges to join with great nicety; and to make these joints accord better with the markings, they are often made curved. The grinding of the edges is effected by the aid of rapidly-revolving copper wheels. The substance on which the malachite is veneered is generally iron or copper, but sometimes stone or marble. When the pieces have been fixed down with cement, small interstices are filled up with a cement mixed with fragments of malachite, and colored with a powder of the same material. After this the surface is ground and polished. The price of the raw malachite, in average pieces as brought up from the mine, is about \$3 50 to \$4 per pound; but very great waste occurs in the working; and this, coupled with the lengthened time required in the working, will account for the great costliness of doors, vases, etc., made in this material. The malachite doors which occupied so prominent a place in the Great Exhibition, London, employed 30 workmen for a whole year.

Malaga, a city and sea-port of Spain, in the kingdom of Granada, in lat. 36° 43' N., long. 4° 25' 7" W. Population, perhaps, 65,000. Malaga has an excellent harbor. It is protected on its eastern side by a fine mole, full 700 yards in length. At its extremity a light-house has been constructed, furnished with a powerful light, revolving once every minute. At a distance it appears obscured for 45 seconds, when a brilliant flash succeeds for the other 15 seconds. A shoal has grown up round the mole-head; and the depth of water throughout the harbor is said to be diminishing. Latterly, however, a dredging-machine has been employed to deepen it, by clearing out the mud and accumulating sand. The depth of water at the entrance of the harbor and within the mole is from 26 to 30 feet; and close to the city from 8 to 10 feet. The harbor could easily accommodate more than 450 merchant ships: it may be entered with all winds, and affords perfect shelter. Owing to the want of official returns, and to the prevalence of smuggling, which may be said to have annihilated all fair trade, it is not possible to obtain any accurate accounts of the trade of Malaga, or indeed of any Spanish port. The great articles of export are wine and fruits, particularly raisins and almonds, grapes, figs, and lemons; there is also a considerable exportation of olive oil, with quantities of brandy, anchovies, cummin-seed, aniseed, barilla, soap, etc. The lead exported from Malaga is brought from Adra. The imports are salt fish, iron hoops, bar iron, and nails; cotton stuffs, hides, earthenware, etc., with dye stuffs, all sorts of colonial produce; butter and cheese from Holland and Ireland, linen from Germany, etc. The trade with England seems to be diminishing, and that with the United States to be increasing. This is a consequence, no doubt, of Malaga wine being very little in demand in the former, while it is pretty largely consumed in the latter. The Americans are also the largest consumers of Malaga fruit. See MARCET'S *Com. Rel. U. S.*, vol. ii., pp. 63, 64, published 1856-7.

Commerce with the United States.—The following table will show, approximately, to what extent the direct trade between the United States and Spain has fallen off within the past few years. Most of this trade is carried on through the port of Malaga:

TONNAGE OF AMERICAN VESSELS ENTERED AT THE PORT
OF MALAGA IN THE FOLLOWING YEARS.

Years.	Tons.	Years.	Tons.
1846.....	15,276	1850.....	16,600
1847.....	12,285	1851.....	11,918
1848.....	15,699	1852.....	12,610
1849.....	13,652	1853.....	11,375

The falling off in tonnage which the above table exhibits is, however, perfectly reconcilable with the com-

EXPORTS FROM MALAGA TO THE UNITED STATES FROM 1ST JANUARY TO 1ST JULY, 1854.

Flags.	Wine.	Raisins.	Figs.	Almonds.	Lemons.	Lead.	Red lead.	Liquorice paste.	Liquorice root.	Bird seed.	Mats.	Olives.	Olive oil.	Values.
	1-4 cks Bbls.	Boxes. Casks.	Frails.	Boxes.	Boxes.	Tons.	Kgs.	Cases.	Bundles.	Bundles.	Bales.	Kegs.	1-4 c's.	Dollars.
United States	2,170 500	53,524 1,259	1,081	540	1,993	575	1,264	16	1,060	789	758	550	472	227,553
British	125 100	21,885 441	300	184	598	245	710	46	....	237	....	....	275	73,767
Spanish	680 840	10,475 ..	....	166	..	294	....	..	....	150	294	300	..	57,283
Prussian	469 ..	411 ..	..	..	176	175	....	84	....	391	370	..	150	80,087
Danish	200 ..	.... ..	..	..	..	66	....	..	....	176	150	..	..	8,733
Tuscan	.. ..	.... ..	..	..	..	276	....	32	....	....	..	..	..	23,274
Total.....	8,644 940	88,295 1,700	1,881	840	2,772	1,631	2,006	96	1,060	1,743	1,512	1,150	897	420,652

The following extracts are taken from the commercial report of Malaga, dated the 31st of January, 1857, communicated to the Department of State: "The imports from the United States, which are usually limited to staves by American, and one or two cargoes of cotton by Spanish vessels, have been increased by a few cargoes of flour and wheat, toward the end of the year, under the late royal decree admitting breadstuffs free of duty until June next; the approximate value of imports of American produce for the last year amounted to \$228,030, and of foreign produce from the United States to 32,700, making a total sum of \$260,730. The exports to the United States have not been large in quantity, owing to short crops the past year. The high price of every article of exportation, however, brings up the value equal to any former period. The amount, as per proximate returns of American vessels, is \$1,240,907, and by foreign vessels \$407,360; making a total sum of \$1,648,267. The raisin crop has been very short, the last vintage being estimated at not much over 600,000 boxes of Muscatels. Other descriptions of raisins show a still greater decrease, owing to the ceniza, a disease of the vines which has been very general the two last years. The culture of the grape is extending throughout the province; and the Muscatel vines would probably yield, in a favorable season 1,500,000 boxes. Over two thirds of this description have been shipped the last year to the United States: the finer quality is shipped to England and France; and when very abundant, at low prices, large shipments would be made to Germany and the north of Europe. Prices have ruled very high, averaging \$2 for M. R., and \$2 25 for ordinary layers, for the American market; fine London layers from \$3 to \$4 per box. The stock existing at the end of the year did not exceed 30,000 boxes, about two thirds of which may go to the United States. The various productions of this and the adjoining provinces, for want of good roads and rapid communication in a mountainous country, can not be brought to market so as to compete with the same of other countries, consequently they are not increased. Outside of five or eight leagues, little is received, but at such a high cost of transportation that many bulky articles can not be brought at all. Sumac, for instance, is worth, in the interior, from 20 to 25 per arroba, or 25 pounds. The freight of this article to Malaga is more than double the cost. It is considered by chemists of a better quality than the Sicily, but it can not be afforded for the American market, although, notwithstanding the high cost, considerable is shipped to France."

The following details, extracted from Mr. Inglis's valuable work, entitled "Spain in 1830," contain the fullest and best account we have met with of the trade of Malaga. The authenticity may, we believe, be depended upon:

"Wine.—The wines of Malaga are of two sorts, sweet and dry; and of the former of these there are

four kinds; first, the common 'Malaga,' known and exported under that name. In this there is a certain proportion of boiled wine, which is allowed to burn, and which communicates a slightly burnt taste to the 'Malaga.' The grape from which this wine is made is a white grape; and every pipe of 'Malaga' contains no less than eleven gallons of brandy. Secondly, 'Mountain.' This wine is made from the same grape as the other, and, like it, contains coloring matter and brandy; the only difference is, that for 'Mountain' the grape is allowed to become ripe. Thirdly, 'Lagrimas,' the richest and finest of the sweet wines of Malaga; the name of which almost explains the manner in which it is made. It is the droppings of the ripe grape hung up, and is obtained without the application of pressure. The dry wine of Malaga is produced from the same grape as the sweet wine, but pressed when greener. In this wine there is an eighth part more of brandy than in the sweet wine; no less than 1-12th part of the dry Malaga being brandy. The whole produce of the Malaga vineyards is estimated at from 35,000 to 40,000 pipes; but, owing to the increasing stock of old wine in the cellars, it is impossible to be precise in this calculation. The exports of all sorts of Malaga wine may be stated at about 27,000 pipes. The principal market is the United States and South America; and to these the export is upon the increase. The average price of the wines shipped from Malaga does not exceed \$35 per pipe; but wines are occasionally exported at the price of \$170. Many attempts have been made at Malaga to produce sherry, but none with perfect success. The sherry grape has been reared at Malaga upon a soil very similar to that of Xeres; but the merchants of Malaga have not ventured to enter the wine for export. One reason of the very low price of the wines of Malaga is to be found in the cheapness of labor: field labor is only 2½ reals a day (10 cents). In the fruit and vintage time it is about double.

"Fruit.—Next to its wines, the chief export of Malaga is fruit, consisting of raisins, almonds, grapes, figs, and lemons; but of these, raisins are principally exported. I have before me a note of the exports of Malaga for the months of September and October, 1830—the chief, though not the sole exporting months—and I find that during that time the export of raisins amounted to 268,845 boxes, and 31,916 smaller packages. Of this quantity 125,334 boxes were entered for the United States; 45,513 for England; the remaining quantity being for France, the West Indies, the Spanish ports, South America, and Holland. The raisins exported from Malaga are of three kinds, *muscatel*, *bloom* or *sun raisin*, and *lexias*. The muscatel is the finest raisin in the world. In its preparation no art is used; the grape is merely placed in the sun, and frequently turned. The bloom or sun raisin is a different grape from the muscatel, but its preparation is the same. The lexias acquire this name from the

liquor, or ley, in which they are dipped, and which is composed of water, ashes, and oil; these, after being dipped, are also dried in the sun. All muscatel raisins are exported in boxes, and also a part of the bloom raisins. In 1829, the exports of muscatel and bloom raisins were 325,000 boxes of 25 lbs. each; in all, 8,125,000 lbs. This quantity is independent of the export of bloom raisins in casks, and of lexias; the latter amounting to about 30,000 arrobas. The export of raisins to England has fallen off, while that to America has considerably increased. In 1824, 75 ships cleared from Malaga for England, with fruit; in 1830, down to the 1st of November, 34 vessels had cleared out. Of the other fruits raised near Malaga, grapes, almonds, and lemons are the most extensively exported. In the months of September and October, 1830, 11,612 jars of grapes were shipped for England, 6429 for America, and 1650 for Russia. During the same months, 5335 arrobas of almonds (183,375 lbs.) were shipped for England, this being nearly the whole export. There were also exported during the same period 3749 boxes of lemons for England, 4201 boxes for Germany, and 840 boxes for Russia.

"*Oil*—There is also a large export of oil from Malaga; but the export during the latter part of 1830 would be no criterion of the average, because the Greenland whale-fishery having failed, extensive orders had been received from England."

Money.—Accounts are kept in reals of 34 maravedis vellon. For the coins, and their value, used at Malaga, see CADIZ.

Weights and Measures.—The weights are the same as those of Cadiz. The arroba or cantara = 4.19 English wine gallons; the regular pipe of Malaga wine contains 85 arrobas, but is reckoned only at 34; a bota of Pedro Ximenes wine = 5½ arrobas; a bota of oil is 43, and a pipe 35, arrobas; the latter weighs about 860 lbs. avoirdupois; a carga of raisins is 2 baskets, or

7 arrobas; a cask contains as much, though only called 4 arrobas; as a last for freight are reckoned—4 botas or 8 pipes of wine or oil; 4 bales of orange-peel; 5 pipes of Pedro Ximenes wine or oil; 10 casks of almonds (each about 380 lbs., English); 20 chests of lemons and oranges; 22 casks of almonds (of 8 arrobas each); 44 casks of raisins (of 4 arrobas each); 88 half casks of raisins; 50 baskets or 160 jars of raisins.

Port Charges.—The port and harbor dues amount, on an English vessel of 300 tons, to about £21; on a Spanish vessel of the same burden they would be about £11 10s.

Warehousing.—Goods may be warehoused for 12 months, paying 2 per cent. ad valorem in lieu of all charges; but at the end of the year they must be either entered for consumption or re-shipped. The 2 per cent. is charged whether they lie a day or the whole year. See also TOWNSEND'S *Travels in Spain*, vol. iii., pp. 10-42.

Malsley See WINE.

Malt (Ger. *Maly*; Du. *Mout*; Fr. *Mal*, *Blédgermé*; It. *Malto*; Sp. *Cebada retonada ó entallecida*; Rus. *Solod*; Lat. *Maltum*). The term malt is applied to designate grain which, being steeped in water, is made to germinate to a certain extent, after which the process is checked by the application of heat. This evolves the saccharine principle of the grain, which is the essence of malt. The process followed in the manufacture is very simple. Few changes have been made in it; and it is carried on at this moment very much in the same manner that it was carried on by our ancestors centuries ago. Rice, and almost every species of grain, has been used in malting; but in Europe, and especially in England, malt is prepared almost wholly from barley. It is the principal ingredient in the manufacture of beer, and is little used except in brewing and the distillation of spirits. Its consumption in the United States is rapidly increasing.

TABLE SHOWING THE CONSUMPTION OF GRAIN, AND THE PRODUCTION OF MALT AND SPIRITUOUS LIQUORS, IN THE UNITED STATES FOR THE YEAR 1850.

States.	Capital invested.	Quantities and kinds of grain, etc., consumed.							Hands employed.	Quantities of liquors produced.		
		Barley.	Corn.	Rye.	Oats.	Apples.	Molasses.	Hops.		Ale, etc.	Whisky & high wines.	Rum.
	Dollars.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Hds.	Tons.		Barrels.	Gallons.	Gallons.
Maine.....	17,000	.....	.....	.....	.....	.....	2,000	.....	5	.....	.....	220,000
Vermont.....	7,000	2,500	.....	.....	.....	.....	.....	1	2	800	.....	.....
Massachusetts.....	457,500	80,000	19,400	26,600	.....	.....	85,130	29	131	25,800	120,000	3,786,000
Rhode Island.....	17,000	12,500	.....	.....	.....	.....	.....	6	20	3,900	.....	.....
Connecticut.....	15,500	.....	20,000	20,000	.....	.....	.....	10	2	.....	180,000	1,200
New York.....	2,585,900	2,062,250	1,647,266	909,067	6,707	60,940	24,500	581	1,380	644,700	9,281,700	2,488,800
New Jersey.....	409,655	103,700	254,000	58,400	.....	409,700	.....	42	197	84,750	1,250,530	.....
Pennsylvania.....	1,719,960	550,105	1,433,555	517,180	24,790	51,200	10	263	911	189,581	6,548,810	1,500
Maryland.....	247,100	76,900	166,100	54,300	460	.....	.....	25	126	26,380	787,400	.....
Virginia.....	100,915	20,000	250,700	62,680	450	.....	.....	14	123	5,500	879,440	.....
North Carolina.....	21,980	.....	64,650	4,700	.....	.....	.....	.....	75	.....	153,030	.....
South Carolina.....	8,475	.....	15,100	.....	.....	.....	.....	.....	33	.....	43,900	.....
Georgia.....	7,150	.....	20,150	2,500	1,500	.....	.....	.....	15	.....	60,450	.....
Alabama.....	500	.....	.....	.....	.....	.....	25	.....	11	.....	.....	3,000
Louisiana.....	8,500	10,000	.....	.....	.....	.....	.....	10	8	8,000	.....	.....
Kentucky.....	165,895	65,650	551,850	80,520	.....	5,000	.....	13	274	19,500	1,491,745	.....
Tennessee.....	66,125	3,000	253,400	5,480	.....	.....	.....	.....	150	.....	657,000	.....
Missouri.....	293,900	124,440	209,200	24,900	.....	.....	.....	81	179	44,850	989,400	.....
Ohio.....	1,262,974	830,950	8,683,140	281,750	19,500	.....	.....	178	1,033	96,948	11,865,150	.....
Indiana.....	334,950	118,150	1,417,900	43,700	1,000	.....	.....	18	237	11,005	4,639,900	.....
Illinois.....	305,400	98,000	703,500	43,700	2,200	.....	.....	30	274	27,925	2,315,000	.....
Michigan.....	139,425	82,030	212,300	19,150	.....	.....	.....	16	98	10,320	600,900	.....
Iowa.....	19,500	.....	51,150	7,200	.....	.....	.....	.....	19	.....	160,600	.....
Wisconsin.....	98,700	91,020	29,900	9,200	.....	.....	.....	23	98	31,320	127,000	.....
New Mexico Territ.....	7,300	.....	2,000	12,900	.....	.....	.....	.....	21	.....	42,000	.....
Utah Territory.....	3,000	1,000	.....	.....	.....	.....	.....	.....	8	300	.....	.....
Dist. of Columbia.....	12,000	5,000	.....	.....	.....	.....	.....	2	11	1,350	.....	.....
Total.....	8,334,254	8,787,195	11,067,761	2,149,927	50,517	526,840	61,675	1,294	5,487	1,177,924	42,183,955	6,500,500

Owing to malt liquor having early become the favorite beverage of the people of England, the manufacture of malt has been carried on in that country, for a lengthened period, on a very large scale. Instead, however, of increasing with the increasing wealth and population of the country, it was nearly stationary for the 100 years ending with 1816. In proof of this we may mention that the quantity of malt that paid duty in England and Wales, at an average of the 12 years ending with 1720, was 24,191,804

bushels a year; whereas the annual average quantity that paid duty during the 12 years ending with 1816, was only 23,197,754 bushels. This apparently anomalous result is probably in some measure to be accounted for by the increased consumption of tea and coffee; but there can not be a question that it is mainly owing to the exorbitant duties with which malt, and the ale or beer manufactured from it, have been loaded, and to the oppressive regulations imposed on the manufacture of malt and the sale of beer. But

the public attention being at length forcibly attracted to the subject, and the effect of the exorbitant duties on malt and beer in increasing the consumption of ardent spirits having been clearly pointed out (see *Edinburg Review*, No. 98), the beer duty in Great Britain was repealed in 1830.

Malta, an island in the Mediterranean, belonging to the British, nearly opposite to the southern extremity of Sicily, from which it is about 64 miles distant. Valetta, the capital, is situated on the north coast of the island, the light-house in the castle of St. Elmo being in lat. $35^{\circ} 54' 6''$ N., long. $14^{\circ} 31' 1''$ E. Malta is about 20 miles long, and 10 or 12 broad. The island of Gozo, about a fourth part of the size of Malta, lies to the north-west of the latter, at about four miles' distance; and in the strait between them is the small island of Cumino. In 1847 the population of Malta amounted, excluding the garrison (except the Maltese regiment), to 108,140. The population of Gozo, at the same period, was 15,130; the total population of both islands making 123,270. The entire revenue collected in Malta usually amounts to about £100,000 a year, of which about £23,000 is derived from the rent of lands. Valetta, the capital of the island, is defended by almost impregnable fortifications. "These," says Mr. Brydone, "are, indeed, most stupendous works. All the boasted catacombs of Rome and Naples are a trifle to the immense excavations that have been made in this little island. The ditches, of a vast size, are all cut out of the solid rock; these extend for a great many miles, and raise our astonishment to think that so small a State has ever been able to make them." (*Tour through Sicily and Malta*.) Since the island came into the possession of Great Britain, the fortifications have been considerably improved; so that at present it is a place of very great strength. After the capture of Rhodes by the Turks, the Emperor Charles V. made a present of Malta to the Knights of St John of Jerusalem, in whose possession it remained till 1798, when it was taken by the French. It was taken from the latter by the English in 1800, and was definitely ceded to Great Britain in 1814. The island consists mostly of a rock, very thinly covered with soil, a good deal of which has been brought, at an immense expense, from Sicily; but being cultivated with the utmost care, it produces excellent fruits, particularly the celebrated Maltese oranges, corn, cotton, with small quantities of indigo, saffron, and sugar. The principal dependence of the inhabitants is on their cotton; the crop of which, amounting to about 4,000,000 lbs. a year, is partly exported raw, and partly manufactured to the value of from \$400,000 to \$500,000. The corn raised on the island is not sufficient to feed the inhabitants for more than five or six months, and, at an average, about 100,000 quarters of foreign wheat are required for their use. In addition to corn, cattle, provisions of all sorts, including dried fish, fruits, Spanish peas, etc., are largely imported. The other leading articles of import comprise cottons and most sorts of manufactured goods, sugar, coffee, and other colonial products, tobacco, oil, wines, timber, etc. The trade in corn used to be monopolized by government; and after the monopoly was abandoned, duties on importation, varying, like those in this country, with the price, were imposed. But in 1835 these duties were abolished, and the fixed duties on corn entered for consumption, specified in the subjoined tariff, were substituted in their stead. Malta presents unusual facilities, which have not hitherto been taken proper advantage of, for becoming the entrepôt of the corn trade of the Mediterranean and Black Sea. Her warehouses for corn are, like those of Sicily and Barbary, excavated in the rock; and are, perhaps, the best fitted of any in Europe for the safe keeping of corn. The wheat lodged in them may be preserved for an indefinite period; and it is affirmed that though it

should, on being deposited, be affected by the weevil, it is very soon freed from that destructive insect. It is not often that corn can be brought direct from Odessa, Taganrog, etc., to England, without the risk of being damaged; but were it brought, in the first instance, to Malta, and bonded there, it might afterward be conveyed in the best order to the English market. Malta is also admirably well suited for becoming a centre of the corn trade of Egypt, Barbary, Italy, etc. During the wars of 1800-1815, particularly during the period when Napoleon's anti-commercial system was in operation, Malta became a great entrepôt for colonial and other goods, which were thence conveyed, according as opportunities offered, to the adjacent ports. This commerce ceased with the circumstances that gave it birth; and for some years after the return of peace, the trade of the island was depressed below its natural level, by the imposition of various oppressive discriminating duties. In 1819, this vexatious system was partially obviated; but it continued to exert a pernicious influence till 1837, when, pursuant to the recommendation of the commissioners of inquiry, the then existing tariffs of customs duties and port charges were wholly abolished, and a new tariff was issued in their stead. It imposed moderate duties, for the sake of revenue only, on a few articles in general demand, without regard to the country whence they came, at the same time that it equalized the tonnage duties, and reduced the warehouse rent on articles in bond to the lowest level. There are some good springs of fresh water! Valetta is partly supplied by water brought by an aqueduct a distance of about six miles, and partly by the rain collected in cisterns.

Harbor.—The harbor of Valetta is double, and is one of the finest in the world. The city is built on a narrow tongue of land, having the castle and light of St. Elmo at its extremity, and an admirable port on each side. That on the south-eastern side, denominated the grand port, is the most frequented. The entrance to it, about 250 fathoms wide, has the formidable batteries of St. Elmo on the one hand, and those of fort Ricasoli on the other. In entering, it is necessary not to come within 50 or 60 fathoms of the former, on account of a spit which projects from it; but in the rest of the channel there is from 10 to 12 fathoms water. The port, which runs about $1\frac{1}{2}$ miles inward, has deep water and excellent anchorage throughout; the largest men-of-war coming close to the quays. Port Marsmusceit, on the north-western side of the city, is also a noble harbor. The entrance to it, which is about the same breadth as that of the grand port, is between St. Elmo and Fort Tiqua. In the centre of the basin is an island on which are built a castle and a lazaretto, for the convenience of the ships performing quarantine, by which the port is principally used. Owing to the narrowness of the entrance, and the usual variable-ness of the wind, it is customary for most vessels bound for Valetta to take a pilot on board before entering the harbor.

CLASSIFICATION OF MERCHANT VESSELS WHICH HAVE ARRIVED IN MALTA DURING THE YEAR 1848.

American.....	22	Neapolitan.....	562
Hanoverian.....	1	Norwegian.....	8
Austrian.....	212	Ottoman.....	83
Belgian.....	4	Prussian.....	3
Bremen.....	2	Roman.....	11
Danish.....	17	Russian.....	75
Dutch.....	9	Samiote.....	11
English.....	639	Sardinian.....	164
French.....	302	Sicilian.....	224
Gerosolimit.....	29	Spanish.....	4
Greek.....	326	Swedish.....	6
Ionian.....	41	Tunisian.....	28
Lubecese.....	1	Tuscan.....	65
Maltese.....	478	Venetian.....	2
Mecklenburg.....	4	Wallachian.....	4
Moldavian.....	17		

The arrivals of merchant-vessels and ships of war at Malta during the year 1849, were as follows:—Merchant-vessels, 3251; ships of war (including steamers), 340; total, 3591.

LIST OF VESSELS BELONGING TO THE ISLAND OF MALTA, ON
THE 1ST OF JANUARY, 1860.

	Ships.	Tons.	Crews.
Ships.....	1	881	18
Barks.....	24	7,878	328
Brigs.....	77	14,138	777
Brigantine.....	1	108	9
Snow.....	1	189	9
Cutters.....	2	28	11
Ketch.....	1	81	8
Brig schooners.....	12	1,109	98
Schooners.....	8	531	59
Bombards.....	8	579	81
Paranza.....	1	28	5
Speronares.....	65	720	760
Total.....	201	25,655	2,158

The central position, excellent port, and great strength of Malta, make it an admirable naval station for the repair and accommodation of the men-of-war and merchant-ships frequenting the Mediterranean, and render its possession of material importance to the British empire. Since Malta-built vessels were admitted into ports of the United Kingdom on the same terms as those of British-built, the trade of ship-building has materially increased in the island. The Maltese shipwrights are diligent, expert workmen; and, their wages being moderate, it is a favorable place for careening. Owing to the want of a dry dock, all ships above the size of a sloop of war, that require to have their bottoms examined, have to come to England for that purpose. This, surely, should be obviated. Quarantine is strictly enforced at Malta; but there is every facility for its performance, and the charges are less than at any other port in the Mediterranean.

Malta is now the centre of a very extensive steam-packet system; the steamers from England for the Ionian Islands, Constantinople, Alexandria, and other ports of the Levant, touching here. The French

steamers from these ports usually perform quarantine at Malta.

Money.—In 1825, British silver money was introduced into Malta; the Spanish dollar being made legal tender at the rate of 4s. 4d.; the Sicilian dollar at 4s. 2d.; and the scudo of Malta, at 1s. 8d.

Weights and Measures.—The pound, or rottolo, commercial weight = 30 oncie = 12·216 English grains. Hence 100 rottoli (the cantaro) = 174½ lbs. avoirdupois, or 79·14 kilog. Merchants usually reckon the cantaro at 175 lbs. The salma of corn, stricken measure = 8221 Winchester bushels; heaped measure is reckoned 16 per cent. more. The caffiso, or measure for oil, contains 5½ English gallons = 20·818 litres. The barrel is double the caffiso. The Maltese foot = 11 1-6th English inches = 2836 metres. The canna = 8 palmi = 81·9 English inches = 2·079 metres. Merchants usually convert Malta measure into English in the proportion of 3½ palmi to a yard, or 2 2-7th yards to 1 canna.

Bills on London are usually drawn at 30 and 60 days' sight. The deputy commissary general is obliged to grant, at all times, bills on the Treasury here for British silver tendered to him, at the rate of a £100 bill for every £101 10s. silver, receiving, at the same time, other silver, at a fluctuating rate of exchange.

Commercial Relations with the United States.—The commercial intercourse of the United States with Malta is dependent, as is that of all other nations, on the regulations and legislative enactments of the mother country. The trade of the United States with this island is not, however, very important, though an examination of the following table will show a perceptible increase in the amount of our tonnage, and but little variation in the value of our exports during the years which they embrace:

COMMERCE OF THE UNITED STATES WITH MALTA, FROM OCTOBER 1, 1832, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
Sept. 30, 1838.....	\$50,828	....	\$50,828	\$31,073	....	....	....	....
1834.....	87,426	....	87,426	49,523	....	....	1,091	....
1835.....	109,655	\$121,243	230,898	31,867	\$381	\$1,482	2,126	....
1836.....	88,817	139,892	228,709	34,390	....	....	781	761
1837.....	100,805	173,866	274,171	35,961	....	....	1,993	710
1838.....	81,955	4,078	86,033	16,866	....	2,470	857	....
1839.....	65,870	34,126	99,996	24,943	....	....	1,869	....
1840.....	14,610	45,386	59,996	28,471	....	....	448	....
Total.....	\$499,966	\$513,091	\$1,013,057	\$253,094	\$381	\$3,952	9,165	1,471
1841.....	\$27,869	\$21,070	\$48,939	\$1,461	....	....	860	274
1842.....	11,644	8,261	19,905	7,900	....	....	756	....
9 mos. 1843.....	6,436	11,471	17,907	27	....	....	214	....
June 30, 1844.....	9,752	7,246	16,998	15	....	....	611	....
1845.....	12,909	....	12,909	22,311	....	....	954	....
1846.....	23,754	19,927	43,681	21,589	....	....	882	....
1847.....	25,096	22,541	47,637	....	....	....	843	223
1848.....	33,123	15,955	49,078	884	....	....	1,812	....
1849.....	51,233	62,734	113,967	8,405	....	....	3,065	720
1850.....	75,329	39,051	114,380	11,354	....	....	2,665	456
Total.....	\$277,150	\$199,256	\$476,406	\$72,846	....	....	12,165	1,673
June 30, 1851.....	\$64,061	\$12,233	\$76,299	\$26,167	....	....	1,097	746
1852.....	96,347	16,975	113,322	114,864	....	....	2,442	453
1853.....	165,319	22,237	187,556	80,053	\$2,000	....	2,721	741
1854.....	148,523	21,245	169,778	83,695	....	....	3,197	302
1855.....	212,397	72,452	284,849	62,616	....	....	4,088	629
1856.....	281,045	33,541	314,586	44,224	....	....	2,993	400

No spirits or cordials, except rum and spirits, the product of Great Britain or of the British colonies, can be admitted for consumption, if they exceed 9 per cent. over-proof. The following are the legal rates for pilotage charged on all vessels entering the harbor of Malta:—Vessels of 100 tons burden, \$2; 101 to 150, \$3 04; 151 to 250, \$4; 251 to 350, \$5 04; 351 and upward, \$6.

Vessels discharging merchandise in the island of Malta, on clearing outward, pay for every ton, or any part thereof, including all port charges, 12 cents. There is a public hospital in Malta, to which British sailors are admitted free of charge. American and

other foreign sailors are also admitted at a charge of 20 cents per diem, the payment of which must be guaranteed by their respective consuls, or by the consignees of the vessels to which they belong.

For trade of, travel in, etc., Malta, see *Edin. Rev.*, vi., 194; *North Am. Rev.*, xxxv., 228 (A. H. EVERETT), x., 225 (E. EVERETT); *South. Lit. Mess.*, x., 728, ix., 86, 163, vii., 830, iv., 780, v., 146; *Chr. Exam.*, ii., 259 (JAS. WALKER); *Quar. Rev.*, ix., 1.

Man, Isle of, is, as every one knows, situated in the Irish Sea, at about an equal distance from England, Scotland, and Ireland. It is about 80 miles long, and 10 or 12 broad. The interior is mountain-

ous, and the soil nowhere very productive. Population in 1851, 52,387. This island used to be one of the principal stations of the herring fishery; but for a considerable period, it has been comparatively deserted by the herring shoals, a circumstance which is not to be regretted; for the fishery, by withdrawing the attention of the inhabitants from agriculture and manufactures, and leading them to engage in what has usually been a gambling and unproductive business, has been, on the whole, injurious to the island. The steam packets from Glasgow to Liverpool, and from the latter to Belfast, touch at the Isle of Man; which is, in consequence, largely frequented by visitors from these cities, and other parts of the empire, whose influx has materially contributed to the improvement of Douglas, the principal port in the island, and other towns. The feudal sovereignty of Man was formerly vested in the Earls of Derby, and more recently in the Dukes of Athol, a circumstance which accounts for the fact of the duties on most commodities consumed in the island having been, for a lengthened period, much lower than those on the same commodities when consumed in Great Britain. This distinction, which still subsists, has produced a great deal of smuggling, and been in no ordinary degree injurious to the revenue and trade of the empire. The customs revenue collected in the Isle of Man in 1852, amounted to £28,077; but from this sum £14,373 was deducted on account of expenses of collection, public works, internal government, etc.

Manchester, a city, parliamentary and municipal borough, and parish of England, county Lancaster. Area of parish, including the borough Salford, 33,553 acres. Population, 452,158. Inhabited houses, 53,697. Population in 1801, 110,938; in 1841, 353,390; in 1851, 401,321, of whom 316,213 were in the borough of Manchester, and 85,108 in that of Salford. The town stands on a plain, and consists, with Salford, of a dense mass of buildings, extending about two miles from east to west, by somewhat less from north to south, and covering about 3000 acres. It has a branch of the Bank of England, 5 joint-stock banks, and 5 weekly newspapers. Market, Tuesday, Thursday, and Saturday. The proximity of an abundance of coal, the improvements introduced into spinning and weaving machinery by Hughes, Arkwright, Hargreaves, and Crompton, and the application of steam power, have raised Manchester to its eminence of monopolizing two thirds of the cotton manufacture of Great Britain. Its manufactures are mostly conducted in large mills and factories. Of these in 1853, there were in Manchester and Salford:

	No. of works.	Persons employed.	Steam Power.
Cotton spinning.....	35	5,292	1,520
Cotton weaving.....	65	7,709	1,080
Cotton spinning and weaving....	42	17,358	4,706
Woolen and worsted spinning { and weaving.....	5	280	80
Silk throwing and small ware....	50	7,520	580
Flax spinning.....	8	1,120	198
Print works.....	35	2,985	....
Total.....	233	42,264	8,185

Woolen fabrics, machinery, hats, paper, ropes, twine, pins, and numerous other goods, are made in large quantities; and there are many bleaching and chemical works, and breweries. Annual export valued at £12,000,000. Manchester communicates with Birmingham and London by the Grand Junction (N. W.) railroad, and by other railroads and canals with Liverpool, Bolton, Preston, Rochdale, Sheffield, etc.

Manganese (Ger. *Braunstein*, *Glasseise*; Du. *Bruinsteen*; Fr. *Manganèse*, *Magalèse*, *Savon du verre*; It. *Manganesia*; Sp. *Manganesia*; Lat. *Magnesia nigra*, *Manganesium*), a metal which, when pure, is of a grayish white color, like cast-iron, and has a good deal of brilliancy. Its texture is granular; it has neither

taste nor smell; it is softer than cast-iron, and may be filed; its specific gravity is 8. It is very brittle, and can neither be hammered nor drawn out into wire. Its tenacity is unknown. When exposed to the air, it attracts oxygen with considerable rapidity. It soon loses its lustre, and becomes gray, violet, brown, and at last black. These changes take place still more rapidly if the metal be heated in an open vessel. Ores of manganese are common in Devonshire, Somersetshire, etc. The ore of manganese, known in Derbyshire by the name of *black wadd*, is remarkable for its spontaneous inflammation with oil. Oxyd of manganese is of considerable use; it is employed in making oxy muriatic acid, for forming bleaching liquor. It is also used in glazing black earthenware, for giving colors to enamels, and in the manufacture of porcelain. It is the substance generally used by chemists for obtaining oxygen gas.—THOMSON'S *Chemistry*, etc.

Mangel Wurzel, or **Field Beet** (Fr. *Bette-raves*; Ger. *Mangold Wurzel*; It. *Biettoia*), a mongrel between the red and white beet. It has been largely cultivated in Europe and the United States, partly as food for cattle, and partly to be used in distillation, and in the extraction of sugar. Its culture in Great Britain is very recent; and Mr. Loudon questions whether it has any advantages over the turnip for general agricultural purposes. The preparation of the soil is exactly the same as for turnips, and immense crops are raised on strong clays. The produce per acre is about the same as that of the Swedish turnip; it is applied almost entirely to the fattening of stock, and the feeding of milch cows.—LOUDON'S *Ency. of Agr.*

Manger, the space near the hawse holes, bounded on the upper side by a partition across the bows, called the *manger board*, to receive the water while it enters the hawse holes and prevent it from flooding the deck.

Mangle (Fr. *Calandre*; Ger. *Mangle*), this is a well-known machine for smoothing table-cloths, table-napkins, as well as linen and cotton furniture, and much used in hotels. As usually made, it consists of an oblong rectangular wooden chest, filled with stones, which load it to a degree of pressure that it should exercise upon the two cylinders on which it rests, and which, by rolling backward and forward over the linen spread upon a polished table underneath, render it smooth and level. The moving wheel, being furnished with teeth upon both surfaces of its periphery, and having a notch cut out at one part, allows a pinion, uniformly driven in one direction, to act alternately upon its outside and inside, so as to cause the reciprocating motion of the chest. This elegant and much admired English invention, called the mangle-wheel, has been introduced with great advantage into the machinery of the textile manufactures.

Mango (*mangos marum*, in the Tamul language of India), is a very large fruit-tree, inhabiting the tropical parts of Asia, throughout all which it is as extensively cultivated as the apple and pear-trees are in Europe. Old specimens have been seen with a trunk from 10 to 15 feet in circumference. The fruit is something like a nectarine, but more compressed, longer, and more curved. It contains a large stone, covered with coarse fibres, which lose themselves in the succulent flesh. The wild and inferior varieties of the fruit taste so strongly of turpentine as to be wholly unfit for use by Europeans; but in the fine varieties this flavor is replaced by a rich sugary quality, which renders it very delicious. In this country the mango has rarely ripened its fruit, but it is common in the shops in a pickled state. The fruit of the *Mangifera Indica*, a tree cultivated in Asia, is also called *mango*.

Manifest, in commercial navigation, is a document signed by the master, containing the name or names of the places where the goods on board have been laden, and the place or places for which they are

respectively destined; the name and tonnage of the vessel, the name of the master, and the name of the place to which the vessel belongs; a particular account and description of all the packages on board, with the marks and numbers thereon, the goods contained in such packages, the names of the respective shippers and consignees, as far as such particulars are known to the master, etc. A separate manifest is required for tobacco. The manifest must be made out, dated, and signed by the captain, at the place or places where the goods, or any part of the goods, are taken on board.

Manilla, the capital of Luconia, the largest of the Philippine Islands, and the principal settlement of the Spaniards in the East, in lat. $14^{\circ} 36' 8''$ N., long. $120^{\circ} 53' 30''$ E. Population about 100,000, of whom from 4000 to 5000 may be Europeans. Manilla is built on the shore of a spacious bay of the same name, at the mouth of a river navigable for small vessels a considerable way into the interior. The smaller class of ships anchor in Manilla Roads, in 5 fathoms, the north bastion bearing N. 37° E., the fishery stakes at the river's mouth N. 18° E., distant about a mile; but large ships anchor at Cavita, about 3 leagues to the southward, where there is a good harbor, well sheltered from the west and south-west winds. The arsenal is at Cavita, which is defended by Fort St. Philip, the strongest fortress on the islands. The city is surrounded by a wall and towers, and some of the bastions are well furnished with artillery. Though situated within the tropics, the climate of the Philippines

is sufficiently temperate; the only considerable disadvantage under which they labor in this respect being that the principal part of the group comes within the range of the typhoons. The soil is of very different qualities; but for the most part singularly fertile. They are rich in mineral, vegetable, and animal productions. It is stated in a statistical account of the Philippines, published at Manilla in 1818 and 1819, that the entire population of the islands amounted to 2,249,852, of which 1,376,222 belonged to Luconia. There were at the period referred to only 2837 Europeans in the islands, and little more than 6000 Chinese. The natives are said to be the most active, bold, and energetic, of any belonging to the eastern Archipelago. "These people," says a most intelligent navigator, "appear in no respect inferior to those of Europe. They cultivate the earth like men of understanding; are carpenters, joiners, smiths, goldsmiths, weavers, masons, etc. I have walked through their villages, and found them kind, hospitable, and communicative; and though the Spaniards speak of and treat them with contempt, I perceived that the vices they attributed to the Indians, ought rather to be imputed to the government they have themselves established."—*Voyage de M. De la Perouse*, c. xv.

The principal articles of export consist of sugar, hemp, indigo, segars, cotton, coffee, rice, sapan-wood, mother-of-pearl, hides, ebony, gold dust, etc. The principal articles of import are stuffs for clothing, iron, hardware, furniture, fire-arms, and ammunition, etc.

ACCOUNT OF THE QUANTITIES AND DESTINATION OF THE PRODUCE EXPORTED FROM MANILLA IN 1850.

Articles.	To Great Britain.	To the Continent of Europe.	To the Australian colonies.	To China.	To Singapore, Batavia, and Bombay.	To California, and the Pacific.	To the United States.	Total.
Sugar.....peculs	146,926	50,880	142,859	....	12,749	29,144	77,919	459,927
Hemp....."	16,073	5,568	....	....	544	....	102,184	124,867
Cordage....."	96	476	8,753	1,732	680	2,137	210	9,034
Segars.....M.	10,319	11,367	12,561	9,262	26,359	1,707	914	73,499
Leaf tobacco.....quintals	....	42,629	....	....	....	....	....	42,629
Sapan wood.....arobas	37,063	14,436	....	18,942	17,387	....	9,015	96,793
Coffee.....peculs	165	9,670	1,481	100	250	1,072	2,063	14,801
Indigo.....quintals	259	213	....	Uncertain.	....	....	8,753	4,225
Hides.....peculs	3,340	213	....	1,069	....	....	....	4,622
Hide cuttings....."	....	....	....	MM	....	....	2,419	2,955
Mother-of-pearl shells	820	383	....	....	260	....	74	1,492
Tortoise-shell.....catties	2,081	550	....	555	1,912	....	469	5,597
Rice....."	....	6,576	....	Uncertain.	....	1,467	....	Uncertain.
Beche de Mer.....peculs	....	....	....	4,843	....	....	....	4,843
Gold dust.....taels	....	....	....	5,063	....	....	....	5,063
Camagon(ebony wd.)peculs	285	1,213	....	794	....	....	....	2,242
Grass-cloth.....pieces	175	13,252	....	500	....	650	22,975	37,552
Hats.....No.	....	....	9,400	5,115	9,115	500	25,870	50,000

The quantity of rice and paddy shipped to China from the islands can not be ascertained with any degree of exactness; what goes from Manilla is very small, because, before arriving there, it has, by its transport expenses, added to the price at which it is obtainable in the districts where it is produced, which, of course, prevents its being shipped from the capital. Probably, however, about 1,000,000 coynas, each of which, one with another, weighs about a China pecul, or $13\frac{3}{4}$ lbs., may be annually exported. The export is regulated by the supposed scarcity or abundance of food in the country.—M'KIN'S *Manilla*, p. 270.

The principal currency of Manilla consists of Spanish dollars, of 8 reals and 96 grains; but South American dollars are also current. The weights in use are the Spanish pound, which is nearly 2 per cent. heavier than the English; the arroba = $25\frac{1}{2}$ English lbs. nearly; the quintal = 102 lbs., and the pecul of 5 arrobas, or $1\frac{1}{2}$ cwt. English. The coyan is a measure for rice, etc., varying from 96 to 185 lbs. According to a recent list, there are in Manilla 47 Spanish merchants and 11 foreign firms. The Spanish merchants have a chamber of commerce and a joint-stock insurance society. The United States, France, and Belgium have consuls, and each of the Canton marine insurance companies has an agent here. There are, however, neither fire nor life-offices nor agents; nor is any newspaper, price-

current, or other periodical publication issued in Manilla. Considering the great fertility and varied productions of the Philippines, and their peculiarly favorable situation for carrying on commerce, the limited extent of their trade, even with its late increase, may excite surprise. This, however, is entirely a consequence of the wretched policy of the Spanish government, which persevered until very recently in excluding all foreign ships from the ports of the Philippines, confining the trade between them and Mexico and South America to a single ship! Even ships and settlers from China were excluded. "Provisions," says La Perouse, "of all kinds are in the greatest abundance here, and extremely cheap; but clothing, European hardware, and furniture, bear an excessively high price. The want of competition, together with prohibitions and restraints of every kind laid on commerce, render the productions and merchandise of India and China at least as dear as in Europe!" Happily, however, this miserable policy the effects of which have been admirably depicted by M. De la Perouse, has been materially modified during the last few years. The events of the late war destroyed forever the old colonial system of Spain; and the ships of all nations are now freely admitted into Manilla and the other ports in the Philippines. An unprecedented stimulus has, in consequence been given to all sorts of

industry; and its progress will, no doubt, become more rapid, according as a wider experience and acquaintance with foreigners make the natives better aware of the advantages of commerce and industry, and disabuses them of the prejudices of which they have been so long the slaves.

Port Charges.—On foreign vessels, 2 reals per ton, and one half on such as neither load nor unload cargo, besides fees, amounting from \$5 to \$15, according to the size of the vessel.

Import Duties.—Spanish commodities by Spanish vessels, pay 3 per cent. ad valorem, and 8 by foreign. Foreign commodities, by foreign vessels, 14 per cent., and 7 by Spanish; in general, being 8 per cent. under national flag from Singapore, and 9 from China. Spirits and strong liquors, produce of Spain, by Spanish vessels, 10 per cent., and 25 for foreign; if they be foreign produce, by Spanish vessels, 30 per cent., and 60 by foreign. Cider and beer, produce of Spain, by Spanish vessels, 3 per cent., and 10 by foreign; if they be foreign produce, by Spanish vessels, 20, and 25 foreign. All Spanish wines, by national vessels, 3 per cent., and 8 by foreign. Foreign wines, by Spanish vessels, 40 per cent., and 60 by foreign, except champagne, which pays, by Spanish vessels, 7 per cent., and 14 by foreign. Cotton twist, gray, black, blue, and purple, knives or bolos, such as the natives use, ready-made clothes, boots, shoes, preserved fruits, confectionery, and vinegar, by Spanish vessels, 20 per cent., and 30 by foreign. British and other foreign cotton and silk manufactures, made in imitation of native cloths, chiefly stripes or checks, of black, blue, and purple colors. Madras and Bengal gray, white, and printed cottons, towels, table-napkins, and table-cloths, 15 per cent. by Spanish vessels, and 25 by foreign. Beche de mer, rattans, diamonds, tortoise-shell, mother-of-pearl-shell, and birds' nests, 1 per cent. by Spanish vessels, and 2 by foreign. Machinery of all sorts for the promotion of the industry of the country, cotton twist of red, rose, yellow, and green colors, gold and silver, coined or uncoined, plants and seeds, free. Tropical productions similar to those of the Philippines, also arrack and gunpowder, are prohibited. Opium is only admitted to be deposited for re-exportation. Swords, fowling-pieces, muskets, pistols, and warlike stores may be deposited for re-export, and can not be introduced without the special license of the government; but cannon and dress-swords are admitted.

Export Duties.—Commodities and produce of every description to Spain, by national vessels, pay 1 per cent., and 2 by foreign; elsewhere, $1\frac{1}{2}$ by Spanish vessels, and 3 by foreign. Hemp, by national vessels, to whatever destination, 1 per cent., and 2 by foreign. Rice, by Spanish vessels, free, and $4\frac{1}{2}$ per cent. by foreign. Manufactured tobacco, and cordage of Manilla hemp, free by all flags. Gold dust, gold in bars, and silver in bars, free.

Entrepôt Duties.—One per cent. ad valorem, and 1 per cent. at the exportation, with 1 per cent. more if the commodities should be kept there more than 12 months, two years being the longest time allowed for it.

Port and Custom-house Regulations.—Vessels newly arrived are not to communicate with the shore until having been visited by the port captain's boat; and within 30 hours after this visit, a manifest must be presented, stating packages, marks, and numbers; but the vessel may retain her cargo 10 days in transit without stating whether for consumption or deposit, and without being obliged to land, or incurring any charge on the same, except gunpowder, pocket-pistols, and forbidden arms.

Terms for Sales and Purchases.—Sales and purchases made, duty paid, at 3 to 5 months' credit, occasionally at $2\frac{1}{2}$ per cent. discount for prompt payment, and exports are bought for cash. See PHILIPPINE ISLANDS.

Manioc, is the Indian name of the nutritious matter of the shrub *Jatropha manihot*, from which *cassava* and *tapioca* are made in the West Indies.

Manna (Fr. *Manne*; Ger. *Mannaesche*; It. *Manna*), the concrete juice of the *Fraxinus ornus*, a species of ash growing in the south of Europe. The juice exudes spontaneously in warm dry weather, and concretes into whitish tears; but the greater part of the manna of commerce is obtained by making incisions in the tree, and gathering the juice in baskets, where it forms irregular masses of a reddish or brownish color, often full of impurities. Manna is imported in chests, principally from Sicily and Calabria. The best is in oblong pieces or flakes, moderately dry, friable, light, of a whitish or pale yellow color, and in some degree transparent: the inferior kinds are moist unctuous, and brown. It has a slight peculiar odor, and a sweet taste, with some degree of bitterness not very pleasant, and leaving a nauseous impression on the tongue.

Mantua-maker. The word is supposed by some, and we think rightly, to be a corruption from *manteau*, French. Others assert that a court-dress was early known in England by the name of Mantua, either on account of its having been invented at Mantua, or from the celebrated Manto, in honor of whom that famous city was built by her son, Bianor, or Ochnus, about 1000 B.C.—BUTLER.

Manufacture, a commodity produced from raw or natural materials, either by the work of the hand or by machinery.

Manufacturer, one who works up a natural product into an artificial commodity.

STATEMENT SHOWING THE ANNUAL MANUFACTURES OF THE MOST PROMINENT COUNTRIES IN THE WORLD.

<i>Austrian Empire.</i>	
Spindles	1,500,000
<i>Austrian Italy—Annual Produce.</i>	
Silk	7,000,000 lbs.
Registered manufactures	11,064
<i>British Empire, £122,150,000 estimate.</i>	
Cotton	£25,000,000
Woolen	24,000,000
Iron and hardware	20,000,000
Leather	18,500,000
Linen	8,000,000
Silk	10,000,000
Glass and earthenware	4,250,000
Hats	2,400,000
Paper	2,000,000
Watches, jewelries, etc.	8,000,000
<i>France, £23,200,000 estimate.</i>	
Raw silk	£12,000,000
Woolen	10,600,000
Linen	10,400,000
Cotton	9,000,000
Iron, brass, etc.	8,600,000
Refined sugar	4,480,000
Other kinds	88,120,000
<i>Prussia.</i>	
Number of manufacturing establishments in 1846	73,469
Machine spinning	2,608
Weaving	2,728
Connected with weaving	2,850
Mills	37,590
Metal	12,693
Other kinds	20,005
<i>Russian Empire.</i>	
Spindles at St. Petersburg in 1840	343,000
Producing 33½ hanks per day.	
Russian spindles	700,000
<i>United States.</i>	
Cotton manufactured a year	200,000,000 lbs.
Woolen manufactures	4,398,112
Produce of manufactures	\$1,020,000,000
<i>Bavaria.</i>	
Manufacturing establishments mostly on a small scale.	
<i>Belgium.</i>	
Woolen cloth, 1838	£3,000,000
Spindles, 1846	400,000
Refined sugar exported	1,014,300 lbs.
<i>Brazil.</i>	
Hides exported	No. 1,763,100
Cotton	bags 124,403
<i>Denmark.</i>	
Sugar produce—Danish colonies	tons 8,000

Egypt.

For want of fuel the country is ill adapted for manufactures. In all the cotton factories there were in use:

Spinning jennies.....	1,459
Looms.....	1,215

Greece.

Manufacturing industry is confined to articles for domestic use.

Hamburg.

Wool exported, 1849.....cwt.	108,008
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Holland.

Dutch West Indies—sugar produced.....tons.	18,000
Java.....	90,000

Mexico.

Gold and silver coined 1849.....	£8,901,351
Woolen and cotton.....value	1,000,000
Spindles.....No.	181,280

Papal States

Hemp.....lbs.	67,900,000
Silk.....	800,000

Portugal.

These are confined to coarse and inferior woolen, common cotton, and linen.

Sardinia.

Silk.....lbs.	2,000,000
Hemp produced.....	£400,000

Spain.

The capital invested in the cotton factories is said to be about.....£200,000

Sweden and Norway.

Sweden—Manufactures, 1848.....No.	2,496
“ Looms.....	2,861
Value produced.....	£1,748,405

Turkey.

Salonica, 1845—Silk produced.....lbs.	167,250
Brussa, 1848.....	624,250

Two Sicilies.

Silk.....lbs.	1,200,000
Woolen cloth.....pieces	70,000
Leather.....bales	8,000
Cotton.....spindles	29,500
Yarn.....lbs.	1,946,000

China.

Silk, Great Brit., 30th June, 1849—50.....bales	161,934
Silk, Great Britain, July 1, 1850, to May 20, 1851.....bales	19,281

COLONIES:**British Possessions—Indies.**

Cotton exported from India per annum.....lbs.	193,328,253
Coffee to Great Britain in 1850.....cwt.	8,845,357
Sugar.....	1,849,690
Rum.....galls.	448,931

Canada.

Maple sugar, 1847.....lbs.	8,764,848
Fisheries, 1846.....	£62,104
Property movable and immovable, valued in 1847 at.....	117,500,000

Cape of Good Hope.

Alloe, 1842.....lbs.	485,574
Ivory.....	12,359
Whale oil.....galls.	11,964
Wine.....	1,216,811

Australia—New South Wales.

Wool exported, 1848.....lbs.	22,091,491
Tallow.....cwt.	98,218

Western.

Wool exported, 1848.....lbs.	801,965
Van Diemen's Land.....	
Wool exported, 1848.....lbs.	4,955,968

South.

Wool exported, 1848.....lbs.	2,762,672
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Jamaica.

Exported to Great Britain from the West Indies and British Guiana in 1850.....	
Sugar.....cwt.	2,586,429
Rum.....galls.	8,579,676
Coffee.....cwt.	4,843,590
Cocoa.....	1,987,760

Ceylon.

Coffee exported to the U. Kingd., 1850.....lbs.	80,859,909
Total Cinnamon exported, 1848.....	408,211

Mauritius.

Sugar, 1848.....lbs.	121,261,800
Sugar exported to Great Brit. in 1850.....cwt.	1,003,296
Coffee.....	20,389
Rum.....galls.	24,167

French Possessions—Hayti. Estimate 1837.

Sugar.....lbs.	80,400,000
Coffee.....cwt.	24,370,000
Cotton.....	1,050,000

Spanish Possessions—Cuba.

Coffee exported 1850.....lbs.	4,218,285
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Dutch Possessions—Java.

Coffee, 1848.....lbs.	17,853,425
Coffee, 1850.....cwt.	1,316,961
Sugar.....	1,893,372
Cochineal.....lbs.	198,196

See LEONE LEVI'S Statistical Chart.

STATISTICS OF MANUFACTURES IN THE UNITED STATES, IN THE YEAR 1850.

States and Territories.	No. of establishments.	Value of raw material consumed.	Capital invested.	Value of products.	Capital invested.
Maine.....	3,977	\$18,555,906	\$14,700,452	\$24,664,185	\$7,105,620
New Hampshire.....	8,211	12,745,466	18,242,114	23,164,508	9,252,448
Vermont.....	1,849	4,172,552	5,001,877	8,570,920	4,826,440
Massachusetts.....	8,259	85,556,771	68,357,642	151,187,145	41,774,446
“ Fisheries.....	593	.....	5,582,650	6,606,849	11,725,550
Rhode Island.....	1,144	.....	.....	.....	10,696,186
Connecticut.....	3,482	23,589,897	23,589,897	45,110,102	13,669,189
“ Fisheries.....	252	.....	1,986,800	2,004,488	1,801,640
New York.....	23,558	134,655,674	99,904,405	237,597,249	55,232,779
New Jersey.....	4,108	21,992,156	22,184,730	39,718,516	11,517,582
“ Fisheries.....	101	.....	109,678	140,050	98,275
Pennsylvania.....	21,595	87,206,877	94,478,810	155,044,010	31,815,105
Delaware.....	581	2,564,607	2,973,945	4,649,296	1,589,215
Maryland.....	8,708	17,326,734	18,108,793	29,592,019	6,450,254
District of Columbia.....	427	.....	.....	.....	1,005,775
Virginia.....	4,741	18,108,433	18,108,793	29,592,019	11,860,861
North Carolina.....	2,604	4,805,468	7,252,245	9,111,245	3,838,900
South Carolina.....	1,431	2,803,534	6,060,565	7,076,077	3,216,970
Georgia.....	1,407	.....	.....	6,704,138	2,899,565
Florida.....	108	220,611	547,060	668,385	669,490
Alabama.....	1,022	.....	.....	4,464,006	2,130,064
Mississippi.....	866	.....	.....	2,749,838	1,797,727
Louisiana.....	1,016	2,485,073	5,804,924	7,048,814	6,430,699
Texas.....	807	399,734	613,288	1,202,885	.....
Arkansas.....	271	256,899	338,154	668,815	474,407
Missouri.....	8,030	12,408,457	9,194,999	24,250,578	2,704,405
Tennessee.....	2,739	4,757,287	7,044,144	9,443,701	3,731,580
Kentucky.....	3,471	12,458,736	14,236,964	23,278,201	5,945,259
Ohio.....	10,550	.....	.....	62,110,138	16,905,257
Indiana.....	4,326	9,347,920	7,917,518	18,747,068	4,132,043
Michigan.....	1,979	6,221,345	6,443,316	10,729,892	3,112,240
Illinois.....	8,099	8,956,142	6,128,282	16,671,273	3,136,512
Wisconsin.....	1,273	.....	.....	.....	635,926
Iowa.....	492	2,093,844	1,256,410	3,393,542	199,645
California.....	.....	.....	17,000,000	60,000,000	.....
Minnesota and other Territories.....	.....	.....	.....	2,842,000	.....
City of New York.....	8,168	47,664,594	29,407,754	90,382,015	11,228,894

The entire capital invested in the various manufactures in the United States, on the 1st of June, 1850—not to include any establishments producing less than the annual value of \$500—amounted, in round num-

bers, according to the Report of the Superintendent of the Census, to \$330,000,000; value of raw material used and consumed, \$550,000,000; amount paid for labor, \$240,000,000; value of articles manufactured

during year, \$1,020,800,000; number of persons employed, 1,050,000. See UNITED STATES.

For "American Manufactures," see *N. A. Rev.*, xxx., 165 (A. H. EVERETT), xvii., 186, l., 223 (N. HALE), xxxv., 265; NILES'S *Reg.*, xlv., 204 (J. Q. ADAMS), xxxii., 287, 832. "Manufactures at the South," see NILES'S *Reg.*, xxxv., 135. Of the United States, HUNT'S *Mag.*, vii., 289 (WALTER FORWARD), xiv., 152, xv., 369; DE BOW'S *Rev.*, ix., 466. Manufacturing System, see *For. Quar.*, viii., 819 (SOUTHEY); *Ed. Rev.*, lxxvii., 101, xxxiii., 382.

Maple Sugar. The State of New York produces more sugar than any other State in the Union, except Louisiana. The whole cane sugar crop of the country in 1850 was as follows:

	Pounds.		Pounds.
South Carolina...	670,000	Tennessee.....	248,000
Georgia.....	1,642,000	Kentucky.....	234,000
Florida.....	2,750,000		
Alabama.....	8,242,000	Total.....	247,577,000
Mississippi.....	888,000	Maple sugar crop..	64,258,436
Louisiana.....	226,001,000		
Texas.....	7,351,000	Total sugar crop.	251,830,436

TABLE SHOWING THE PRODUCTIONS OF SUGAR IN THE U. STATES IN 1850.

States and Territories.	Maple sugar.	Cane sugar.
	lbs.	Hhds. 1000 lbs.
Alabama.....	643	87
Arkansas.....	9,380	...
Connecticut.....	50,796	...
Florida.....	...	2,750
Georgia.....	50	846
Illinois.....	243,904	...
Indiana.....	2,921,192	...
Iowa.....	78,407	...
Kentucky.....	487,405	10
Louisiana.....	255	226,001
Maine.....	93,542	...
Maryland.....	47,740	...
Massachusetts.....	795,525	...
Michigan.....	2,489,794	...
Missouri.....	178,910	...
N. Hampshire.....	1,293,863	...
New Jersey.....	2,197	...
New York.....	10,367,484	...
North Carolina.....	27,932	...
Ohio.....	4,588,209	...
Pennsylvania.....	2,326,525	...
South Carolina.....	200	77
Tennessee.....	158,557	8
Texas.....	...	7,351
Vermont.....	6,849,357	...
Virginia.....	1,227,665	...
Wisconsin.....	610,976	...
Minnesota.....	2,950	...
Total.....		

The States which produced 1,000,000 pounds and over of maple sugar in 1850 were as follows:

	Pounds.		Pounds.
New Hampshire..	1,298,863	Virginia.....	1,227,665
Vermont.....	6,849,257	Indiana.....	2,921,122
New York.....	10,367,484	Ohio.....	4,588,209
Pennsylvania.....	2,326,524	Michigan.....	2,489,794

The State of Louisiana produces four fifths of all the sugar crop of the Union, both maple and cane.

The production of maple depends very much upon the circumstances of the market. Its manufacture is not a regular business, like that of cane, but is prosecuted or not, very much to suit the convenience of the farming population among whom the sugar orchards lie. Nothing but a very high price of sugar—so high as to make its purchase a severe burden—stimulates a large production of maple. Accordingly we find that from 1850 to 1855 the product of maple sugar in New York State fell from 10,367,484 pounds to 4,935,815 pounds—a reduction of more than one half. If the falling off in price from 1850 to 1855 reduced the production one half, we are inclined to think it not extravagant to estimate that the present increased price has doubled the production of 1850, and we accordingly estimate the maple sugar crop of the present year in New York State at 20,000,000 pounds. It is worth not less than 12½ cents per pound, making its total value \$2,500,000!

Adopting the same estimate, would give the maple sugar crop of the whole Union for the present spring as 68,500,000 pounds, and its value as \$8,562,500—making the quantity and value very nearly equal to one half the cane product of last year—and contributing in a very important degree to relieve the last year's deficiency. See SUGAR.

Maple-tree (*acer saccharinum*) known as the rock maple, hard maple, bird's-eye maple, sugar maple. The *acer saccharinum* is one of the most noble and majestic of American trees. In favorable situations it sometimes grows to a height of 70 or 80 feet, and from 2 to 4 feet in diameter; but usually it does not exceed an elevation of 50 or 60 feet, and a diameter of 12 or 18 inches. The trunk is generally straight, though often studded with projections and excrescences. In all healthful and vigorous trees, the outward bark is light-colored, by which they may readily be distinguished. When growing in open situations, with room to spread on every side, where all its branches are exposed to the free action of light, this tree is an object of great beauty. It somewhat resembles the English oak, in its outline, in the form of its trunk, and disposition of its branches, and in the dense and massy character of its foliage.

The wood of the *acer saccharinum*, when newly cut, is white, but after being wrought and exposed for some time to the light, it takes a rosy tinge. Its grain is fine and close, and when polished its lustre is silky. It is very strong and heavy, but wants the property of durability, for which the English and American white oaks are so highly esteemed. The northern wood, when dry, weighs 46 pounds to a cubic foot, but that grown south weighs much less. When cut, and properly dried, it makes excellent fuel, which is equally esteemed by some, for that purpose, with the oak and hickory. When exposed to the alternations of moisture and dryness, it soon decays, and for this reason it is not much used in civil and naval architecture. In Maine, New Hampshire, Vermont, and further north, where the oak is not plentiful, the timber of this tree is substituted for it, in preference to that of the beech, the birch, or the elm. When perfectly seasoned, which requires two or three years, it is used for axles, trees, spokes, runners of common sleds, mill-cogs, and for chairs, and cabinet-work. It is also sometimes used for the frames of houses, keels, and the lower frames of vessels, piles, and foundation pieces for mills, canal locks, and for many other purposes where strength is required, and the work is not exposed to the alternation of moisture and dryness. The wood of this tree exhibits several accidental forms in the arrangement of its fibre, of which cabinet-makers take advantage in manufacturing beautiful articles of furniture, such as bedsteads, writing-desks, and other fancy works, and for inlaying mahogany and black walnut, in bureaux, piano-fortes, etc. These forms or varieties may be classified and described as follows:

1. **CURLED MAPLE.** *Erable gris ondulé*, French. The undulations or medullary rays of this variety, like those of the red-flowered maple, are lustrous, and in one light appear darker, and in another lighter than the rest of the wood. Sometimes the zig-zag lines are crossed by beautifully-colored veins; but, unfortunately, the lustre of these shades disappear by long exposure to light and air.

2. **BIRD'S-EYE MAPLE.** *Erable mouchète*, French. This variety exhibits small whitish spots or eyes, not exceeding a tenth of an inch in diameter, sometimes occurring a little way apart, and at others contiguously disposed. The more numerous these spots, the more beautiful and valuable the wood. They are seen only in old trees, which are still sound, and appear to arise from an infection of the fibres from the centres of their trunks toward the surface across the grain. To obtain the finest effect, the wood should be sawed

as nearly as possible in a direction parallel with the concentric circles.

In addition to the above-named varieties, two other kinds occur in the *wens*, or excrescences, which grow on the trunk or roots of this tree, and, like them, are covered with bark. The most valuable variety is known by the name of *Variiegated Maple-knob*, or *Loupe d'érable de couleurs variées*, of the French. It presents an assemblage of shades, agreeably disposed, sometimes resembling Arabic characters, which renders the wood very appropriate for fancy works, and from its scarcity it usually commands high prices. The other variety, known by the name of *Silver-white Maple-knob*, or *Loupe d'érable blanc argenté*, of the French, exhibits a silvery lustre by the arrangement of its fibres, and is highly prized for the same purposes as the preceding, although more common.

The wood of this species is easily distinguished from that of the red-flowered maple, which it resembles in appearance, by its weight and hardness. There is, besides, a very simple and certain test. A few drops of water saturated with copperas (sulphate of iron), being poured upon samples of different woods, that of the sugar maple turns greenish, and the white maple and the red-flowered maple change to a deep blue. The ashes of the sugar maple are rich in the alkaline principle, and it has been asserted that they furnish four fifths of the potash exported from the United States to Europe. In the forges of Maine, New Hampshire, Vermont, and places further north where this tree grows, its charcoal is preferred to that of any other wood; and it is said to be one fifth heavier than that made from the same species in the middle and southern States.

The extraction of sugar from this tree is a valuable resource in a new country where it abounds; but it is obvious that this mode of obtaining sugar is only destined for a certain stage in the progress of society, and eventually gives way to the sugar of commerce, produced by cane. For this reason we shall not detail the process of its manufacture, as it can not be regarded as a matter of practical utility. In a country like the United States, intersected by canals, railroads, and other channels of inter-communication, where labor is expensive, and fuel is becoming more and more valuable, the manufacture of this article can not fail to be an unprofitable occupation. Besides, the annual draught of the sap renders the trees sickly, and causes a premature decay.

From the great height, extended branches, regular and often pyramidal form, and the rich verdure and cleanliness of the foliage in spring and summer, the sugar maple is accounted as one of our finest shade-trees, and is highly recommended to be planted along streets and avenues, in pastures, and ornamental grounds. And it is no less beautiful in our forest or woodland scenery in autumn, when it puts on its bright-orange and deep-crimson robes. At first, the extremities of the boughs alone change their color, leaving the internal and more sheltered parts still in their verdure, which "gives to the tree the effect of great depth of shade, and displays advantageously the light, lively coloring of the sprays." Later in the season, on the contrary, when the tints become more and more gorgeous, and the full beams of the sunshine fall upon the large masses of foliage, the warm and glowing colors of the whole summit possess a great deal of grandeur, and add much to the beauty and effect in the landscape.

The wood of the *acer eriocarpum*, or white maple, is very white when newly cut, and of a fine texture; but it is softer and lighter than that of any other maple in the United States; and from the want of strength and durability it is little used. When dry, it weighs 38 pounds to a cubic foot, and in seasoning, loses nearly half of its weight. It is sometimes used in cabinet-making, instead of the holly or other light-colored

wood, for inlaying furniture of mahogany, cherry-tree, and black walnut; though it is less suitable for this purpose, as it soon changes color by exposure to light. Wooden bowls are also made of it, when that of ash, or tulip-tree can not be obtained. The charcoal of this wood is preferred by hatters and dyers to every other, as it affords a heat more uniform, and of longer duration. The sap is in motion earlier in this species than in the sugar maple, beginning to ascend, in the middle States, about the 15th of January; so that when it is employed for making sugar, the operations are sooner completed. Like the sap of the red-flowered maple, it yields not more than one half of the product of sugar, from a given measure, as that of the *acer saccharinum*. Its inner bark produces a black precipitate with copperas (sulphate of iron), and is sometimes employed in domestic dyeing.

The wood of the *acer rubrum*, or red maple, when dry, weighs 44 pounds to a cubic foot, and when green, it is soft, full of aqueous matter, and loses in drying nearly one half of its weight. In this tree, as in others which grow in wet places, the sap-wood bears a large proportion to the heart-wood, the latter of which consists of an irregular column, star-like in its transverse section, and occupies the central parts of large trunks, with its points projecting into the sap-wood. This wood has but little strength, is liable to injury from insects, and ferments, and speedily decays when exposed to the alternation of moisture and dryness. Yet it is solid, and for many purposes is preferred by workmen to other kinds of wood. It is harder than that of the white maple, and of a finer and closer grain; hence it is easily wrought in the lathe, and acquires, by polishing, a glossy and silky surface. It is principally employed in the manufacture of chairs, saddle-trees, shoe-lasts, ox-yokes, broom-handles, and various other articles of domestic use. It sometimes happens that, in very old trees, the grain of the wood, instead of following a perpendicular direction, is undulated; and this variety bears the name of *curled maple*. This singular arrangement is never found in young trees, nor even in the branches of such as exhibit it in the trunk; it is also less conspicuous in the centre of the tree than near the bark. Trees offering this disposition, however, are rare. The serpentine direction of the fibres, which renders this wood difficult to split and to work, produces, in the hands of a skillful mechanic, the most beautiful effects of light and shade. These effects are rendered more striking, if, after smoothing the surface of the wood with a double-ironed plane, it is rubbed with a little sulphuric acid, and afterward with linseed oil. On examining it attentively, the varying shades are found to be owing entirely to the inflection of the rays of light; which is more sensibly perceived in viewing it in different directions by candle-light. Before mahogany became generally fashionable in the United States, the best furniture in use was made of the red-flowered maple, and bedsteads are still made of it, which in richness of lustre exceed those of the finest imported woods. But one of the most constant uses to which the curled maple is applied is for the stocks of rifles and fowling-pieces, which, to elegance and lightness, unite toughness and strength, the result of the tortuous direction of the fibres. The cellular matter of the inner bark is of a dusky-red. By boiling, it yields a purplish colored liquor, which, with the addition of sulphate of iron (copperas), acquires an intense dark blue, or black; and is sometimes employed as ink by American youth in village schools. For this purpose, however, it is very inappropriate, as it never dries properly, and in damp weather the writing becomes glutinous, and blots. A fluid prepared in a similar manner, by adding sulphate of alumina (common alum), instead of copperas, is also used for dyeing black. The French Canadians make sugar from the sap of this maple, which they call *plaine*; but, as in the

preceding species, the product of a given measure is not more than one half as great as that of the sugar maple.

The *acer campestre*, or field maple, is found throughout the middle States of Europe, and in the north of Asia. According to Pallas, it abounds in New Russia, and about Caucasus. It is common in hedges and thickets in the middle counties and south of England; but in the northern counties, and in Scotland, it is rare. It is not indigenous to Ireland, and perhaps not to Scotland. The wood of the *acer campestre*, when allowed to become a tree, and of a proper age, is very compact, possesses a fine grain, sometimes beautifully veined, and is susceptible of a high polish. When dry, it weighs 52 pounds to a cubic foot. It makes excellent fuel, and produces charcoal of the best quality, which is sometimes employed in the manufacture of gunpowder. It was celebrated among the ancient Romans for tables; and Pliny, who has treated at length upon the *brusca* and *mollusca*, the names under which the knobs and excrescences of this tree were known, informs us that cabinet-work of the most costly description was fabricated from them. In France and other European countries, it is still extensively used by turners, carvers, and cabinet-makers, and the wood of the roots, which is often knotted and curiously marbled, is wrought into snuff-boxes, pipes, and various other articles of fancy.—BROWNE'S *Trees of America*.

Maps and Charts. They were invented by Anaximander, the Milesian philosopher, a disciple of Thales, and the earliest philosophical astronomer on record, 570 B. C. He was also the first who constructed spheres. A celestial chart was, it is said, constructed in China in the 6th century.—*Freret*. And sea-charts were first brought to England by Bartholomew Columbus, to illustrate his brother's theory respecting a western continent, A. D. 1489. The earliest map of England was drawn by George Lily in 1520. Mercator's chart, in which the world was taken as a plane, was invented in 1566. A map of the moon's surface was first drawn at Dantzic in 1647.—HAYDN.

Of the Construction and Use of Maps.—In representing the geographical divisions of the earth's surface, two objects are to be kept in view; on the one hand to exhibit accurately to the eye the relative position of the different countries, and, on the other hand, to give a delineation sufficiently minute to furnish a distinct knowledge of the necessary details. As a globe has very nearly the exact figure of the earth, the representation which it affords of the surface fulfills the first of these objects in the most perfect manner; but to attain the second it would be requisite to enlarge the globe beyond all convenient size. A globe of the ordinary dimensions serves almost no other purpose in this respect but to convey a clear conception of the earth's surface as a whole; exhibiting the figure, extent, position, and general features of the great continents and islands, with the intervening oceans and seas. To obtain a detailed representation of any part of the earth's surface, geographers have therefore found it necessary to have recourse to maps, in which countries are delineated on a plane, while the mutual proportions of the distance of places are preserved as nearly as possible the same as on the globe.

For the construction of maps different mathematical hypotheses have been adopted. By one method of construction, that of *projection*, the boundaries of countries, and their more remarkable features, are represented according to the rules of perspective, on the supposition of the eye being placed on some point of the sphere, or at some given distance from it, which may be increased indefinitely. Wherever the eye is supposed to be situated, the representation thus obtained answers very well, provided the surface to be represented is of small extent, and the point of view, or *projecting point*, is nearly over the centre; but when the surface is of great extent, for example, a

whole hemisphere, those places which are situated near the border of the projection are in all of them much distorted. Another method, that of *development*, is founded on the supposition that the spherical surface to be represented is a portion of a cone, of which the vertex is situated somewhere in the polar axis produced, and the conical surface is supposed either to touch the sphere in the middle parallel of the map, or to fall within the sphere of the middle parallel, and without it at the extreme parallels. The surface of the cone is then supposed to be spread out into a plane. For the "History and Construction of Maps," see *Eccl. Rev.*, xxv., 365; same article in *Living Age*, xxi., 353; *Smithsonian Annual Report*, 1856-7.

A third method, which depends on the development of a cylindrical surface, is that according to which maps are so delineated as to have the parallels of latitude and circles of longitude respectively represented by parallel straight lines. By this method marine charts are constructed. As the rhumb makes equal angles with every meridian, it necessarily, according to this method of delineation, becomes a straight line. Such a representation of the earth's surface is commonly called *Mercator's Chart*, although the invention is due to an English mathematician, Edward Wright. These are the three principal methods employed to represent to the eye the several countries on the surface of the earth. See CHARTS and COAST SURVEY.

The maps and charts of our country and the coasts, besides being of great general interest, are of such importance to the commercial community that any account of the progress made in this direction, should be made known as matter of common interest. The United States' Coast Survey have completed the surveys of a large portion of our coast, and, with a view of obtaining the important facts relative to the old surveys of the country, have employed Mr. J. G. Kohl to investigate the earliest records extant of the history of our maps and charts. Mr. Kohl has extended his researches, and in a series of lectures before the Smithsonian Institute (and published in their last Report), has embodied a general history of the origin of the cartographical art, and from these lectures we make some extracts that have an especial relation to the early history of our own country: The Cartographical Art originated probably everywhere with travelers by land and sea and their requirements; all the maps which we see mentioned in ancient times were probably more or less of this kind; as, for instance, those which the Greeks received from the Phenicians, and which they improved upon; so, too, the maps of the Romans, who scarcely mention any other than travelers' maps, called "*itineraria picta*" (painted itineraries), of which a separate class was formed by the "*itineraria maritima*" (marine itineraries).

By far the greater part of the maps painted during the middle ages belonged to this class, and more especially to the class of marine maps; because the greatest map-makers of that time, the Venetians and other Italians, were also the greatest navigators. Thus we see that the art of map-making particularly flourished among the great trading and navigating nations—the Phenicians, Greeks, and Italians. The different classes of cartographical works for which they had names in the middle ages related all of them more or less exclusively to the hydrography of the sea. Very common, for instance, were the so-called "*portulanos*," or indicators of harbors. The "*isolarios*" (books of islands) form a very curious sort of composition, also probably designed for the special use of mariners. In these insularies the authors represented and described all the most important islands of the world, which they separated from their surrounding continents. From the class of maps, made by conquerors and distributors of land, have grown our official government surveys, which often are very

valuable, because they are made without a too great fear of expense. They generally contain the most important information as regards the political divisions of the country, and for the adjustment of boundary questions. Sometimes, being particularly destined for government use, they have not been given to the public, or at least not to any great extent. With respect to America we have many most important publications of this character made by the French and British governments for Canada, by the British Admiralty for nearly every part of America; by the Spanish hydrographical dépôt in Madrid, for Spanish America, and by the Land Office, Topographical Bureau, Coast Survey Office, and other branches of the United States' government, for different parts of the territory of the United States. The governments of Brazil, of New Granada, and other South American States, have likewise caused splendid publications to be made, descriptive of the territories under their dominion.

Until the time of Columbus and Gama, nations had no accurate knowledge of the world, except that of their own immediate neighborhood. Hence, for thousands of years, the art of constructing maps made but little progress. The maps that were in use at the time of Columbus were not much better than those made for the work of Ptolemy a thousand years before. They do not include a greater extent of country, they exhibit no new facts, nor do they show any greater accuracy in the location of points on the earth's surface. After the discovery of America and the countries bordering on the Pacific Ocean and the Indian Sea, the extent of the known and habitable world was much increased, and the figure of the continents and the limits of the oceans were more correctly given on the maps. But it was still very long ere the classes of interesting facts represented on the maps were enlarged, and the manner of depicting them improved.

Water remained for a long time a blank on all the old maps. It was not known that the ocean offers so much variety in color, depth, temperature, and fitness for motion as the dry land itself. The Spaniards knew that some parts of the ocean are rough and boisterous, and called a certain part "el Golfo de los Cabellos" (the Horse Gulf), and a quiet portion "el Golfo de las Damas" (the Ladies' Gulf). Some of the regular currents of the ocean were also of early discovery. The Gulf Stream was known as early as 1512, or since the first voyage of Ponce de Leon to Florida. We find on many maps, in the neighborhood of Florida, legends like the following: "Here the water runs continually to the north." It would have been easier to have designated this by a few strips of color; and yet it required the inventive genius of Franklin, for it was he who first located definitely the Gulf Stream in our maps.

The regular trade winds between India and Arabia, with their nature, direction, and changes, were not only known, but daily taken advantage of by navigators for centuries. So too the trade winds of the Atlantic were described, discussed, and used, at least since the time of Columbus. Nevertheless, though there are currents that flow with nearly the same regularity as rivers, no map-maker gave any visible hint respecting them to the navigator to whom he pretended to furnish useful charts, until the time of our modern Rennell's Wind-maps, which are also a very late innovation of our century.

The existence of the banks of Newfoundland was known to the very first discoverers of the eastern coast of North America. Nay, for a long time these banks were the most frequented part of the North American waters, being visited since the year 1504 by whole fleets of French, Portuguese, Spanish, and English fishermen. To have a true conception of their configuration, extent, varying depths, currents, and

other circumstances, was almost of greater importance for all the navigating nations of Europe than to know the configuration of the coasts of the great continent itself. Yet at a time when the whole east coast of North America was already very well represented on the maps, we see the Georges Bank, Nantucket shoals, and the other great banks, before this coast, either not given at all, or else in a shape so little like reality that it would have been almost better to leave them out altogether. The other qualities of the bottom of the ocean, its deep valleys and lofty mountain ranges, were of course not noticed in an age which did not possess our deep-sea sounding instruments, and which had also no practical occasion for such explorations. This practical interest has existed only since the question has been mooted where we can lay with safety our electric wires for the connection of the two continents. For this purpose we now explore those hidden recesses, and we may expect that ere long our pictures of the oceans will present as great variety of scenes as do those of the dry land itself.

We should endeavor to collect and preserve all the old records and charts of our early maritime history. These are valuable to science, and are objects of curiosity and interest to our merchants, and it should be the object of the Chamber of Commerce to collect and preserve these records of the past.

Maranhão, or Maranhão, a province of Brazil, in South America. This name, which is common to the province, the capital, the island on which it stands, the River Meary, and the Amazon, is derived from Marañon, the appellation which the navigator Pinzan first bestowed upon the estuary of the Amazon, upon finding that its waters did not possess the saline properties of the ocean. It lies between $1^{\circ} 20'$ and $10^{\circ} 50'$ of south latitude, and $45^{\circ} 10'$ and $53^{\circ} 20'$ of west longitude, being nearly 400 miles in length from north to south, and having an average breadth of about 200 miles. Maranhão, or St. Luiz, the capital, is situated on an island of the same name of about 42 miles in circumference. It forms the south-east side of the Bay of Marcos, having to the eastward the Bay of San José, in latitude $2^{\circ} 32'$ south, and longitude $43^{\circ} 40'$ west. It is fertile, and well inhabited, there being, besides the capital, numerous small hamlets belonging to the natives. Much difficulty is experienced in reaching this island, on account of the rapidity of three rivers at the mouth of which it is situated. The harbor, which is formed by a narrow creek, is of a sufficient depth to admit of merchantmen entering; but it is so beset with shoals as to require a pilot, and its depth is diminishing. Population about 30,000. Chief public edifices, an episcopal palace, college, hospital, theatre, and numerous convents of the Franciscan and Carmelite orders. It is the residence of the governor, and has a lyceum and schools of navigation and commerce. Chief exports, cotton, rice, and sarsaparilla. Chief imports, slaves. The average number of slaves imported between the years 1840 and 1845 averaged 5000 annually, for whom a considerable duty was derived. With regard to exports and imports, there are no returns which can be relied on later than the year 1820. From 1815 to 1820, the average number of bags of cotton exported was 68,000. The exports of rice varied during these years from 56,000 to 82,000 bags. The other articles sent out of the country consisted of hides, tanned and untanned, skins, and gums. The entire population of the province amounted, in 1821, to 182,000. This province might be made one of great importance, for it possesses vast capabilities; but as yet it is in an infant or semi-barbarous state.

Marble (Ger., *Rus.*, and Lat. *Marmo*; Du. *Marmmer*; Fr. *Marbre*; It. *Marmo*; Sp. *Marmol*), a genus of fossils, composed chiefly of lime; being a bright and beautiful stone, moderately hard, not giving fire with steel, fermenting with and soluble in acid menstrua, and calcining in a slight fire. *Dipænus* and *Seyllis*,

statuaries of Crete, were the first artists who sculptured marble, and polished their works; all statues previously to their time being of wood, 568 B.C.—*Pliny*. Marble afterward came into use for statues and the columns and ornaments of fine buildings; and the edifices and monuments of Rome were constructed of, or ornamented with, fine marble. The ruins of Palmyra prove that its magnificent structures, which were chiefly of white marble, were far more extensive and splendid than those of even Rome itself. These latter were discovered by some English travelers near Aleppo, A. D. 1678.

The colors by which marbles are distinguished are almost innumerable. Some are quite black, others, again, are of a snowy white; some are greenish, others grayish, reddish, bluish, yellowish, etc.; while some are variegated and spotted with many different colors and shades of colors. The finest solid modern marbles are those of Italy, Blankenburg, France, Flanders and the United States.

Italy produces a most valuable marble, and its exportation makes a considerable branch of her foreign commerce. The black and the milk-white marble of Carara, in the duchy of Massa, are particularly esteemed. The marble of Germany, Norway, and Sweden are very inferior, being mixed with a sort of scaly limestone. Marble is of so hard, and compact, and fine a texture as readily to take a beautiful polish. That most esteemed by statuaries is brought from the island of Paros, in the Archipelago. It was employed by Praxiteles and Phidias, both of whom were natives of that island; whence also the famous Arundelian marbles were brought. The marble of Carara is likewise in high repute among sculptors. The specific gravity of marble is from 2.700 to 2.800. Black marble owes its color to a slight mixture of iron.

STATEMENT SHOWING THE EXPORTS OF THE MANUFACTURES OF MARBLE FROM THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30TH, 1856.

Whither exported, Dollars.	Whither exported, Dollars.
Dutch Guiana..... 50	Turkey in Europe..... 35
England..... 1,025	Hayti..... 1,285
Ireland..... 50	San Domingo..... 163
Gibraltar..... 90	Mexico..... 2,055
Canada..... 105,833	Central Republic..... 460
Other Br. N. A. pos. 10,664	New Granada..... 195
British West Indies. 343	Venezuela..... 165
British Honduras..... 89	Brazil..... 270
British pos. in Africa 904	Buenos Ayres..... 535
British Australia..... 189	Chili..... 2,004
Cuba..... 80,884	Sandwich Islands.... 4,259
Porto Rico..... 743	
Madeira..... 181	Total..... 162,376

STATEMENT SHOWING THE IMPORTS OF MARBLE INTO THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30TH, 1856.

Whence Imported.	Manufactures of.	Unmanufactured.
Bremen.....	\$196	....
Holland.....	28	....
Belgium.....	17	\$198
England.....	3,017	25
Scotland.....	1,145	....
Malta.....	170	....
Canada.....	154	....
British East Indies.....	25	....
France on the Atlantic.....	12,487	14
France on the Mediterranean.....	2,767	1,841
Portugal.....	....	3,188
Sardinia.....	11,886	32,858
Tuscany.....	15,885	140,848
Two Sicilies.....	154	....
China.....	178	....
Total.....	\$38,054	\$177,967

Brande divides marble, according to their localities, into classes, each of which contains eight subdivisions: 1. Uni-colored marbles, including only the white and the black; 2. Variegated marbles; those with irregular spots or veins. 3. Madreporic marbles, presenting animal remains in the shape of white or gray spots, with irregularly disposed dots or stars in the centre. 4. Shell marbles; with only a few shells interspersed in the calcareous base. 5. Lunachella marbles, entirely composed of shells. 6. Cipolin marbles, con-

taining veins of greenish talc. 7. Breccia marbles, formed of a number of angular fragments of different marbles, united by a common cement. 8. Pudding-stone marbles; a conglomerate of round pieces.

Of Cutting and Polishing Marble.—The marble saw is a thin plate of soft iron, continually supplied during its sawing motion, with water and the sharpest sand. The sawing of moderate pieces is performed by hand, but that of large slabs is most economically done by a proper mill.

The first substance used in the polishing process is the sharpest sand, which must be worked with till the surface becomes perfectly flat. Then a second, and even a third sand of increasing fineness is to be applied. The next substance is emery of progressive degrees of fineness, after which tripoli is employed; and the last polish is given with tin-putty. The body with which the sand is rubbed upon the marble, is usually a plate of iron; but for the subsequent process, a plate of lead is used with fine sand and emery. The polishing-rubbers are coarse linen cloths or bagging, wedged tight into an iron planing tool. In every step of the operation, a constant trickling supply of water is required.

Marbling, the method of preparing and coloring marbled paper. There are several kinds of marbled paper, but the principal difference between them consists in the forms in which the colors are laid on the ground; some being disposed in whirls or circumvolutions, others in jagged lengths, and others only in spots of a rounder oval figure. The general manner of managing each kind is, nevertheless, the same, namely, the dipping the paper in a solution of gum-tragacanth, or, as it is commonly called, gum-dragon, over which the colors, previously prepared with ox-gall and spirit of wine, are first spread.

Marine, a general name for the navy of a kingdom or state, as also for the whole economy of naval affairs, or whatever respects the building, rigging, arming, equipping, navigating, and fighting of ships. It comprehends, likewise, the government of naval armaments, and the state of all the persons employed therein, whether civil or military.

Marines, or Marine Forces, a body of soldiers raised for the naval service, and trained to fight either in a naval engagement or in an action on shore.

Mariner's Compass. The Chinese ascribe the invention of the compass to their Emperor Hong-Ti, who, they say, was a grandson of Noah; and some of their historians refer the invention of it to a later date, 1115 B.C. The honor of its discovery, though much disputed, is generally given to Flavio de Gioja or Giovia, a native of Amalfi, an ancient commercial city of Naples, A.D. 1302. The variation of the needle was first discovered by Columbus in his voyages of discovery, 1492; and it was observed in London in 1580. The dipping-needle was invented by Robert Norman, a compass-maker of Ratcliffe in that year. See COMPASS; *Am. Jour. Sc.*, xl., 242.

Maritime Law. By maritime law is meant the law relating to harbors, ships, and seamen. It forms an important branch of the commercial law of all maritime nations. It is divided into a variety of different departments; such as those with respect to harbors, the property of ships, the duties and rights of masters and seamen, contracts of affreightment, average, salvage, etc. The reader will find those subjects treated of under their respective heads.

Sketch of the Progress of Maritime Law.—The earliest system of maritime law was supplied by the Rhodians, several centuries before the Christian era. The most celebrated authors of antiquity have spoken in high terms of the wisdom of the Rhodian laws; luckily, however, we are not wholly left, in forming our opinion upon them, to the vague, commendatory statements of Cicero and Strabo. (CICERO *pro Lege Manilia*; STRAB., lib. xiv.) The laws of Rhodes

were adopted by Augustus into the legislation of Rome; and such was the estimation in which they were held, that the Emperor Antoninus, being solicited to decide a contested point with respect to shipping, is reported to have answered, that it ought to be decided by the Rhodian laws, which were of paramount authority in such cases, unless they happened to be directly at variance with some regulation of the Roman law.— (“*Ego quidem mundi dominus, lex autem maris legis id Rhodia, qua de rebus nauticis præscripta est, judicetur, quatenus nulla nostrarum legum adversatur. Hoc idem Divus quoque Augustus judicavit.*”) The rule of the Rhodian law with respect to average contributions in the event of a sacrifice being made at sea for the safety of the ship and cargo, is expressly laid down in the Digest (lib. xiv.); and the most probable conclusion seems to be, that most of the regulations as to maritime affairs, embodied in the compilations of Justinian have been derived from the same source. The regulations as to average adopted by all modern nations, are borrowed, with hardly any alteration, from the Roman, or rather, as we have seen, from the Rhodian law!—a conclusive proof of the sagacity of those by whom they had been originally framed. The only authentic fragments of the Rhodian law are those in the Digest. The collection entitled *Jus navale Rhodiorum*, published at Bâle in 1561, is now admitted by all critics to be spurious. See *ante*, pp. 1168–1192.

The first modern code of maritime law is said to have been compiled at Amalfi, in Italy, a city at present in ruins; but which, besides being early distinguished for its commerce, will be forever famous for the discovery of the Pandects, and the supposed invention of the mariner's compass. The Amalfitan code is said to have been denominated *Tabula Amalfitana*. But if such a body of law really existed, it is singular that it should never have been published, nor even any extracts from it. M. Pardessus has shown that all the authors who have referred to the Amalfitan code and asserted its existence, have copied the statement of Freccia, in his book *De Subfeudis*. (*Collection des Loix Maritimes*.) And as Freccia assures us that the Amalfitan code continued to be followed in Naples at the time when he wrote (1570), it is difficult to suppose that it could have entirely disappeared; and it seems most probable, as nothing peculiar to it has ever transpired, that it consisted principally of the regulations laid down in the Roman law, which, it is known, preserved their ascendancy for a longer period in the south of Italy than any where else.

But, besides Amalfi, Venice, Marseilles, Pisa, Genoa, Barcelona, Valencia, and other towns of the Mediterranean, were early distinguished for the extent to which they carried commerce and navigation. In the absence of any positive information on the subject, it seems reasonable to suppose that their maritime laws would be principally borrowed from those of Rome, but with such alterations and modifications as might be deemed requisite to accommodate them to the particular views of each state. But whether in this or in some other way, it is certain that various conflicting regulations were established, which led to much confusion and uncertainty; and the experience of the inconveniences thence arising, doubtless contributed to the universal adoption of the *Consolato del Mare* as a code of maritime law. Nothing certain is known as to the origin of this code. Azuni (*Droit Maritime de l'Europe*, tome i., or rather Jotto, *Codice Ferdinando*, from whose work a large portion of Azuni's is literally translated) contends, in a very able dissertation, that the Pisans are entitled to the glory of having compiled the whole, or at least the greater part, of the *Consolato del Mare*. On the other hand, Don Antonio de Capmany, in his learned and excellent work on the commerce of Barcelona (*Antiguo Comercio de Barcelona*, tome i., pp. 170–183), has endeavored to show that the

Consolato was compiled at Barcelona; and that it contains the rules according to which the consuls, which the Barcelonese had established in foreign places so early as 1268, were to render their decisions. It is certain that the *Consolato* was printed for the first time at Barcelona, in 1502; and that the early Italian and French editions are translations from the Catalan. Azuni has, indeed, sufficiently proved that the Pisans had a code of maritime laws at a very early period, and that several of the regulations in it are substantially the same as those in the *Consolato*. But it does not appear that the Barcelonese were aware of the regulations of the Pisans, or that the resemblance between them and those in the *Consolato* is more than accidental; or may not fairly be ascribed to the concurrence that can hardly fail to obtain among well-informed persons legislating upon the same topics, and influenced by principles and practices derived from the civil law.

M. Pardessus, in the second volume of his excellent work already referred to, appears to have been sufficiently disposed, had there been any grounds to go upon, to set up a claim in favor of Marseilles to the honor of being the birth-place of the *Consolato*; but he candidly admits that such a pretension could not be supported, and unwillingly adheres to Capmany's opinion. “*Quoique Français,*” says he, “*quoique portée par des sentimens de reconnaissance, qu'aucun événement ne sauroit affaiblir, à faire valoir tout ce qui est en faveur de Marseilles, je dois reconnoître franchement que les probabilités l'emportent en faveur de Barcelone.*” —Tome ii. But to whichever city the honor of compiling the *Consolato* may be due, there can be no doubt that its antiquity has been greatly exaggerated. It is affirmed, in a preface to the different editions, that it was solemnly accepted, subscribed and promulgated, as a body of maritime law, by the Holy See in 1075, and by the kings of France and other potentates at different periods between 1075 and 1270. But Capmany, Azuni, and Pardessus, have shown in the clearest and most satisfactory manner that the circumstances alluded to in this sketch could not possibly have taken place, and that it is wholly unworthy of attention. The most probable opinion seems to be, that it was compiled, and began to be introduced about the end of the 13th or beginning of the 14th century. And notwithstanding its prolixity, and the want of precision and clearness, the correspondence of the greater number of its rules with the ascertained principles of justice and public utility, gradually led, without the intervention of any agreement, to its adoption as a system of maritime jurisprudence by all the nations contiguous to the Mediterranean. It is still of high authority. Casaregis says of it, though perhaps, too strongly, “*Consulatus maris, in materiis maritimiis, tanquam universalis consuetudo habens vim legis, inviolabiliter attendenda est apud omnes provincias et nationes.*”—Disc. 214.

The collection of sea laws next in celebrity, but anterior, perhaps, in point of time, is that denominated the *Roole des Jugemens d'Oleron*. There is as much diversity of opinion as to the origin of these laws, as there is with respect to the origin of the *Consolato*. The prevailing opinion in Great Britain has been, that they were compiled by direction of Queen Eleanor, wife of Henry II., in her quality of Duchess of Guienne; and that they were afterward enlarged and improved by her son Richard I., at his return from the Holy Land; but this statement is now admitted to rest on no good foundation. The most probable theory seems to be, that they are a collection of the rules or practices followed at the principal French ports on the Atlantic, as Bordeaux, Rochelle, St. Malo, etc. They contain, indeed, rules that are essential to all maritime transactions, wherever they may be carried on; but the references in the code sufficiently prove that it is of French origin. The circumstance of that

monarch's having large possessions in France at the period when the Rules of Oleron were collected, naturally facilitated their introduction into England; and they have long enjoyed a very high degree of authority in that country. "I call them the laws of Oleron," said a great civilian (*Sir Leoline Jenkins, Charge to the Cinque Ports*), "not but that they are peculiarly enough English, being long since incorporated into the customs and statutes of our admiralties; but the equity of them is so great, and the use and reason of them so general, that they are known and received all the world over by that, rather than by any other name." Molloy, however, has more correctly, perhaps, said of the laws of Oleron, that "they never obtained any other or greater force than those of Rhodes formerly did; that is, they were esteemed for the reason and equity found in them, and applied to the case emergent."—*De Jure Maritimo et Navali*.

A code of maritime law issued by Wisby, in the island of Gothland, in the Baltic, has long enjoyed a high reputation in the north. The date of its compilation is uncertain; but it is comparatively modern. It is true that some of the northern jurists contend that the laws of Wisby are older than the Rules of Oleron, and that the latter are chiefly copied from the former! But it has been repeatedly shown that there is not so much as the shadow of a foundation for this statement. See PARDESSUS, *Collection, etc.*, tome i., pp. 425, 462; *Foreign Quarterly Review*, No. 13, art. *Hanseatic League*. The laws of Wisby are not certainly older than the latter part of the 14th or beginning of the 15th century; and have obviously been compiled from the *Consolato del Mare*, the Rules of Oleron, and other codes that were then in use. Grotius has spoken of these laws in the most laudatory manner:—"Que de maritimis negotiis," says he, "*insula Gothlandia habitatoribus placuerunt, tantum in se habent, tum equitatis, tum prudentiæ, ut omnes oceanî accola eo, non tanquam proprio, sed velut gentium jure, utantur.*"—*Prolegomena ad Procopium*, p. 64.

Besides the codes now mentioned, the ordinances of the Hanse Towns, issued in 1597 and 1614, contain a system of laws relating to navigation that is of great authority. The judgments of Damme, the customs of Amsterdam, etc., are also often quoted. A translation of the law of Oleron, Wisby, and the Hanse Towns, is given in the 3d edition of Malynes's *Lex Mercatoria*, but the edition of them in the work of M. Pardessus, referred to in the text, is infinitely superior to every other. But by far the most complete and well-digested system of maritime jurisprudence that has ever appeared, is that comprised in the famous *Ordonnance de la Marine* issued by Louis XIV., in 1681. This excellent code was compiled under the direction of M. Colbert, by individuals of great talent and learning, after a careful revision of all the ancient sea laws of France and other countries, and upon consultation with the different parliaments, the courts of admiralty, and the chambers of commerce, of the different towns. It combines whatever experience and the wisdom of ages had shown to be best in the Roman laws, and in the institutions of the modern maritime states of Europe. In the preface to his treatise on the *Law of Shipping*, Lord Tenterden says:—"If the reader should be offended at the frequent references to this ordinance, I must request him to recollect that those references are made to the maritime code of a great commercial nation, which has contributed much of its national prosperity to that code: a code composed in the reign of a politic prince; under the auspices of a wise and enlightened minister; by laborious and learned persons, who selected the most valuable principles of all the maritime laws then existing; and which, in matter, method, and style, is one of the most finished acts of legislation that ever was promulgated." The ordinance of 1681 was published in 1760, with a detailed and most elaborate commentary by M. Valin, in 2 vol-

umes, 4to. It is impossible which to admire most in this commentary, the learning or the sound good sense of the writer. Lord Mansfield was indebted for no inconsiderable portion of his superior knowledge of the principles of maritime jurisprudence to a careful study of M. Valin's work.

That part of the *Code de Commerce* which treats of maritime affairs, insurance, etc., is copied with very little alteration, from the ordinance of 1681. The few changes that have been made are not always improvements. No system or code of maritime law has ever been issued by authority in Great Britain. The laws and practices that now obtain among them, in reference to maritime affairs have been founded principally on the practices of merchants, the principles laid down in the civil law, the laws of Oleron and Wisby, the works of distinguished juriconsults, the judicial decisions of their own and foreign countries, etc. A law so constructed has necessarily been in a progressive state of improvement; and, though still susceptible of amendment, it corresponds, at this moment, more nearly, perhaps, than any other system of maritime law, with those universally recognized principles of justice and general convenience by which the transactions of merchants and navigators ought to be regulated. The decisions of Lord Mansfield did much to fix the principles, and to improve and perfect the maritime law of England. It is also under great obligations to Lord Stowell. The decisions of the latter chiefly, indeed, respect questions of neutrality, growing out of the conflicting pretensions of belligerents and neutrals during the late war; but the principles and doctrines which he unfolds in treating those questions, throw a strong and steady light on those branches of maritime law. It has occasionally, indeed, been alleged—and the allegation is probably, in some degree well founded—that his lordship has conceded too much to the claims of belligerents. Still, however, his judgments must be regarded, allowing for this excusable bias, as among the noblest monuments of judicial wisdom of which any country can boast. "They will be contemplated," says Mr. Serjeant Marshall, "with applause and veneration, as long as depth of learning, soundness of argument, enlightened wisdom, and the chaste beauties of eloquence, hold any place in the estimation of mankind."—*On Insurance*, Prelim. Disc. The *Treatise of the Law Relative to Merchant Ships and Seamen*, by the late Chief Justice of the Court of King's Bench, does credit to the talents, erudition, and liberality of its noble and learned author. It gives, within a brief compass, a clear and admirable exposition of the most important branches of our maritime law; and may be consulted with equal facility and advantage by the merchant, the general scholar, and the lawyer. Mr. Serjeant Marshall has entered very fully into some, and has touched upon most points of maritime law, in his work on *Insurance*; and has discussed them with great learning and sagacity. The works of Mr. Justice Park, Mr. Holt, and a few others, are also valuable. Of the earlier treatises, the *Lex Mercatoria* of Malynes is by far the best; and, considering the period of its publication (1622), is a very extraordinary performance. See *North Am. Rev.*, vi., 323 (J. STORY), ii., 218, xiii., 1 (H. WHEATON); *Hunt's Mag.*, xiii., 232, 455, x., 337, ix., 261, 358, 543, xiv., 547, xv., 75, xxiv., 191.

The marine law of the United States is the same as the marine law of Europe. It is not the law of a particular country, but the general law of nations; and Lord Mansfield applied to its universal adoption the expressive language of Cicero, when speaking of the eternal laws of justice: "Nec erit alia lex Romæ, alia Athenis; alia nunc, alia posthac; sed et omnes gentes, et omni tempore una lex et sempiterna, et immortalis continebit."

In treating of this law, we refer to its pacific character as the law of commerce and navigation in time of peace. The respective rights of belligerents and neu-

trials in time of war constitute the code of prize law, and that forms a distinct law of inquiry. When Lord Mansfield mentioned the law-merchant as being a branch of public law, it was because that law did not rest essentially for its character and authority on the positive institutions and local customs of any particular country, but consisted of certain principles of equity, and usages of trade, which general commerce and a common sense of justice had established to regulate the dealings of merchants and mariners in all the commercial countries of the civilized world.

In the study and cultivation of maritime law our improvement has been rapid, and our career illustrious, since the adoption of the present Constitution of the United States. The decisions in federal courts, in commercial cases, have done credit to the intellectual and moral character of the nation, and the admiralty courts in particular have displayed great research and a familiar knowledge of the principles of the marine law of Europe.

The reports of judicial decisions in the several States, and especially in the States of Massachusetts, New York, and Pennsylvania, evince great attention to maritime questions; and they contain abundant proofs that our courts have been dealing largely with that business of our enterprising and commercial people.

Declaration respecting Maritime Law signed by the Plenipotentiaries of Great Britain, Austria, France, Prussia, Russia, Sardinia, and Turkey, assembled in Congress at Paris, April 16, 1856:

The plenipotentiaries who signed the Treaty of Paris, on the 30th of March, 1856, assembled in conference, considering: That maritime law in time of war has long been the subject of deplorable disputes; that the uncertainty of the law and of the duties in such a matter gives rise to differences of opinion between neutrals and belligerents which may occasion serious difficulties, and even conflicts; that it is, consequently, advantageous to establish a uniform doctrine on so important a point; that the plenipotentiaries assembled in Congress at Paris can not better respond to the intentions by which their governments are animated, than by seeking to introduce into international relations fixed principles in this respect. The above-mentioned plenipotentiaries, being duly authorized, resolved to concert among themselves as to the means of attaining this object; and having come to an agreement, have adopted the following solemn declarations:

1. Privateering is, and remains, abolished. 2. The neutral flag covers enemies' goods, with the exception of contraband of war. 3. The neutral goods, with the exception of contraband of war, are not liable to capture under enemy's flag. 4. Blockades, in order to be binding, must be effective; that is to say, maintained by a force sufficient really to prevent access to the coast by the enemy.

The governments of the undersigned plenipotentiaries engage to bring the present declaration to the knowledge of the States which have not taken part in the Congress of Paris, and invite them to accede to it. Convinced that the maxims which they now proclaim can not but be received with gratitude by the whole world, the undersigned plenipotentiaries doubt not that the efforts of their governments to obtain the general adoption thereof will be crowned with full success. The present declaration is not, and shall not be binding, except between those powers who have acceded or shall accede to it.

Done at Paris the 16th of April, 1856.

(Signed,)

BUOL-SCHAUENSTEIN,	HATZFELDT,
HÜNER,	ORLOFF,
WALEWSKI,	BRUNNOW,
BOURQUENEY,	CAVOUR,
CLARENDON,	DE VILLAMARINA,
COWLEY,	AALI,
MANTEUFFEL,	MEHEMMED DJEMIL.

The United States' Executive, through the Department of State, communicated to the French government its reply in August 1856, viz.:

These four points are *indivisible*, because he can not accept the first point—the abolition of privateering. Governor Marcy respectfully proposes, however, two distinct amendments:

1. Either to add to the *first* proposition in the "declaration" of the Congress of Paris—

"And that the private property of the subjects or citizens of a belligerent on the high seas shall be exempted from seizure by public armed vessels of the other belligerents, except it be contraband," or

2d. To adopt the 2d, 3d, and 4th propositions, without the first.

The argument contained in the reply of Governor Marcy is historical, argumentative, and forcible.

It goes to say, that no nation has a right to prescribe to another what shall constitute her military or naval force; and that we can, consistently with our institutions and policy, neither agree not to employ volunteers on land, nor privateers on the high seas. When a nation having a large standing army is threatening a nation with a small standing army, the latter must have recourse to volunteers; and so when a nation with a large navy, makes war on another with an inferior navy, the latter must have recourse to privateers, otherwise the nation with a large navy could employ a portion of her navy to keep the inferior navy of her enemy in check, and with the rest sweep the commerce of the latter from the ocean. Parity of position could only be reached if the armed cruisers of the superior navy and other national ships of war would forego making captures of the enemy's property on the high seas, or if the nation with an inferior navy armed privateers to inflict as much damage on the commerce of the greater naval power as the latter does on its inferior enemy. The concluding portion of Mr. Marcy's reply is as follows:

"In discussing the effect of the proposed measure—the abolition of privateering—a reference to the existing condition of nations is almost unavoidable. An instance will at once present itself in regard to two nations where the commerce of each is about equal, and about equally wide-spread over the world. As commercial powers they approach to an equality, but as naval powers there is great disparity between them. The regular navy of one vastly exceeds that of the other. In case of war between them only an inconsiderable part of the navy of the one would be required to prevent that of the other from being used for defense or aggression, while the remainder would be devoted to the unembarrassed employment of destroying the commerce of the weaker in naval strength. The fatal consequence of this great inequality of naval force between two such belligerents would be in part remedied by the use of privateers; in that case, while either might assail the commerce of the other in every sea, they would be obliged to distribute and employ their respective navies in the work of protection. This statement only illustrates what would be the case, with some modification, in every war where there may be considerable disparity in the naval strength of the belligerents.

"History throws much light upon the question. France, at an early period, was without a navy; and in her wars with Great Britain and Spain, both naval powers, she resorted, with signal good effect, to privateering, not only for protection, but successful aggression. She obtained many privateers from Holland, and by this force gained decided advantages on the ocean over her enemy. While in that condition France could hardly have been expected to originate or concur in a proposition to abolish privateering. The condition of many of the smaller States of the world is now, in relation to naval powers, not much unlike that of France in the middle of the 16th century.

At a later period, during the reign of Louis XIV., several expeditions were fitted out by him, composed wholly of privateers, which were most effectively employed in prosecuting hostilities with naval powers. Those who may have at any time a control on the ocean will be strongly tempted to regulate its use in a manner to subserve their own interests and ambitious projects. The ocean is the common property of all nations; and instead of yielding to a measure which will be likely to secure to a few—possibly to one—an ascendancy over it, each should pertinaciously retain all the means it possesses to defend the common heritage. A predominant power upon the ocean is more menacing to the well being of others than such a power on land; and all are alike interested in resisting a measure calculated to facilitate the permanent establishment of such a domination, whether to be wielded by one power or shared among a few others. The injuries likely to result from surrendering the dominion of the seas to one or a few nations which have powerful navies, arise mainly from the practice of subjecting private property on the ocean to seizure by belligerents. Justice and humanity demand this practice should be abandoned, and that the rules in relation to such property on land should be extended to it when found upon the high seas.

"The President, therefore, proposes to add to the first proposition in the 'Declaration' of the Congress at Paris the following words: 'And that the private property of the subjects or citizens of the belligerent on the high seas shall be exempted from seizure by public armed vessels of the other belligerent, except it be contraband.' Thus amended, the government of the United States will adopt it, together with the other three principles contained in that 'Declaration.' I am directed to communicate the approval of the President to the second, third, and fourth propositions, independently of the first, should the amendment be unacceptable. The amendment is recommended by so many powerful considerations, and the principle which calls for it has so long had the emphatic sanction of all enlightened nations in military operations on land, that the President is reluctant to believe it will meet with any serious opposition. Without the proposed modification of the first principle, he can not convince himself that it would be wise or safe to change the existing law in regard to the right of privateering.

"If the amendment should not be adopted, it will be proper for the United States to have some understanding in regard to the treatment of their privateers when they shall have occasion to visit the ports of those powers which are or may become parties to the declaration to the Congress at Paris. The United States will, upon the ground of right and comity, claim for them the same consideration to which they are entitled, and which was extended to them under the law of nations, before the attempted modification of it by that Congress.

"As connected with the subject herein discussed, it is not inappropriate to remark that a due regard to the fair claims of the neutrals would seem to require some modification, if not an abandonment, of the doctrine in relation to contraband trade. Nations which preserve the relations of peace should not be injuriously affected in their commercial intercourse by those which choose to involve themselves in war, provided the citizens of such peaceful nations do not compromise their character as neutrals by direct interference with the military operations of the belligerents. The laws of siege and blockade, it is believed, afford all the remedies against neutrals that the parties to war can justly claim. These laws interdict all trade with the besieged or blockaded places. A further interference with the ordinary pursuits of neutrals, in nowise to blame for an existing state of hostilities, is contrary to the obvious dictates of justice. If this view of the

subject could be adopted, and practically observed by all civilized nations, the right of search, which has been the source of so much annoyance, and of so many injuries to neutral commerce, would be restricted to such cases only as justified a suspicion of an attempt to trade with places actually in a state of siege or blockade.

"Humanity and justice demand that the calamities incident to war should be strictly limited to the belligerents themselves, and to those who voluntarily take part with them; but neutrals, abstaining in good faith from such complicity, ought to be left to pursue their ordinary trade with either belligerent without restrictions in respect to the articles entering into it.

"Though the United States do not propose to embarrass the other pending negotiations relative to the rights of neutrals, by pressing this change in the law of contraband, they will be ready to give it their sanction whenever there is a prospect of its favorable reception by other maritime powers.

"The undersigned avails himself of this opportunity to renew to the Count de Sartiges the assurance of his high consideration.

"W. L. MARCY."

The points here settled are all of them important. Privateering has been the scourge of the ocean—a lawless sort of warfare between belligerents themselves—a grievous annoyance and damage to neutrals, and a most prolific school of piracy. Those whose recollection extends back 30 or 40 years remember when the ocean was traversed by pirates, trained for their fiendish business by the long wars of the earlier years of the century. The best men of modern Christendom had never ceased to protest against the system. Sweden and Holland attempted, in the 17th century, to put an end to the practice, but without effect. The United States and Prussia, in 1785, entered into stipulations against privateering, as between themselves, but did not renew the provision. The French Legislature, in 1792, made a similar, but fruitless effort. Privateering was destined to have one license more for perpetrating its atrocities, and shocking the sense of mankind. Jurists lamented the practice, but were forced to acknowledge it a part of the law of nations, and gave up in despair all expectation of an early abandonment of the legalized outrage.

When the late war between the United States and Mexico occurred, it was matter of general gratulation that the circumstances of the case saved the world from the curse of privateering; and much more did the world rejoice; at the commencement of the late European war, when England and France announced their intention to grant no letters of marque. With the conclusion of that war—as part of the conclusion, indeed—we have the solemn compact of the great powers of Europe, that "privateering is, and remains, abolished." It is an important step in the progress of humanity.

The declaration that "the neutral flag covers enemies' goods, with the exception of contraband of war," diminishes greatly the liabilities of the world to future strifes. Until the breaking out of the recent war, Great Britain had steadily maintained the contrary doctrine as the law of nations. The Empress of Russia, in 1780, set forth precisely the doctrine of the late Paris Conference, and gained the concurrence of most of the States of Europe, and of the government of the United States. Great Britain refused to yield, and the other nations, one after another, submitted to the interpretations of that power. Even Russia herself conceded that point, and in 1801 agreed, by treaty, that an enemy's property was not protected in neutral ships. Jurists, our own with the rest, regarded the question of international law as settled on the British interpretation. The qualified accession of England, in the Declaration of 1854, to the principles of the Armed

Neutrality occasioned, therefore, general and gratifying surprise. It then entered the minds of none, however, that within two years she would make her full accession to those principles, by a compact with those very powers against whom, on this same question, she had leveled the broadsides of her fleets. In regard to this particular, Russia is the victorious party, and her triumph is a note of human progress. Turkey, too, has a proud distinction in this declaration, for in settling the point that free ships make free goods, she is but publishing anew what she was the first to declare 250 years ago. The labors of our own government have been in the same direction through the whole period of our national history. Our government, while admitting the English rule as to the law of nations, has declared that the rule had no foundation in natural right, and in repeated treaties has gained the insertion of the doctrine now proclaimed in Paris.

The third item in the late Declaration has been less the occasion of differences than the second. The fourth is a conclusive testimony against "paper blockades."

Whether our government will "accede" in form to the points named may be doubted, though every one of them is a concession to principles or usages for which we have contended, and all, it may be hoped, will have our uniform and hearty practical concurrence. It has been generally the policy of our statesmen to keep our government clear from alliances which might, under any circumstances, be embarrassing, and that disposition may demand for us, even in this instance, an attitude of independence. However this may be, the moral sense of the nation will accept with thankfulness the results of the Paris Conference, and the Christian will see new foretokenings of that day when nations shall learn war no more.

Maritime Loans. The contracts of *bottomry* and *respondentia* are maritime loans of a very high and privileged nature, and they are always upheld by the admiralty with a strong hand, when entered into *bonâ fide*, and without any suspicion of fraud. The principle on which they are founded and supported is of great antiquity, and penetrates so deeply into it, that Emerigon says its origin can not be traced. It was borrowed by the Romans from the ancient Rhodians, and it is deeply rooted in the maritime general law of Europe, from which it has been transplanted into the law of this country. The object of hypothecation bonds is to procure the necessary supplies for ships which happen to be in distress in foreign ports, where the master and owners are without credit, and in cases in which, if assistance could not be procured by means of such instruments, the vessels and cargoes must be left to perish. The authority of the master to hypothecate the ship and freight, and even the cargo, in a case of necessity, is indisputable. The vital principle of a bottomry bond is, that it be taken in a case of unprovided necessity when the owner has no resources or credit for obtaining necessary supplies. If the lender knew that the owner had an empowered consignee or agent in the port, willing to supply his wants, the taking the loan is a fraud; but if fairly taken under an ignorance of the fact, the courts of admiralty are disposed to uphold such bonds, as necessary for the support of commerce in its extremities of distress. And if the lender of money on a bottomry or respondentia bond be willing to stake the money upon the safe arrival of the ship or cargo, and to take upon himself, like an insurer, the risk of sea perils, it is lawful, reasonable, and just, that he should be authorized to demand and receive an extraordinary interest, to be agreed upon, and which the lender shall deem commensurate to the hazard he runs.

A *bottomry bond* is a loan of money upon the ship or ship and accruing freight, at an extraordinary interest, upon maritime risks, to be borne by the lender for a specific voyage, or for a definite period. It is in

the nature of a mortgage, by which the ship-owner, or the master on his behalf, pledges the ship as a security for the money borrowed, and it covers the freight of the voyage, or during a limited time. A *respondentia* bond is a loan upon the pledge of the cargo, though an hypothecation of both ship and cargo may be made in one bond; and it amounts at most to an equitable lien on the salvage in case of loss. The condition of the loan is the safe arrival of the subject hypothecated, and the entire principle as well as interest is at the risk of the lender during the voyage. The bottomry holder undertakes the risk of the voyage as to the enumerated perils, but not as to those which arise from the fault or misconduct of the master or owner. The money is loaned to the borrower, upon condition that if the subject pledged be lost by a peril of the sea, the lender shall not be repaid, except to the extent of what remains, and if the subject arrives safe, or if it shall not have been injured, except by its own defect, or the fault of the master or mariners, the borrower must return the sum borrowed, together with the maritime interest agreed upon, and for the repayment the person of the borrower is bound, as well as the property pledged. This is the definition of the contract given by Pothier, and it was taken from the Roman laws, and has been adopted by Emerigon, and he says the definition is given in nearly the same terms by all the maritime jurists.—KENT'S *Com.*

Mark, or Marc, a weight used in several parts of Europe, for various commodities, especially gold and silver. In France, the mark was divided into 8 ozs. = 61 drachms = 192 deniers or pennyweights = 4,608 grains. In Holland, the mark weight was also called Troy weight, and was equal to that of France. When gold and silver are sold by the mark, it is divided into 24 carats.

The pound, or *livre poids de marc*, the weight most commonly used in retail dealings throughout France, previous to the Revolution, was equal to 2 marcs, and consequently contained 16 ozs. = 182 drachms = 884 den. = 9,216 grains. One kilogramme is nearly equal to 2 livres. Subjoined is a table of livres, *poids de marc*, from 1 to 10, converted into kilogrammes. Any greater number may be learned by a simple multiplication and addition.

Livres.	Kilog.	Livres.	Kilog.
1 =	0.4895	5 =	2.9370
2 =	0.9790	7 =	3.4265
3 =	1.4685	8 =	3.9160
4 =	1.9580	9 =	4.4055
5 =	2.4475	10 =	4.8951

Mark, is a term sometimes used for a money of account, and in some countries for a coin. The English mark is $\frac{3}{4}$ ds of a pound sterling, or 13s. 4d.; and the Scotch mark is $\frac{2}{3}$ ds of a pound Scotch. The mark Lubs, or Lubec mark, used at Hamburg, is a money of account, equal to 29 $\frac{1}{2}$ cents. See HAMBURG.

Market, a public place in a city or town, where provisions are sold. No market is to be kept within 7 miles of the city of London; but all butchers, victualers, etc., may hire stalls and standings in the flesh-markets there, and sell meat and other provisions. Every person who has a market is entitled to receive toll for the things sold in it; and by ancient custom, for things standing in the market, though not sold; but those who keep a market in any other manner than it is granted, or extort tolls or fees where none are due, forfeit the same. See FAIRS.

Marseilles, a large commercial city and sea-port of France, on the Mediterranean, lat. 48° 17' 49" N., long. 5° 22 $\frac{1}{2}$ ' E. Population, 1851, including suburbs, 195,257. The harbor, the access to which is defended by several strong fortifications, is in the centre of the city, forming a basis 525 fathoms in length, by about 152 fathoms in breadth. The tide is hardly sensible; but the depth of water at the entrance to the harbor varies from 16 to 18 feet, being lowest when the wind is north-west, and highest when it is

south-west. Within the basin, the depth of water varies from 12 to 24 feet, being shallowest on the north, and deepest on the south side. Dredging machines are constantly at work to clear out the mud, and to prevent the harbor from filling up. Though not accessible to the largest class of ships, Marseilles is one of the best and safest ports in the world for moderate-sized merchantmen, of which it will accommodate above 1000. Ships in the basin lie close alongside the quays; and there is every facility for getting them speedily loaded and unloaded. The Isles de Rattonneau and Pomegues, and the strongly fortified islet or rock of If, lie W.S.W. from the port; the latter, which is the nearest to it, being only $1\frac{1}{2}$ miles distant, and not more than $\frac{1}{2}$ of a mile from the projecting point of land to the south of the city. There is good anchorage ground for men-of-war and other large ships between the Isles de Rattonneau and Pomegues, to the west of the Isle d'If. When coming from the south, it is usual to make the Isle de Blanier, in lat. $43^{\circ} 11' 54''$ N., long. $5^{\circ} 13' 59''$ E. A light-house erected on this island is 131 feet high; the flashes of the light, which is a revolving one, succeed each other every half minute, and in clear weather it may be seen 7 leagues off. Ships that have made the Isle de Blanier, or that of Le Maire, lying east from it about $4\frac{1}{2}$ miles, steer northerly for the Isle d'If, distant about 7 miles from each, and having got within $\frac{1}{2}$ or $\frac{1}{4}$ a mile of it, heave to for a pilot, who carries them into a harbor; it is not, however, obligatory on ships to take a pilot on board; but being obliged to pay for one whether they avail themselves of his services or not, they seldom dispense with them. The charge is 4 sous per ton in, and 2 sous per ton out, for French vessels, and the vessels having reciprocity treaties with France. There is a light-house in the fort St. Jean, on the north side of the entrance of the port. The lazaretto, which is one of the best in Europe, lies a little to the north of the city; and there is an hospital on Rattonneau Island, for individuals whose health is dubious. With the exception of the above charge for pilotage, and the charges for such vessels as perform quarantine, there are no port charges on ships entering at or clearing out from Marseilles.

Usages.—As soon as the master has, on his arrival, made his declaration at the Health Office, and received *pratique*, he is directed to an office close by, called the Patache, where he makes two similar declarations, the one for the captain of the port, and the other for the custom-house; the day and hour of the latter being made is marked, in order to ascertain if the regular manifest of his cargo is delivered at the custom-house within 24 hours after, as required by law. As soon as these declarations are made, the master is accosted by one or more public brokers, who alone are authorized by law to enter ships at the custom-house and other public offices, and to interpret, if it be necessary, for the master. The broker whom he may select then gives the master all the necessary information respecting the usages of the port as regards the ship and cargo, and goes through all the formalities respecting them that the law or local regulations require. Independent of the regular manifest which it is usual in all ports for the master to give in to the custom-house, he is here required to give in a full and complete list of all the ship's stores, provisions, etc., that he has on board for his own use, and that of his crew; and he can not be too careful to make this list as correct as possible, as when it is subsequently verified on board by the custom-house and excise officers, any variation subjects the ship to penalties. This is particularly the case with tobacco, which, being a government monopoly, is watched with the greatest vigilance. All the tobacco on board over that which the crew have in their chests for their own use, must be declared, and any attempt at concealment or smuggling is visited with heavy fines. When the ship

sails, the stores, provisions, etc., are again examined, and an excise duty charged on such provisions and other excisable articles as may have been consumed in the port. No fire or light is allowed on board, and the cooking is all done on shore. Marseilles is a city of great antiquity, and has long enjoyed a very extensive commerce. Havre, partly, no doubt, from its being, as it were, the port of Paris, used to enjoy a greater share of the trade of France; but, notwithstanding the increased importance of the former, it has recently been surpassed by Marseilles. The customs duties collected at Havre in 1851, were 26,164,000 francs, whereas those collected at Marseilles during the same year amounted to 30,677,000 francs; having increased to that amount from 25,899,000 francs in 1830.

This statement shows conclusively, that the trade of Marseilles is not only increasing, but that it is already very extensive. She is the grand emporium of the south of France, and the centre of 9-10ths of her commerce with the countries on the Mediterranean and Black Sea. The exports consist principally of silk stuffs, wines, brandies, and liquors; woollens and linens; madder, oil, soap, refined sugar, perfumery, stationery, verdigris, and all sorts of colonial products. Among the principal imports are sugar, coffee, and other colonial products; dye stuffs; corn from the Black Sea and the north coast of Africa; cotton from Egypt and America; coal, linen, thread, and various descriptions of manufactured goods from England; with hides, wool, tallow, timber, etc. Marseilles engrosses almost the whole trade between France and Algiers. She is now also the principal seat of the intercourse carried on by steamers with Malta, Alexandria, and Constantinople; and besides the steamers employed by the government as packets, she ran upward of 28 steamers belonging to private companies. Mr. Maclaren says that in 1839 most of the latter had English-made engines, and English engineers; and that they burnt English coal, which sold here for about 30s. a ton. There belonged to the port, on the 31st of December, 1851, 684 sailing vessels of the burden of 63,577 tons; and 43 steamers of the burden of 9,505 tons. A joint-stock bank established here in 1835 is said to have been exceedingly successful.

ACCOUNT OF THE SHIPPING WHICH ARRIVED AT AND DEPARTED FROM MARSEILLES IN 1847, SPECIFYING THE COUNTRIES TO WHICH THE SHIPS BELONGED, AND THE NUMBER, TONNAGE, AND CREWS OF THOSE BELONGING TO EACH.

Countries.	Arrivals.		Departures.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
Great Britain.....	242	44,405	280	52,829
France.....	2,247	366,562	2,098	331,858
America.....	54	15,578	54	15,578
Austria.....	484	112,268	442	104,948
Brazil.....	5	547	1	287
Belgium.....	5	505	6	588
Chili.....	5	596	1	277
Denmark.....	16	1,688	18	1,947
Holland.....	19	2,310	23	2,930
Greece.....	770	163,572	771	163,812
Hanover.....	4	260	4	260
Hanseatic Towns.....	8	1,220	8	1,220
Lucca.....	66	3,185	68	3,276
Mecklenburg Schwerin.....	2	239	8	429
Morocco.....	69	1,109	69	1,109
Naples.....	554	127,456	576	134,817
Portugal.....	5	822	5	822
Prussia.....	10	2,882	10	2,882
Roman States.....	40	5,086	42	5,288
Russia.....	208	63,592	204	63,096
Sardinia.....	845	84,909	820	88,567
Spain.....	517	45,713	522	46,828
Sweden and Norway.....	96	24,365	107	27,617
Turkey.....	154	29,048	160	30,048
Tuscany.....	80	9,322	71	8,927
Venezuela.....	1	170	1	170
Total.....	6,445	1,107,889	6,304	1,090,395

The arrivals and departures in this and the preceding year are considerably above the average, a consequence of the great importations of foreign corn. In

1846 the imports of wheat amounted to 1,290,000 quarters, and in 1847 to above 2,200,000 quarters.

We are unable to lay before the reader any very recent account of the import and export trade of Marseilles. We believe, however, that the value of the first was, in 1853, estimated at about 200,000,000 francs, and that of the exports at about as much. For information as to money, weights, measures, duties, etc., the reader is referred to FRANCE and HAVRE, under which heads he will find an account of the trade of France.

The trade of Marseilles has been much increased by the occupation of Algiers, she being the grand centre of the intercourse carried on with that country. But independently of this circumstance, Marseilles engrosses by far the largest share of the extensive commerce carried on between France and the east coast of Spain, Italy, Greece, and the Levant. See FRANCE.

Martinico, or Martinique, one of the French West India Islands, in the windward group, between lat. $14^{\circ} 24'$ and $14^{\circ} 53' N.$, and long. $60^{\circ} 50'$ and $61^{\circ} 18' W.$ Population, 1850, 121,145. It is mountainous, and contains several extinct volcanoes; the numerous small rivers are used to turn sugar-mills. About one quarter of the surface is covered with dense forests. Soil fertile, but only one fifth of the superficies is cultivated. Chief products, sugar, coffee, and cacao. This island, called by the natives Madiana, was discovered by the Spaniards in 1493. The French founded a colony on it in 1635. It was taken by the English in 1762, but resigned in 1763; they again occupied it from 1794 to 1809, and it was finally given up to France in 1814. The capital of the colony is Port Royal, but St. Pierre is the most populous town and the centre of commerce. The island is nearly 50 miles in length by about 16 in breadth, and comprehends an area of 360 square miles. The surface is uneven, and intersected in all parts by steep and rugged rocks. Piton de Corbet, one of the highest, is about 812 feet above the level of the sea. The shape of this calcareous hill resembles a cone, and it is on that account very difficult of access. The palm-trees with which it is covered, become more lofty and abundant near the summit, and these continually attract the clouds, which occasion noxious damps, and contribute to render it more rugged in appearance, and more dangerous to ascend. There are also two other mountains conspicuous from their elevation, and from these, particularly from the first, descend numerous streams, which irrigate the island. Martinique is better supplied with water, and less exposed to hurricanes than Guadeloupe, while the productions are nearly the same. Of 75,321 hectares, the superficial area of the island, 17,622 are employed in raising sugar-cane, 3861 in coffee, 719 in cocoa, 491 in cotton, 17,191 are pasturage, and 19,997 are woods. The annual production is valued at 21,000,000 francs. In 1824 the island consumed French products to the value of 16,000,000 francs, and exported to the mother country goods to the amount of 18,000,000 francs. The tonnage engaged in this commerce amounted to 33,500 tons. The revenue in 1823, was 4,000,000 francs. The commerce of Martinique has continued nearly the same since the period at which the above estimate was made.

Port Royal, the capital and seat of the courts of justice of Martinique, is situated on one of the several bays which indent the island, and possess one of the safest and most capacious harbors in the West Indies, or even in the world.

The commercial relations of Martinique and Guadeloupe are regulated by the royal decree of February 5, 1826, and by such other decrees as have subsequently been promulgated. Foreign and national ships may import into all open ports of the islands (in Martinique, the ports of St. Pierre, Port Royal, and Trinité; in Guadeloupe, Moule, La Basseterre, and

Poin-a-Pitre; and in Mariegalante, or Grandbourg, the principal town and only port of the island), articles of merchandise enumerated in the following tariff:

TARIFF FOR ALL FLAGS, NATIONAL AND FOREIGN.		
Denomination of merch.	No., weight or measure.	Rate of duty.
Animals, living.....	10 per ct. ad val.	
Beef, salt.....	100 kilos.=220 lbs. \$2 80	4-5
Codfish & other salt fish.....	" " 1 30	1-5
Indian corn, in grain.....	1 hect.=2 4-5 bush. 37	1-5
Vegetables, dried.....	" " 64	4-5
Rice.....	220 lbs. 1 80	1-5
Salt.....	" " 33	
Tobacco.....	7 per ct. ad val.	
Hoop-poles.....	1,000 \$1 86	
Wine, foreign.....	1 hect.=26 gals. In for ships, 93 c.	
		In nat. " 43-5c.
Stone coal.....	220 lbs. \$0 02	

By decree of March 10, 1855, salted provisions (meats) of every description pay only 50 centimes (9-3 cents) per 100 kilogrammes. Wood of all sorts, other than hoop-poles; tar, pitch, and other extracts of pine, etc.; hides, with the hair on; forage, green and dry; table fruits, and seeds, pay 4 per cent. ad valorem.

No. 2.—Free of Duty.—Ammonia, unpulverized; animal substances used in medicine and perfumery; bones and horns of animals; cassia; cochineal; cocoa-shells; copper; elephants' teeth; fats, except of fish; ginger; gloves; gums; indigo; Jesuits' bark; kermes; lac; lead; medicinal balsams, juices, roots, barks, herbs, leaves, and flowers; mother-of-pearl; nutmegs; peltries; pepper; potash; quercitron; rocou; rushes and reeds; seeds hard to be crushed; skins, dry and undressed; sumach; tin, unwrought; tortoise-shell, turmeric; vanilla; vegetables, green; wax, not worked; whale fins; woods, odoriferous, dye, and cabinet. Foreign vessels importing the above enumerated merchandise are subjected to no other port charges, light-house and tonnage duties, than are levied on French vessels. All goods not enumerated in the above tariff, and imported from foreign countries, either in foreign or French bottoms, are liable to confiscation.

The articles enumerated in lists Nos. 1 and 2, as well as all articles imported from France, may be re-exported, duty free, from one colony to another, but only in French vessels; on condition, however, that the importer of merchandise contained in list No. 1 proves that the duties have been discharged in the colony of original importation. Foreign vessels, as well as French, may export, duty free, to foreign countries, articles imported into the two colonies, whether from France or elsewhere; but these exportations can only be allowed from the ports opened by the ordinance of February 5, 1826, for the importation of merchandise enumerated in lists 1 and 2. Foreign flour may be imported (if necessity or urgency authorizes the importation) for a fixed duty of \$3 94.2 per 80 kilogrammes, or 177½ lbs.; but then it can only be done if a special order by the governor permitting the importation has been issued, which allowance will never extend beyond the term of three months.

Maryland, one of the central United States, lies between 38° and $39^{\circ} 44' N.$ lat., and between $75^{\circ} 10'$ and $79^{\circ} 21' W.$ long. It is 196 miles long and 120 broad, containing 11,000 square miles. Population in 1790, 319,728; in 1800, 345,824; in 1810, 380,546; in 1820, 407,350; in 1830, 446,913; in 1840, 469,282; and in 1850, 563,035.

Early History of Maryland.—In the year 1632 King Charles I. gave a charter to Cecilius Calvert, Lord Baltimore, and granted to him a tract of land lying in that peninsula, between the ocean and Chesapeake Bay, and round the northern extremities of that same bay, and ordered this land to be called "Maryland," in honor to the Queen Henrietta Maria, the consort of Charles I. She was of the Catholic religion, like Lord Baltimore himself, and likewise the greater part of the settlers which he carried out. The name appears for the first time in the charter of Maryland of the 20th

June, 1632. It is possible that Lord Baltimore and his associates, in proposing to the king that name, had also at the same time the old Spanish maps of North America before their eyes, on which Chesapeake Bay is called "St. Mary's Bay" (*Bahia de Santa Maria*) and that they had a desire to carry back to this bay that old and historical name. It may be a mere accident that the name Maria was as well in modern as in ancient times applied to the same regions. But what we call accident in history is often secretly linked together by an association of ideas which escapes our research.

Others think that the Calverts and their associates, and their Catholic missionaries, who explored and settled the territory of Maryland, thought, in giving this name, exclusively of the Queen Henrietta Maria and not at all of the Holy Virgin. It was among Spaniards and French, and among all Catholic colonists and discoverers, very customary to vow a new country or place, to which they gave a name in honor of some person, at the same time to the protection of that saint which bore the same name. They would, for instance, call a place named after Christopher Columbus, not "Christophoro," but "St. Christophoro," because they thought at once as well of the man as of his protecting saint. That something similar was going on at the baptism of Maryland seems not unlikely, from the circumstance that the first principal settlement of Maryland was called *St. Mary*, and that this settlement, as well as the surrounding country, is so called to this day. The fact that the old forgotten name *Mary*, in later times, returned to the same regions, appears one of the so-called "curious coincidences in history worthy to be pointed out."—J. G. KOHL.

Physical Features, etc.—Eastern Maryland, or that part of the State east of the Chesapeake Bay, is mostly level. The country on the west shore to the head of the tides is similar to the eastern shore; the soil of this portion is generally fertile, producing wheat, Indian corn, tobacco, etc. Above the tides the surface rises into hills, and the western part attains an elevated region, being crossed by the Alleghany Mountains. The western part contains much fine land, adapted both to grain and grazing. Extensive beds of coal and iron ore exist. There were in this State in 1860, 2,797,905 acres of improved land, and 1,836,445 of unimproved land, in farms; cash value of farms, \$87,178,545; and the value of implements and machinery, \$2,463,443.

Live Stock.—Horses, 75,684; asses and mules, 5644; milch cows, 86,859; working oxen, 34,135; other cattle, 98,595; sheep, 177,902; swine, 352,911. Value of live stock, \$7,997,634.

Agricultural Products, etc.—Wheat, 4,494,680 bushels; rye, 226,014; Indian corn, 11,104,631; oats, 1,242,151; barley, 745; buckwheat, 103,671; peas and beans, 12,816; potatoes, 764,939; sweet potatoes, 208,993. Value of products of the orchard, \$164,051. Produce of market gardens, \$200,869. Pounds of butter made, 3,806,160; of cheese, 3975; maple sugar, 47,740; molasses, 1430 gallons; bees' wax and honey, 74,802 pounds; wool, pounds produced, 480,226; flax, 35,686; silk cocoons, 39; hops, 1870; tobacco, 21,407,497 pounds; hay, tons of, 157,956; clover seeds, 15,217 bushels; other grass seeds, 2561; flax seed, 2446 bushels; and were made 1431 gallons of wine. Value of home-made manufactures, \$111,828; of slaughtered animals, 1,954,800.

FOREIGN COMMERCE OF THE STATE OF MARYLAND, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Tonnage cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821.....	\$2,714,850	\$1,135,544	\$3,850,394	\$4,070,842	61,687	4,677	46,612	80,244
1822.....	3,496,998	1,039,303	4,536,796	4,792,486	58,790	9,469	.....	.....
1823.....	4,173,112	1,357,116	5,530,228	4,946,179	62,911	7,615	.....	.....
1824.....	3,649,937	1,918,276	4,868,233	4,551,642	73,610	6,017	.....	.....
1825.....	3,092,365	1,408,989	4,501,304	4,751,815	66,228	3,845	.....	.....
1826.....	2,947,352	1,063,396	4,010,748	4,928,569	62,212	2,931	.....	.....
1827.....	3,457,691	1,058,715	4,516,406	4,405,708	67,480	4,191	.....	.....
1828.....	3,107,819	1,226,603	4,334,422	5,629,694	59,582	6,631	.....	.....
1829.....	3,662,273	1,142,192	4,804,465	4,804,135	54,983	6,890	.....	.....
1830.....	3,075,985	715,497	3,791,482	4,523,866	55,020	3,586	.....	.....
Total.....	\$33,278,397	\$11,961,081	\$45,239,478	\$47,404,936	622,403	56,102	.....	.....
Sept. 30, 1831.....	\$3,780,506	\$578,141	\$4,308,647	\$4,826,577	65,370	10,276	25,959	47,958
1832.....	3,016,873	1,484,045	4,499,918	4,629,303	49,380	15,648	.....	.....
1833.....	3,301,014	761,453	4,062,467	5,487,057	47,181	25,499	.....	.....
1834.....	3,012,708	1,155,587	4,168,245	4,647,483	41,702	17,350	.....	.....
1835.....	3,176,566	148,368	3,925,234	5,647,158	45,298	18,526	.....	.....
1836.....	3,028,916	646,559	3,675,475	7,181,867	39,416	18,507	.....	.....
1837.....	3,363,173	424,744	3,787,917	7,857,033	39,195	35,798	.....	.....
1838.....	4,165,168	359,407	4,524,575	5,701,369	54,421	22,685	.....	.....
1839.....	4,318,189	268,372	4,576,561	6,995,285	49,298	19,556	.....	.....
1840.....	5,495,020	273,748	5,768,768	4,910,746	67,718	25,546	.....	.....
Total.....	\$36,604,433	\$6,695,874	\$43,299,307	\$57,784,373	498,979	209,391	.....	.....
Sept. 30, 1841.....	\$4,739,160	\$158,006	\$4,947,166	\$6,101,313	63,656	23,598	41,985	64,920
1842.....	4,635,507	269,259	4,904,766	4,417,078	61,447	21,260	.....	.....
9 mos. 1843.....	2,820,214	195,842	3,015,556	2,479,132	41,473	15,431	.....	.....
June 30, 1844.....	4,841,950	291,216	5,183,166	3,917,750	69,834	21,205	.....	.....
1845.....	4,944,237	275,740	5,221,977	3,741,504	69,718	22,342	.....	.....
1846.....	6,744,110	124,945	6,869,055	4,042,915	89,404	30,887	.....	.....
1847.....	9,632,360	129,884	9,762,244	4,432,314	114,502	55,228	.....	.....
1848.....	7,016,034	113,749	7,129,782	5,343,643	84,709	36,321	.....	.....
1849.....	7,768,695	218,965	8,000,660	4,376,731	113,276	31,652	.....	.....
1850.....	6,659,431	377,872	6,967,353	6,124,201	89,296	37,523	.....	.....
Total.....	\$59,801,748	\$2,149,977	\$61,951,725	\$45,576,831	801,618	295,347	.....	.....
June 30, 1851.....	\$5,416,798	\$218,988	\$5,635,786	\$6,650,645	75,406	30,883	95,675	108,869
1852.....	6,514,641	158,220	6,667,861	6,719,936	68,608	42,637	.....	.....
1853.....	7,768,224	138,235	7,906,459	6,830,078	87,218	56,373	.....	.....
1854.....	11,655,250	127,382	11,782,632	6,787,552	136,524	54,750	.....	.....
1855.....	9,882,218	513,766	10,395,984	7,788,949	111,096	47,494	.....	.....
1856.....	10,856,687	264,761	11,121,898	9,119,907	118,872	40,489	.....	.....

The Potomac River, which divides the State from Virginia, is 350 miles long, and navigable about 150 miles to Washington city. It is $7\frac{1}{2}$ miles wide at its mouth. The great falls are 14 miles above Washing-

ton; the perpendicular descent is 76 feet, and the rapids extend for several miles up the river, and form a very picturesque view. The Susquehanna is a large river which enters into the head of Chesapeake Bay in

this State. It is $1\frac{1}{2}$ miles wide at its mouth, but is navigable only 5 miles, being above that much obstructed by falls and rapids. The Patapsco is a small river, navigable, however, 14 miles to Baltimore for ships. The Patuxent is 110 miles long, and is navigable for 50 miles for vessels of 250 tons. The other rivers are Elk, Sassafra, Chester, Choptank, Nanticoke, and Pocomoke. The Chesapeake Bay is 270 miles long, and from 70 to 20 wide, and by its numerous inlets furnishes many fine harbors.

Manufactures, etc.—There were in the State in 1850, 33 cotton factories, with a capital invested of \$2,248,600, employing 1212 males and 2035 females; products valued at \$2,021,396; 43 woolen factories, with a capital of \$258,100, employing 264 males and 106 females; products valued at \$319,240; 19 establishments making pig iron, with a capital of \$1,033,500, employing 1351 persons, producing 43,641 tons of pig iron, etc., valued at \$1,048,250; 16 establishments, with a capital of \$350,100, employing 761 persons, and making 6244 tons of castings, etc., valued at \$685,000; 17 establishments, with a capital of \$780,650, employing 568 persons, manufacturing 10,000 tons of wrought iron, valued at \$771,431; 392 flouring and grist mills; 130 saw mills; 116 tanneries, with a capital of \$628,900, employing 479 persons; value of products, \$1,103,139; 59 printing-offices; 6 daily, 4 tri-weekly, 54 weekly, 1 semi-monthly, and 2 monthly publications. There were in this State (January, 1856) 3 railroads, with 466 miles of road finished and in operation, and 30 miles in course of construction. The Chesapeake and Ohio Canal, 184 miles long, is mostly in this State. Capital invested in manufactures, \$14,753,143; value of manufactured articles, \$32,477,702.

The principal places in the State are Baltimore, the metropolis; Annapolis, the capital; Havre de Grace, Frederick, Hagerstown, and Cumberland. There were (January, 1854) 25 banks, with an aggregate cash capital of \$9,558,409. The exports of Maryland in 1852 of domestic produce in American vessels amounted to the value of \$4,391,692; in foreign vessels, \$2,122,949. Foreign produce in American vessels, \$120,129; in foreign vessels, \$38,091. Total value, \$6,667,861. The imports same year in American vessels amounted to \$5,620,114; in foreign vessels, \$1,099,872. Total, \$6,719,986. Tonnage, 1852, 201,186.

For History, Finances, etc., of Maryland, see *Am. Quar.*, ix., 483; *HUNT'S Mag.*, v., 50; *Bank. Mag.*, i., 394; *Jo. Sc.*, xxvii., 1; *DE BOW'S Rev.*, x., 645.

The principal port is Baltimore, situated on the north side of the Patapsco River, about 14 miles above its entrance into the Chesapeake Bay, in lat. $39^{\circ} 17' N.$, long. $76^{\circ} 36' W.$ The harbor is spacious and convenient, and the water deep. Its tonnage in 1856 amounted to 183,344 tons. In the fiscal year, 1855-6, there were built at this port, 12 ships, 8 barks, 43 schooners, 3 sloops, with an aggregate tonnage of 15,393 tons.

Annapolis, city, port of entry, and capital of Maryland, on the Chesapeake Bay, at the entrance of Severn River. The State House is remarkable as the building in which the American Congress, during the revolutionary war, held some of its sessions. The Senate Chamber, which witnessed the last scene of the great drama of the Revolution, Washington's resignation of his commission to the Congress, has been preserved unaltered. The United States' Naval Academy, at Fort Severn, has 7 professors, and 70 midshipmen as students. Tonnage of the port in 1856, was 1332 tons.

Number of vessels built, and their tonnage, in the State of Maryland, during the year ending June 30, 1856:

District.	Ships & barks.	Brigs.	Schooners.	Sloops & canal b'ts.	Total No.	Tonnage.
Baltimore...	12	8	43	3	66	15,393
Oxford....	..	..	25	..	25	2,004
Vienna.....	..	..	38	..	38	1,920
Snow Hill..	..	..	7	..	7	463
Annapolis..	..	..	2	..	2	133
Total....	12	8	110	3	133	19,918

Massachusetts, one of the eastern United States, lies between $41^{\circ} 23'$ and $42^{\circ} 52'$ north lat., and between $69^{\circ} 30'$ and $73^{\circ} 30'$ west long. It is about 190 miles long, with an average breadth of 90 miles, and contains 7250 square miles. Population in 1790 was 388,727; in 1800, 422,845; in 1810, 472,040; in 1820, 528,287; in 1830, 610,408; in 1840, 787,699; and in 1850, 994,499.

Early History.—The first and most ancient names which were given by historians to the territory of the State of Massachusetts were more or less the same with those of Maine, and we need not repeat them here. The name "*La Côte des Almouchiquo's*" (the Coast of the Almouchiquois Indians), which the French introduced, and which the Dutch geographers frequently changed to "*The Land of Almushikosen*," covered particularly the whole extent of Massachusetts. This latter name was first introduced by the English navigators and explorers. The word is said to be composed of the Indian words *Mos* (Arrowhead) and *Wetuset* (hill). The pure and correct orthography of the compound word is from this said to be *Moswetuset*, the hill in the shape of an arrowhead. The king of an Indian tribe is said to have resided on such a hill near the shores of Massachusetts Bay, and his tribe of Indians received from this, the name "*The Indians of Moswetuset*." The name is already mentioned by Captain John Smith under the year 1616. He writes it *Massachusset*. In the early times, the name was, however, corrupted in many different ways. Captain Dermer writes, in his celebrated letter on his discoveries, *Massachusit* (1619). In a letter from Plymouth in the year 1629, the name is written *Massachuets Bay*, and in the patent of Sir Fernando Gorges, repeatedly *Massachusiac*. In the earliest time of the Plymouth Colony this name included only the country round Boston harbor, and the name was principally given to that great bay, of which Boston harbor is a part, and which was called *Massachusetts Bay*. The first English colony or province was therefore not called from the country, but from the bay, "*The Colony of Massachusetts Bay*" (since 1626). The territory which this name covered was at first not extensive, but by and by it became the greatest name throughout the whole of New England. In the year 1692 the country of the Plymouth Colony was united to it, and for the whole was now introduced the name of "*The Province of Massachusetts*." So long also as New Hampshire and Maine were united to the mighty Massachusetts, during the greater part of the 17th and 18th centuries, the geographers, forgetting local names, extended the name of Massachusetts often over the greater half of all the New England seas and countries; while since 1774 the name "*State of Massachusetts*" includes the coasts between Merrimack River in the north and Narragansett Bay in the south.—J. G. KOHL.

Physical Features.—This State presents three distinct zones. The first toward the ocean, is a marine alluvion but little elevated above the sea; it is mostly sandy, and the least fertile and smallest in extent of the three sections. This plain is followed by a fine hilly tract which crosses the State from north to south, elevated in some places 300 feet above the sea; from these elevations the rivers flow in every direction. The second, or middle zone, includes part of the beautiful valley of the Connecticut, and is followed by the mountainous, but highly fertile county of Berkshire, which comprises the whole western part of the State. Through Berkshire passes two mountain ranges, the Taghkanic, on the western border of the State and between the Housatonic and Connecticut Rivers, the Green Mountain range here called the Hoosick Mountains. Mount Holyoke, near Northampton, is near 1200 feet above the level of the sea, and Wachusett Mountain in Princeton, is an elevated peak from 2000 to 3000 feet high. Saddle Mountain in the Taghkanic range in the north-west corner of the State is 4000 feet

high, and Mount Washington in the same range in the south-west corner of the State, is about 3000 feet high. The valleys of the Connecticut are fertile, as are also those of the Housatonic. There were in this State in 1850, 2,133,436 acres of land improved, and 1,222,576 of unimproved land in farms; cash value of farms \$109,076,847, and the value of implements and machinery \$3,209,584. Live stock—horses, 42,216; asses and mules, 34; milch cows, 130,099; working oxen, 46,611; other cattle, 83,284; sheep, 188,651; swine, 81,119; value of live stock, \$9,647,710.

Agricultural Products, etc.—Wheat 31,211 bushels; rye, 481,021; Indian corn, 2,345,490; oats, 1,165,146; barley, 112,385; buckwheat, 105,895; peas and beans, 43,709; potatoes, 3,585,384. Value of products of the orchard, \$463,995; produce of market gardens, \$600,020; pounds of butter made, 8,071,370; of cheese, 7,088,142; maple sugar, 795,525 pounds; molasses, 4693 gallons; beeswax and honey, 59,508 pounds; wool, pounds produced, 855,136; flax, 1162; silk cocoons, 7; hops, 121,595 pounds; tobacco, 138,246; hay, tons of, 651,807; clover seed, 1002 bushels; other grass seeds, 5085; flax seed, 72 bushels; and were made 4688 gallons of wine. Value of home-made manufactures, \$205,333; of slaughtered animals, \$2,500,924.

The principal rivers are the Connecticut, a noble stream winding for 50 miles across the State, Housatonic, which rises in Berkshire county, and flows through the west part of the State, and Merrimac, which rises in New Hampshire, and has a course of 50 miles in the north-east part of the State, and enters the ocean below Newburyport. It is navigable for large vessels to Haverhill, 15 miles. Besides these, there are Nashua, Concord, Taunton, and Blackstone Rivers. Massachusetts has numerous good harbors. There are several important islands off the south shore of this State, to which they belong. The largest is Nantucket, 15 miles long and 11 miles broad, and which constitutes a county of its own name. Martha's Vineyard, west of Nantucket is 20 miles long and from 2 to 10 miles broad, which, with other small islands, constitutes Duke's county. The shores of Massachusetts are diversified by some bold promontories and capacious bays. Of the latter, Massachusetts Bay, between Cape Ann on the north and Cape Cod on the south, is about 40 miles in breadth. Buzzard's Bay is on the south-west side of Cape Cod, and is 20 miles long. Cape Ann, in the north part of the State, is a rocky promontory 15 miles in length. Cape Cod is a peninsula in the south-east part of the State, extending 75 miles long and from 2 to 20 miles broad, with a bend in the middle nearly at right angles. The peninsula of *Nahant*, a few miles north of the harbor of Boston, is connected with the mainland by Lynn-beach two miles long. It has become, on account of its cool breezes and wild sea views, a place of fashionable resort during the summer months.

There were, January, 1856, 43 railroads, of which 1409 miles were finished and in operation, and 48 miles in course of construction. The Middlesex Canal, 27 miles long, connects Boston with Lowell. The Blackstone, and the Hampshire and Hamden Canals are both in disuse.

The value for the year of the products of industry, as found by adding the separate returns throughout the State, is found to be \$295,820,681. If allowance be made for defective and erroneous returns, the Secretary thinks the whole amount would be at least \$350,000,000. The returned value without allowance, shows an enormous increase of the productive energy of the State as compared with the previous returns, viz.:

	Production.	Population.
1837.....	\$36,282,616	700,000
1845.....	124,749,457	845,000
1855.....	295,820,681	1,183,128

That is, while the population has increased only 34 and 62 per cent. respectively; the value of the product

of industry (returned) has increased 138 and 242 per cent. The amount of capital invested in manufactures and other productions in Massachusetts, is shown to be \$120,000,000, and the gross value of products \$295,000,000 annually. The number of hands employed is 245,908. The leading products of the State in 1855, and the amount of capital employed in 1845 and 1855 are as follows:

Products.	Value. 1855.	Capital. 1855.	Capital. 1845.
	Dollars.	Dollars.	Dollars.
Cotton goods.....	26,140,000	31,961,000	17,789,000
Calico.....	5,213,000	1,980,000	1,401,000
Goods, bleached and colored.....	5,111,000	659,000	200,000
Woolen goods.....	12,105,000	7,905,000	5,604,000
Rolls and silt iron, and nails.....	5,512,000	2,342,000	1,906,000
Hollow ware and castings.....	3,256,000	1,618,000	718,000
Machinery.....	4,089,000	2,484,000	1,169,000
Steam engines and boilers.....	3,255,000	2,100,000	127,000
Railroad cars, coaches, etc.....	2,352,000	850,000	553,000
Glass.....	2,648,000	1,503,000	700,000
Paper.....	4,141,000	2,564,000	1,144,000
Musical instruments.....	2,295,000	1,280,000	298,000
Watches, chronometers, gold and silver ware.....	2,105,000	720,000	126,000
Cordage.....	2,478,000	638,000	548,000
Vessels.....	4,648,000	1,940,000	.....
Sugar, refined.....	2,056,000	.....	410,000
Sperm candles and oil.....	6,818,000	3,282,000	2,451,000
Soap and tallow candles.....	7,720,000	1,582,000	405,000
Chairs and cabinet ware.....	3,969,000	1,913,000	477,000
Leather.....	12,206,000	4,380,000	1,900,000
Boots and shoes.....	37,459,000	.....	.....
Straw bonnets.....	4,905,000	.....	.....
Bricks.....	2,627,000	.....	.....
Alcohol and liquors.....	3,153,000	964,000	.....
Bread.....	3,592,000	640,000	.....
Clothing.....	9,061,000	2,770,000	.....

The actual expenditures and receipts for 1855 are contrasted with those of 1856 (mostly actual, though a portion necessarily estimated), and with the estimates for 1857, in the following table:

EXPENDITURES FOR 1855 AND 1856, CONTRASTED WITH ESTIMATES FOR 1857.

	1855.	1856.	1857.
Legislative and Executive.....	\$470,959	\$512,400	\$481,000
Scientific and Educational.....	19,889	19,420	18,350
Charitable and Humane.....	339,900	300,000	308,400
Military.....	78,339	75,250	76,000
Reformatory & Correctional.....	288,599	196,800	261,650
Interest.....	118,150	153,900	185,000
Public buildings.....	150,400	78,350	.....
Total.....	\$1,411,237	\$1,335,620	\$1,275,800

RECEIPTS FOR 1855 AND 1856, CONTRASTED WITH ESTIMATES FOR 1857.

	1855.	1856.	1857.
Bank tax.....	\$578,983	\$583,500	\$585,000
State tax.....	428,108	600,000	.....
Insurance tax.....	1,258	2,200	2,000
Alien estates.....	773	900	1,000
Alien passengers.....	15,849	16,800	15,000
Western R. R. Sink'g Fund.....	61,897	61,700	80,000
Western R. R. Dividend.....	49,392	49,392	49,100
Interest on deposits.....	792	1,500	1,000
Hawkers and peddlers.....	.....	506	800
Courts of Insolvency.....	.....	115	12,000
Attorney, Suffolk County.....	3,719	530	.....
Premium and int. on scrip.....	4,803	12,600	.....
Charles R. & West Bridge.....	.....	9,530	.....
Sundry accounts.....	2,241	4,250	.....
State tax of 1856—balance.....	.....	.....	56,000
Cash on hand.....	18,610	10,937	.....
Total.....	\$1,666,425	\$1,452,660	\$1,751,800

For Manufactures, Finances, Commerce, etc., of Massachusetts, see *North Am. Rev.*, i., 223 (N. HALE), ii., 277; *DE Bow's Rev.*, iv., 459, lxxvi., 190; *Ch. Exam.*, xlii., 294.

COTTON MANUFACTURES IN MASSACHUSETTS IN 1855.

	Value.
Cotton mills, 294.....	1,519,527
Number of spindles.....	105,551,749
Cotton consumed.....	814,996,568
Cotton cloth.....	\$24,859,212
Unmanufact'd cotton yarn.....	\$80,546
Cotton thread.....	\$25,954
Cotton batting.....	\$85,374
Capital invested.....	\$1,961,000
Males employed.....	11,937
Females.....	22,850

In 1850, the total value of cotton manufactures in Massachusetts was \$19,712,461; in 1855, it was \$26,760,066, an increase of 36 per cent. in a period of five years. The capital increased in the same period from \$28,545,630 to \$31,961,000, an increase of only 12 per cent.

FOREIGN COMMERCE OF THE STATE OF MASSACHUSETTS, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Tonnage Cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821.....	\$3,683,597	\$8,846,174	\$12,484,771	\$14,896,739	129,741	1,170	196,975	138,066
1822.....	4,072,166	8,526,859	12,598,525	13,337,320	135,334	5,297	.....	.....
1823.....	3,944,985	7,938,254	11,683,239	17,607,160	135,040	8,785	.....	.....
1824.....	4,083,972	6,995,356	10,494,328	15,378,753	134,952	4,667	.....	.....
1825.....	4,262,104	7,170,388	11,432,987	15,845,141	145,972	4,943	.....	.....
1826.....	3,888,138	6,210,724	10,098,862	17,063,482	139,746	4,519	.....	.....
1827.....	3,820,349	6,604,034	10,424,383	13,370,564	130,056	3,951	.....	.....
1828.....	4,096,025	4,902,760	9,025,785	15,070,444	138,999	4,819	.....	.....
1829.....	3,949,751	8,305,136	8,254,937	12,520,744	140,187	3,385	.....	.....
1830.....	3,599,932	8,613,242	7,213,194	10,453,544	148,124	5,176	.....	.....
Total.....	\$39,311,039	\$66,339,972	\$105,651,011	\$150,473,889	1,378,651	47,162	.....	.....
Sept. 30, 1831.....	\$4,027,201	\$3,706,562	\$7,733,768	\$14,269,056	157,530	7,483	225,226	117,450
1832.....	4,656,635	3,377,133	11,993,768	18,118,900	204,239	25,676	.....	.....
1833.....	5,150,584	4,532,588	9,683,122	19,940,911	201,097	31,785	.....	.....
1834.....	4,262,746	5,476,074	10,148,820	17,672,129	183,631	31,299	.....	.....
1835.....	5,564,499	4,479,291	10,043,790	19,900,373	210,021	38,167	.....	.....
1836.....	5,113,196	5,267,150	10,380,346	25,681,462	219,057	55,643	.....	.....
1837.....	4,871,901	4,856,289	9,728,190	19,984,663	188,321	59,559	.....	.....
1838.....	6,163,529	2,946,338	9,104,862	13,300,925	231,386	38,995	.....	.....
1839.....	5,526,455	3,749,630	9,276,083	19,385,223	193,378	45, 69	.....	.....
1840.....	6,263,153	3,918,103	10,186,261	16,518,353	187,995	58,765	.....	.....
Total.....	\$52,009,904	\$46,269,103	\$98,279,007	\$184,667,505	1,976,655	392,446	.....	.....
Sept. 30, 1841.....	\$7,397,692	\$4,089,051	\$11,487,343	\$20,318,003	236,376	73,623	316,530	229,370
1842.....	6,719,115	3,087,995	9,807,110	17,986,433	212,291	86,343	.....	.....
9 mos., 1843.....	4,430,631	1,974,525	6,405,207	16,789,452	138,295	49,253	.....	.....
June 30, 1844.....	6,871,896	2,724,450	9,096,286	20,296,007	229,281	105,118	.....	.....
1845.....	7,756,896	2,594,634	10,351,030	22,781,024	231,096	122,212	.....	.....
1846.....	7,337,015	2,476,103	10,313,118	24,190,963	237,334	137,117	.....	.....
1847.....	9,262,777	1,985,685	11,248,462	34,477,003	235,800	182,634	.....	.....
1848.....	9,303,337	4,111,862	13,419,699	28,647,707	296,833	192,787	.....	.....
1849.....	8,174,667	2,090,195	10,264,862	24,745,917	230,137	244,067	.....	.....
1850.....	8,253,473	2,423,290	10,631,768	30,374,634	272,273	274,674	.....	.....
Total.....	\$75,511,939	\$27,562,591	\$108,074,880	\$240,607,193	2,369,371	1,418,333	.....	.....
June 30, 1851.....	\$9,837,537	\$2,495,145	\$12,352,632	\$32,715,827	279,963	346,937	604,376	190,026
1852.....	14,144,001	2,402,493	16,546,496	33,504,739	303,539	348,974	.....	.....
1853.....	16,935,304	3,059,972	19,935,279	41,367,956	307,905	379,023	.....	.....
1854.....	17,835,733	3,542,766	21,438,504	45,563,733	362,615	375,391	.....	.....
1855.....	24,412,923	3,773,002	28,190,925	45,113,774	432,634	380,850	.....	.....
1856.....	26,355,613	3,407,247	29,522,860	43,814,334	414,333	372,213	.....	.....

The principal ports are: 1. Boston, lat. 42° 23' N., long. 71° 4' W. The city is situated at the head of a deep bay, on a peninsula, being surrounded on three sides by water. Generally there is sufficient depth of water to enable the largest ships to come up to the city at all times of the tide; and they usually moor alongside of docks where there is perfect safety. The depth of water in the channel varies from 15 to 30 feet. It is the great centre of the commerce of New England, and in this capacity receives and distributes one fifth of the whole commercial material of the United States. The tonnage of Boston in 1856 was 521,117 tons. See BOSRON. 2. Salem, city and port of entry. It is chiefly built on a tongue of land formed by two inlets from the sea, called North and South Rivers; over the former are two bridges (one of which is crossed by the railroad), connecting it with Beverly. The harbor has good anchorage ground, but vessels drawing more than 12 or 14 feet of water must be partially unloaded before they can come to its wharves. The tonnage of Salem in 1856 was 29,970 tons. 3. Nantucket. Tonnage in 1856, 16,857 tons. 4. New Bedford. 5. Fall River. 6. Newburyport. 7. Gloucester.

COMMERCE OF BOSTON, 1855—56.

Years.	Custom House revenue.	Foreign arrivals.
1856.....	\$3,357,024	2,990
1855.....	7,773,784	2,956

Mast, a long piece, or system of pieces, of timber, placed nearly perpendicularly to the keel of a vessel to support the yards or gaffs on which the sails are extended. When the mast is one entire piece, it is called a pole-mast; but in all larger vessels it is composed of several lengths, called lower, top, and top-gallant masts; sometimes a fourth, called a royal mast. The

method of supporting each mast on the one next below it, is peculiar. On the sides of the lower mast, some feet below the head, are placed checks: on these are fixed horizontally two short pieces of wood, fore and aft, called trestle trees. Across these at right angles are laid, before and abaft the mast, two or more longer and lighter pieces, called cross trees, which give the name to the entire system. On the mast head itself is a cap. The topmast being placed up and down, the fore side of the lower mast is swayed up between the trestle trees, and through the round or foremost hole in the cap. When raised so high that the heel of the topmast is nearly up to the surface of the cross trees, a piece of iron, called the fid, is put through the hole in the heel for the purpose; and on this fid, of which the ends are supported on the trestle trees, the topmast rests. When fidded, the topmast is stayed, and the rigging or shrouds set up to the dead eyes in the ends of the cross trees. These dead eyes pull from the lower rigging below, and thus the cross trees serve merely to extend the rigging. The topgallant is supported in the same manner on the topmast. When the mast is to be taken down, it is first raised to relieve the fid; which being drawn out, the mast is lowered. The masts are supported by a strong rope, leading forward, called the stay; by others, leading aft on each side of the ship, called, in general, backstays; and by others abreast, called shrouds, and also breast backstays. Large lower masts are composed of pieces, and have for some years been made of several lengths, about a foot or so square, and the whole supported merely by hoops at intervals. The mainmast is near the middle of the vessel, the foremast is that which is nearest the fore part, and the mizzenmast is abaft the mainmast. The old rule for the length of the main

lower mast is to take one half the sum of the length of the lower deck and extreme breadth: the foremast is eight ninths of the mainmast, the mizzenmast considerably smaller. The topmast is about three fifths of the lower mast. These rules, as well as others for the thicknesses, etc., are merely for convenience, based on no mechanical principle, and are by no means strictly followed.

Masts are still built up in pieces, but by the aid of marine glue. A joint secured by this glue is less easily separable than the actual fibres of the wood itself. In the great Exhibition of London there were many curious specimens illustrative of the use of this extraordinary cement. One was a piece of the mast of the ship *Curaçoa*, found inseparable even by the wedge. Another was part of a mainmast, from which a glued fragment was torn away only after a force of 22 tons had been applied. A third was a block of elm, joined with glue; it was exploded by gunpowder, but the joint did not yield. Another was an oak cannon-ball, made of two glued pieces; it had been fired with eight ounces of powder, but the joint held fast. Another was a deal block, which broke in the fibres by a force of four tons. Others were pieces of masts, intended to show how intensely strong a mast becomes when built up with pieces which are joined by this glue. It is not only a glue: it is also a substitute for pitch. Many vessels have the seams payed or calked with this glue, which is found much more durable for the purpose than ordinary pitch.

Master, in commercial navigation, the person intrusted with the care and navigation of the ship. "The master is the confidential servant or agent of the owners; and in conformity to the rules and maxims of law the owners are bound to the performance of every lawful contract made by him relative to the usual employment of the ship."—*ABBOTT on the Law of Shipping*. From this rule of law it follows that the owners are bound to answer for a breach of contract, though committed by the master or mariners against their will, and without their fault. Nor can the expediency of this rule be doubted. The owners, by selecting a person as master, hold him forth to the public as worthy of trust and confidence. And in order that this selection may be made with due care, and that all opportunities of fraud and collusion may be obviated, it is indispensable that they should be made responsible for his acts. The master has power to hypothecate, or pledge, both ship and cargo for necessary repairs executed in foreign ports during the course of the voyage; but neither the ship nor cargo can be hypothecated for repairs executed at home. The master has no lien upon the ship for his wages, nor for money advanced by him for stores or repairs. In delivering judgment upon a case of this sort, Lord Mansfield said: "As to wages, there is no particular contract that the ship should be a pledge; there is no usage in trade to that purpose; nor any implication from the nature of the dealing. On the contrary, the law has always considered the captain as contracting personally with the owner; and the case of the captain has, in that respect, been distinguished from that of all other persons belonging to the ship. This rule of law may have its foundation in policy for the benefit of navigators; for, as ships may be making profit and earning every day, it might be attended with great inconvenience, if, on the change of a captain for misbehavior, or any other reason, he should be entitled to keep the ship till he is paid. Work done for a ship in England is supposed to be done on the personal credit of the employer: in foreign parts the captain may hypothecate the ship. The defendant might have told the tradesman, that he only acted as an agent, and that they must look to the owner for payment." The master is bound to employ his whole time and attention in the service of his employers, and is not at liberty to enter into any engagement for his own benefit

that may occupy any portion of his time in other concerns; and, therefore, if he do so, and the price of such engagement happen to be paid into the hands of his owners, they may retain the money, and he can not recover from them.—*ABBOTT on Shipping*.

Willfully destroying or casting away the ship, or procuring the same to be done by the master or mariners, to the prejudice of the owners, freighters, or insurers; running away with the cargo; and turning pirates; are offenses punishable by transportation beyond seas for not less than 15 years, or by imprisonment for not more than 3 years. After the voyage has been commenced, the master must proceed direct to the place of his destination, without unnecessarily stopping at any intermediate port, or deviating from the shortest course. No such deviation will be sanctioned, unless it has been occasioned by stress of weather, the want of necessary repair, avoiding enemies or pirates, succoring of ships in distress, sickness of the master or mariners, or the mutiny of the crew.—*MARSHALL on Insurance*. To justify a deviation, the necessity must be real, inevitable, and imperious; and it must not be prolonged one moment after the necessity has ceased. A deviation without such necessity vitiates all insurances upon the ship and cargo, and exposes the owners to an action on the part of the freighters. If a ship be captured in consequence of deviation, the merchant is entitled to recover from the owners the prime cost of the goods with shipping charges; but he is not entitled to more, unless he can show that the goods were enhanced in value beyond the sum above mentioned. If a merchant ship has the misfortune to be attacked by pirates or enemies, the master is bound to do his duty as a man of courage and capacity, and to make the best resistance that the comparative strength of the ship and crew will allow. By the common law, the master has authority over all the mariners on board the ship—it being their duty to obey his commands in all lawful matters relating to the navigation of the ship, and the preservation of good order. But the master should in all cases use his authority with moderation, so as to be the father, not the tyrant, of his crew. On his return home he may be called upon by action of law, to answer to a mariner he has either beat or imprisoned during the course of the voyage; and unless he show sufficient cause for chastising the mariner, and also that the chastisement was reasonable and moderate, he will be found liable in damages. Should the master strike a mariner without cause, or use a deadly weapon as an instrument of correction, and death ensue, he will be found guilty, according to the circumstances of the case, either of manslaughter or murder.—*ABBOTT*, part ii., c. 4. The master may by force restrain the commission of great crimes: but he has no jurisdiction over the criminal. His business is to secure his person, and to deliver him over to the proper tribunals on his coming to his own country.

The master must not take on board any contraband goods, by which the ship and other parts of the cargo may be rendered liable to forfeiture and seizure. Neither must he take on board any false or colorable papers, as these might subject the ship to the risk of capture or detention. But it is his duty to procure and keep on board all the papers and documents required for the manifestation of the ship and cargo, by the law of the countries from and to which the ship is bound, as well by the law of nations in general, as by treaties between particular States. These papers and documents can not be dispensed with at any time, and are quite essential to the safe navigation of neutral ships during war. It is customary in bills of lading to insert a clause limiting the responsibility of the master and owners, as follows: "The act of God, enemies, fire, and every other dangers and accidents of the seas, rivers, and navigation, of whatever nature and kind soever, save risk of boats, as far as ships are

liable thereto, excepted." When no bill of lading is signed, the master and owners are bound, according to the common law. The most difficult part of the master's duty is when, through the perils of the sea, the attacks of enemies or pirates, or other unforeseen accidents, he is prevented from completing his voyage. If his own ship have suffered from storms, and can not be repaired with a reasonable time, and if the cargo be of a perishable nature, he is at liberty to employ another ship to convey it to the place of destination. He may do the same if the ship have been wrecked and the cargo saved, or if his own ship be in danger of sinking, and he can get the cargo transferred to another; and in extreme cases he is at liberty to dispose of the cargo for the benefit of its owners. The most celebrated maritime codes, and the opinions of the ablest writers, have differed considerably as to these points. According to the Rhodian law (Pand. l. 10, § 1) the captain is released from all his engagements, if the ship, by the perils of the sea, and without any fault on his part, become incapable of proceeding on her voyage. The laws of Oleron (art. 4), and those of Wisby (arts. 16, 37, 55), say that the captain may hire another ship; harmonizing in this respect with the present law of England. The famous French ordinance of 1681 (tit. *Du Frêt*, art. 11), and the *Code du Commerce* (art. 296), order the captain to hire another ship; and if he can not procure one, freight is to be due only for that part of the voyage which has been performed (*pro rata itineris peracti*). Valin has objected to this article, and states that practically it meant only that the captain must hire another ship if he would earn the whole freight. Emerigon (tom. i. p. 428) holds that the captain, being the agent not only of the owners of the ship, but also of the shippers of the goods on board, is bound, in the absence of both, to use his best endeavors to preserve the goods, and to do whatever, in the circumstances, he thinks will most conduce to the interest of all concerned; or what it may be presumed the shippers would do were they present. This, which seems to be the best and wisest rule, has been laid down by Lords Mansfield and Tenterden, as stated above, and may be regarded as the law of England on this point.

But to use the words of Lord Chief Justice Tenterden, "the disposal of the cargo by the master, is a matter that requires the utmost caution on his part. He should always bear in mind that it is his duty to convey it to the place of destination. This is the purpose for which he has been intrusted with it, and this purpose he is bound to accomplish by every reasonable and practicable method. What, then, is the master to do, if, by any disaster happening in the course of his voyage, he is unable to carry the goods to the place of destination, or to deliver them there? To this, as a general question, I apprehend no answer can be given. Every case must depend upon its own peculiar circumstances. The conduct proper to be adopted with respect to perishable goods, will be improper with respect to a cargo not perishable; one thing may be fit to be done with fish or fruit, and another with timber or iron; one method may be proper in distant regions, another in the vicinity of the merchant; one in a frequented navigation, another on unfrequented shores. The wreck of the ship is not necessarily followed by an impossibility of sending forward the goods, and does not, of itself, make their sale a measure of necessity or expedience; much less can the loss of the season, or of the proper course of the voyage, have this effect. An unexpected interdiction of commerce, or a sudden war, may defeat the adventure, and oblige the ship to stop in her course; but neither of these events doth of itself alone make it necessary to sell the cargo at the place to which it may be proper for the ship to resort. In these, and many other cases, the master may be discharged of his obligation to deliver the cargo at the place of destination; but it does

not therefore follow that he is authorized to sell it, or ought to do so. What, then, is he to do? In general, it may be said, he is to do that which a wise and prudent man will think most conducive to the benefit of all concerned. In so doing he may expect to be safe, because the merchant will not have reason to be dissatisfied; but what this thing will be, no general rules can teach. Some regard may be allowed to the interest of the ship, and of its owners; but the interest of the cargo must not be sacrificed to it. Transhipment for the place of destination, if it be practicable, is the first object, because that is in furtherance of the original purpose; if that be impracticable, return, or a safe deposit, may be expedient. A disadvantageous sale (and almost every sale by the master will be disadvantageous) is the last thing he should think of, because it can only be justified by that necessity which supercedes all human laws."—*Law of Shipping*, part iii., c. 3.

The master of a ship is liable for goods of which she is robbed, in part; and the reason, as Lord Mansfield stated, is, lest room should be given for collusion, and the master should get himself robbed on purpose, in order that he might share in the spoil. The master is, however, entitled to indemnify himself out of the seamen's wages for losses occasioned by their neglect. If any passenger die on board, the master is obliged to take an inventory of his effects; and if no claim be made for them within a year, the master becomes proprietor of the goods, but answerable for them to the deceased's legal representatives. Bedding and furniture become the property of the master and mate; but the clothing must be brought to the deck, and there appraised and distributed among the crew. If a master die, leaving money on board, and the mate, becoming master, improve the money, he shall, on allowance being made to him for his trouble, account for both interest and profit. The conditions under which seamen and apprentices are to be taken on board ship, and the obligations of the master with respect to them, are fully set forth in the article SEAMEN, in this work; and to it also the reader is referred for a statement of the duty of the master with respect to the registry of seamen, and the contributions, etc., due to the corporation for the relief of decayed seamen, their widows, etc. For the duties of the master as respects custom-house regulations, see the articles CONSULS, FREIGHT, SEAMEN, UNITED STATES, and INSURANCE, etc.; and for a further discussion of this important subject, see the excellent work of LORD TENTERDEN, *On the Law of Shipping*; PARSONS *On Commercial Law*; KENT'S *Commentaries*; CHITTY *On Commercial Law*, vol. iii.; and the articles CHARTER-PARTY, FREIGHT, etc.

Qualifications of Masters. Means by Which They Should be Ascertained.—Considering the important nature of the duties which the master of a ship has to perform, it has been customary in some countries to require that all persons, previously to their being nominated to act in that capacity, should undergo an examination by some public board respecting their knowledge of seamanship, and their possession of the various qualifications necessary to act as masters, and that none should be appointed without their being licensed by such board or other competent authority. We are inclined to think that this practice is consistent with sound policy. "The interposition of government in a case of incapacity, is not only absolutely just and necessary, but it is conformable to the highest authority. The famous French ordinance of 1681, has the following article:—'Aucun ne pourra ci-après être reçu capitaine, maître, ou patron de navire, qu'il n'ait navigué pendant cinq ans, et n'ait été examiné publiquement sur le fait de la navigation, et trouvé capable par deux anciens maîtres, en présence des officiers de l'Amirauté et du Professeur de l'Hydrographie, s'il y en a dans le lieu.' A like article has been inserted in the *Code de Commerce*; and in 1825, the French government issued

an ordinance specifying, in detail, the qualifications that are necessary before any one can obtain a certificate of his fitness to command a ship, either on a foreign or a coasting voyage; the persons who are to examine candidates; and the rules to be observed in the examination. A similar system has been adopted in Prussia; and we can not entertain a doubt that it would be of the greatest service were it introduced into this country. The authority of the master is so very great, and the trust reposed in him, including not merely the ship and goods of his employers, but the lives of the crew and passengers, so very extensive, that it is the bounden duty of the public to provide, in as far as practicable, that it be not committed to ignorant or incapable hands. At present the care of the lives of hundreds of passengers may be committed without check or control of any sort, and without their knowing any thing of the matter, to any incapable blockhead who may be able to prevail on an owner to appoint him to a ship. No doubt it is for the interest of the owner to appoint the best captain he can find; but he may be unable to form a correct estimate of the qualifications necessary for such a situation; and, though this were not the case, hundreds of circumstances may conspire to blind his judgment, and to make him select a master who is really unworthy. Hence the advantage of the preliminary examination by competent parties, which, if made efficient, would certainly afford a powerful guaranty against the chance of an unfit person being appointed."

Mastic, Mastik (Ger. *Mastix*; Du. *Mastik*; Fr. *Mastic*; It. *Mastiche*; Sp. *Almastica*, *Almaica*; Arab. *Arâh*). This resinous substance is the produce of the *Pistacia Lentiscus*, a native of the Levant, and particularly abundant in the island of Chios. It is obtained by making transverse incisions in the trunks and branches of the trees, whence the mastic slowly exudes. About 1500 cwt. are annually exported from Chios, part of which is brought to this country, packed in chests. The best is in the form of dry, brittle, yellowish, transparent tears; it is nearly inodorous, except when heated, and then it has an agreeable odor; chewed, it is almost insipid, feeling, at first gritty, and ultimately soft. Its virtues are trifling.—AINSLIE'S *Materia Indica*; THOMSON'S *Dispensatory*.

Mate, in a merchant ship, the deputy of the master, taking, in his absence, the command. There is sometimes only one, and sometimes two, three, or four mates in a merchantman, according to her size—denominated first, second, third, etc. mates. The law, however, recognizes only two descriptions of persons in a merchantman—the master and mariners; the mates being included in the latter, and the captain being responsible for their proceedings. In men-of-war, the officers immediately subordinate to the captain are called lieutenants. But the *master*, or officer whose peculiar duty it is to take charge of the navigation of the ship, has certain mates under him, termed *master's mates*, sometimes selected from the midshipmen. The boatswain, gunner, carpenter, etc., have each their mates or deputies, taken from the crew. See articles MASTER, SHIPPING, and CONSULS.

The mate is the next to the master on board, and upon his death or absence, the mate succeeds, *virtute officii*, to the care of the ship and the government and management of the crew. He does not cease to be mate in such cases, but has thrown upon him, cumulatively, the duties of master. He is *quasi* master, with the same general powers and responsibilities, *pro hac vice*, and with the preservation of his character and privileges as mate. He may sue in the admiralty for his wages as mate, and is entitled, in that character, to be cured, if sick, at the expense of the ship. The master, and even the consignees, may appoint a substitute in a foreign port, in cases of necessity. Even a supercargo, in cases of necessity, and acting with reasonable discretion, may bind the owner.

Matches, Lucifer. According to Dr. R. Boettger, in *Annalen der Chemie und Pharmacie*, vol. xlvii., p. 334, take phosphorus, four parts; nitre, ten parts; fine glue, six parts; red ochre, or red lead, five parts; smalt, two parts. Convert the glue with a little water by a gentle heat into a smooth jelly, put it into a slightly warm porcelain mortar to liquefy; rub the phosphorus down through this gelatine at a temperature of about 140° or 150° Fahr.; add the nitre, then the red powder, and lastly the smalt, till the whole forms "a" uniform paste. To make writing-paper matches, which burn with a bright flame and diffuse an agreeable odor, moisten each side of the paper with tincture of benzoin, dry it, cut it into slips, and smear one of their ends with a little of the above paste by means of a hair pencil. On rubbing the said end after it is dry against a rough surface, the paper will take fire, without the intervention of sulphur. To form lucifer wood matches, that act without sulphur, melt in a flat-bottomed tin pan as much white wax as will stand one tenth of an inch deep; take a bundle of wooden matches free from resin, rub their ends against a red-hot iron plate till the wood be slightly charred; dip them now in the melted wax for a moment, shake them well on taking them out, and finally dip them separately in the viscid paste. When dry, they will kindle readily by friction.

The Manufacture of Friction Matches.—Among articles of great demand that have become of importance, though apparently insignificant, there is nothing more worthy of notice than the friction or lucifer match. About 20 years ago chemistry abolished the tinder-box; and the burnt rag which made the tinder went to make paper. Slowly did the invention spread. The use of the match is now so established, that machines are invented to prepare the splints. In New York one match manufactory annually cuts up a large raft of timber for matches. The English matches are generally square, and thus 30,000 splints are cut in a minute. The American matches are round, and the process of shaping being more elaborate, but 4500 splints are cut in a minute. We find that a bundle of 1800 thin splints, each 4 inches long, is finally converted into 3600 matches. Without being separate, each end of the bundle is first dipped into sulphur—when dry, the splints adhering to each other by means of the sulphur, must be parted by what is called dusting.

Mats (Du. *Matten*; Fr. *Nattes*; Ger. *Matten*; It. *Stuoje*, *Stoje*; Port. *Esteiras*; Rus. *Progosshki*; Sp. *Esteras*), textures composed, for the most part, of flags, reeds, the bark of trees, rushes, grass, rattans, old ropes, etc. In this country mats are used for a great variety of purposes. The coarser sort are very largely employed in the packing of furniture and goods; in the stowage of corn and various other articles on board ship; in horticultural operations; in covering the floors of churches and other public buildings, etc. The finer sorts are principally employed in covering the floors of private houses. In Europe, mats are principally manufactured for sale in Russia, where their production is a prominent branch of national industry. They consist of the bark of the lime or linden-tree, and are known in this country by the name of *bast* mats. The Russian peasants manufacture this sort of material into shoes, cordage, sacks for corn, etc., and employ it in an endless variety of ways. In consequence of the vast quantities of matting that are thus made use of at home and sent abroad, the demand for it is immense. It is principally produced in the government of Viatka, Kostroma, and those immediately contiguous; and in the months of May and June, the period when the bark is most easily detached from the stem, the villages in the governments in question are almost deserted, the whole population being then in the woods employed in stripping the trees. The academician Köppen, who has carefully investigated this curious subject, estimates the average

annual production of mats in European Russia, as follows:

	Government of	Pieces.
Viatka.....		6,000,000
Kostroma.....		4,000,000
Kasan.....		1,000,000
Nijni Novgorod.....		1,000,000
Vologda, Tamboff, Simbirske, and Penza.....		2,000,000
Total.....		14,000,000

Köppen further estimates that about one fourth part of this vast quantity, or $3\frac{1}{2}$ millions, are exported, the rest being consumed at home. It is obvious from these statements that the annual destruction of lindentrees must be quite enormous; and it may well excite astonishment that they are not already all but exhausted. But whether it be from the rapid growth of the tree, or the vast extent of the forests in which it is found, the gloomy forebodings of Mr. Tooke as to its destruction have not hitherto been realized (*View of Russia*, iii., 262), and mats have not become either scarcer or dearer. It is, however, hardly possible to suppose that such should continue to be the case, seeing the rapid increase of population and of the consumption of matting in most parts of the empire. But in the event of its becoming scarcer, the inhabitants will have no difficulty in finding substitutes; so that we agree in opinion with those who think it would be bad policy to impose any restrictions on this branch of industry, in the view of averting an evil which may never occur; and which, if it do occur, may be easily obviated.—See *Supplément au Journal de l'Intérieur de Petersbourg*, for 1841.

Archangel is the principal port for the shipment of mats; and it appears that at an average of the years 1851 and 1852, the export of mats from that port amounted to 615,360 pieces a year. Large quantities are also shipped from Petersburg, Riga, and other ports; and most descriptions of Russian produce sent abroad are packed in mats. Various descriptions of reed mats are extensively manufactured in Spain and Portugal; some of them being very beautifully varied. In Spain large quantities of matting are made of the Esparto rush. Rush floor mats, and rattan table mats of a very superior description, are brought from China. They should be chosen clean, of a bright clear color, and should, when packed, be thoroughly dry. The mats of the Japanese are soft and elastic, serving them both for carpets and beds; they are made of a peculiar species of rush cultivated for the purpose. The bags in which sugar is imported from the Mauritius consist of matting formed of the leaves of a tree growing in the island, interwoven in broad strips. They are very strong and durable, and may be washed and cleaned without sustaining any injury. Being imported in large quantities, they are sold very cheap. (Beside the works already referred to, see MILBURN'S *Oriental Commerce*, and the valuable little work entitled *Vegetable Substances, Materials of Manufactures*, published by the Society for the Diffusion of Useful Knowledge, London.) It is probable that mats formed the first sort of woven fabrics produced by man; and it is worthy of remark that but few savage tribes have been discovered which have not attained to considerable eminence in their manufacture. On the coast of Guinea and other places in the west of Africa, pieces of fine mat, about a yard long, and of a pretty uniform texture, were denominated *makkutea*, and formed a sort of money; the value of commodities being rated and estimated in them.—MORELLET, *Prospectus d'un Dictionnaire de Commerce*. They enjoyed this distinction, no doubt, from their utility, and the great care and labor bestowed on their preparation. There is hardly an island in the South Seas in which the natives have not acquired great skill and dexterity in the making of mats. The finer sorts consist, generally, of dyed reeds or grass; and have a very brilliant appearance.

Maulmain, or **Moulmein**, a sea-port town of India beyond the Ganges, capital of the British province of Martaban, at the mouth of the great River Than-lueng, having north the Burmese town of Martaban, on the opposite side of the river, and west, the island of Balu, which serves as a natural breakwater to defend the port from the heavy seas that would otherwise be thrown in from the west, 100 miles S.S.E. of Rangoon, 27 miles N.N.E. of Amherst, lat. $16^{\circ} 30' N.$, long. $97^{\circ} 38' E.$ It was founded in 1825, when the site was selected by Sir A. Campbell as eligible as well for a commercial as a military station. It is about 200 feet above the level of the river, and extensive and fertile plains stretch eastward from it toward the mountains. Its port is good, and, from its extensive command of internal navigation, it promises to become a considerable emporium. The principal articles of export are teak-timber and rice; but there is also a considerable export of tobacco, stick-lac, betel-nut, ivory, cutch, cocoa-nuts, etc. The imports consist principally of European cotton goods and marine stores. The principal trade of the place has hitherto been carried on with Calcutta, Madras, Rangoon, and Penang; but in 1837 a direct trade was commenced with London. Owing to the facility with which supplies of teak-timber are obtained, ship-building is carried on very extensively. The population in 1848 was estimated at about 85,000. The principal article of commerce at Maulmain is teak-timber, with which from 25 to 30 ships annually load for England. The quantity of teak exported to that country from 1840 to 1847, and its estimated official value, was as follows:

Years.	No. of tons.	Price per ton.	Value.
1840.....	4,952	Rs. 25	£ 12,380
1841.....	6,399	25	15,983
1842.....	11,847	25	28,717
1843.....	10,523	30	31,554
1844.....	14,245	30	42,875
1845.....	13,360	40	53,442
1846.....	16,798	45	75,592
1847.....	7,873	50	39,365

Maulmain is a free port, on the same footing as Singapore, etc. There is no custom-house, and no duties on sea-borne goods: but foreign sugar, and sugar from Singapore and Malacca, is contraband. The coins in use are the Company's rupee and its subdivisions, the same as are current in Calcutta. The English sovereign is generally worth 11 rupees, and the Spanish dollar 220 rupees per 100 dollars. The weights are the Madras viss, equal to 3·065 lbs. avoirdupois, or, say, $3\frac{1}{4}$ lbs.; in this there are 100 ticals. The Bengal bazaar maund of 82 lbs., is also occasionally used. The measures principally used are called baskets: they are of uncertain size. A basket of cleaned rice is about 65 lbs. in weight; of mixed about 60 lbs.; paddy 51 lbs. Ship-building is well adapted to the place; and some of the finest teak-ships in the world have been built here. There are several dry docks, though not of a very efficient description, for repairing vessels. The British government bought here, during 1847, upward of 5000 tons of teak for the royal dockyards in England.

The *Maulmain Almanac* for 1852 contains the following statements: "The value of the imports by sea into Maulmain during 1850 amounted to 22,57,983 rupees, and the exports to 23,32,951 rupees; while in the first 10 months of 1851 the imports increased in value to 28,78,487, or £287,848, and the exports to 28,79,797 or £287,979. The town, which 20 years back contained only a few miserable fishing-huts, is thus shown to have a trade of nearly £600,000 a year, which is still increasing. The value of the piece goods imported from Europe during 1851 amounted to £63,229; coals, £5408, and iron £1849. Provisions were imported to the extent of £3496, and wines of the value of £492; military stores £1853, etc. The articles of export pre-

sent no remarkable feature of interest, except timber, the value of which in 1850 was £55,108, and in the first 10 months of 1851, £81,561. The town possesses a large and thriving European population, and 40 vessels, of an aggregate burden of 17,170 tons, have been launched from its dockyard since 1830. It contains three printing-presses, seven places of public worship (five of which are Protestant), besides eight schools, English and native."

Mauritius. The Isle of France was discovered by the Portuguese, A. D. 1500, but the Dutch were the first settlers, in 1598. The Mauritius was so called by the Dutch in honor of Prince Maurice; but it was first settled by the French in 1720; and is indebted for most part of its prosperity to the skillful management of its governor, the famous M. de la Bourdonnais. It was taken by the English in 1810, and was definitively ceded to them in 1814. Mauritius is fertile, a considerable part of the surface being, however, occupied by mountains. Its shape is circular, being about 150 miles in circumference. The climate is healthy, but subject to hurricanes. The principal product of the island is sugar, which is now cultivated to the almost total neglect of every thing else; but it also produces excellent coffee, indigo, and cotton. The blackwood, or ebony, of the Mauritius is very abundant, and of a superior quality. Very little corn or grain of any kind is raised in the island, most articles of provision being imported. Previously to 1825, the sugar and other articles brought to Great Britain from the Mauritius were charged with the same duties as the like articles from India; but in the above-mentioned year this distinction was done away, and it was enacted that all goods of the growth, produce, or manufacture of the Mauritius should, upon importation into any port of the United Kingdom, be subject to the same duties and regulations as the like goods being of the growth, produce, and manufacture of the British colonies in the West Indies; and that the trade with the Mauritius should be placed as nearly as possible on the same footing as that of the West India Islands. This was a great boon to the Mauritius, and the exports of sugar from it have since rapidly increased. According to Milburn (*Oriental Commerce*, ii., 568), they amounted, in 1812, to about 5,000,000 lbs. In 1818 they amounted to about 8,000,000 lbs.; and in 1824 to 23,334,553 lbs. Since 1826 nine tenths of the sugar raised in Mauritius has been shipped for the United Kingdom.

Sugar Trade.—The recent removal of the interdiction against the importation of coolies into the island of Mauritius has contributed largely to the prosperity of that colony, and materially augmented the sugar returns of 1856-57 over those of preceding years. Advices from the island, under date of July 11, refer in glowing terms to the prosperous condition of the sugar planters, and inform us of the gratifying fact—the more gratifying, inasmuch as the price of sugar has sensibly declined since that date—that "just as we are about to harvest the largest crop ever made, and the removal of the interdiction to emigration from India at the same time, has wonderfully improved the position of every landed proprietor, and has placed the colony in a high state of prosperity." In 1856 the shipments were 235,958,460 lbs., amounting in value to \$12,433,492, equal to 5-26 cents per pound. From January to May there were shipped 98,445,286 lbs., valued at \$6,042,500, or 6-13 cents per pound. The average price in 1856 was \$5 26 per 100 lbs.; and during the first five months of the present year it rose to \$6 13, showing an advance of 87 cents. The shipment of the old crop, it was believed, would be brought to a close by the end of July, and would reach nearly 220,000,000 lbs., against 235,000,000 lbs. produced in 1856. This, however, was the largest crop ever made on the island. The next crop (1857-58) it is estimated will reach 240,000,000 lbs., or 20,000,000 lbs. more than the crop now closed. We annex a statement

showing the production of sugar in Mauritius during the past seven years:

Years.	Pounds.	Years.	Pounds.
1850-51.....	116,000,000	1854-55.....	214,000,000
1851-52.....	186,000,000	1855-56.....	236,000,000
1852-53.....	160,000,000	1856-57.....	220,000,000
1853-54.....	202,000,000	1857-58.....	240,000,000

About one fourth of the number of mills in the island were already, in (July) in operation, and by the first of August sugar-making would be general. Some few parcels had reached market, and sold at high prices to complete a cargo to Australia. Thus, for vacuum claired \$9 75 to \$10; good and fine yellow, \$8 75 to \$9 25 per cwt. The news from Europe has, however, before this time arrested these advancing rates, and our next advices will show a considerable decline.

With the exception of molasses, ebony, and a few other unimportant articles, sugar is almost the only article of export. The principal imports consist of provisions, particularly grain and flour; the supply required for the use of the island being almost entirely derived from the Cape of Good Hope, Madagascar, India, Bourbon, etc. Earthenware, machinery, furniture, hardware, piece goods, wine, etc., are also largely imported. The total declared value of the exports from the United Kingdom to the Mauritius in 1852 amounted to £243,045. In 1851 the population of the Mauritius amounted, including military and seamen, to 183,506 souls, of whom between 9000 and 10,000 were whites. The population of the Seychelles—small islands dependent on the Mauritius—amounted at the same time to 8000. The emancipation of the slaves was little less injurious to the Mauritius than to the sugar colonies in the West Indies. But, owing to its more convenient situation, vast numbers of hill-coolies and other laborers from India have been enticed away and imported; and to this the increase of population and of the exports of sugar are wholly to be ascribed.

The principal imports from the United States are beef, pork, butter, cheese, candles, lard, and tobacco. The discriminating duties in favor of British produce and manufactures limit American exports to the articles above enumerated. *Ad valorem* duty 10 per cent., and specific duties various: On tobacco unmanufactured, 6 cents per pound; manufactured, 8 cents per pound; segars and snuff, 24 cents per pound. All foreign nations enjoy equal commercial privileges. The ports of the Mauritius are Mahebourg, Port Louis, and Seychelles Island.

There is some direct trade between the United States and the Mauritius. Occasionally a cargo of lumber arrives from California, but as yet this trade has not been profitable.

Maury, Matthew F.—Lieutenant Maury is a native of Virginia. He received an appointment as midshipman in the navy in 1825, and was ordered to the *Brandywine*, then fitting out at Washington, to convey the illustrious Lafayette to France. He returned home in that vessel, and in the spring of 1826 again sailed in her to the Pacific, and was absent about four years, returning in the *Vincennes* sloop. Passing his examination, he was again ordered to the Pacific station as master of the sloop-of-war *Falmouth*. From the time of his entrance into the navy he was a close student. He made himself master of the Spanish tongue, by studying a course of mathematics and navigation in that language. His work on "Navigation" he commenced in the steerage of the *Vincennes*, and it was completed in the frigate *Potomac*, to which he was ordered as acting lieutenant, when the *Falmouth* was about to return to the United States. When again Lieutenant Maury came home, he was regularly promoted to a lieutenancy, and was appointed astronomer to the South Sea Exploring Expedition, under Commander Thomas Ap-Catesby Jones. Soon after that officer gave up the command of the expedi-

tion, Lieutenant Maury retired from it also, and was afterward put in charge of the dépôt of charts and instruments which has served as a nucleus for the national observatory and hydrographical office of the United States, of which he now has charge. His labors in organizing the observatory were great and efficient, and he was successful in at once putting it on a respectable footing. The investigations of Lieutenant Maury as to the winds and currents of the ocean, the charts which he has constructed, mapping out better paths and more rapid routes across the trackless depths, and the incalculable benefits which he has thus bestowed upon the mercantile and marine interests of the world, are well known. See *South. Lit. Mess.*, vii., 560, ii., 454; *HUNT'S Mag.*, xviii., 516.

Mayagüez, or Mayaguas. This is the most important port on the island of Porto Rico. It possesses large capital, and contains several costly and fine dwellings. Rapidly rebuilt after the great conflagration, by which it was destroyed in 1841, Mayagüez has gained in prosperity; having been before that disaster but an inconsiderable village, it has now become the most important city on the island. The surrounding district produces large quantities of coffee, though, since 1840, there has been a sensible diminution in that article. For that year, the exports amounted to 80,000 quintals, while in 1853 they fell to 43,500 quintals. The coffee of Mayagüez stands in such high repute in America and Germany, that purchases are frequently made in advance of the crop. Hence comes also the best sugar of the island, which is mostly imported in American bottoms into the United States. In 1853, there arrived 83 American vessels, of 13,272 tons, carrying freight to the value of \$223,600; and there cleared 76, of 12,680½ tons, taking cargoes worth \$460,013. The molasses from this port is always of the best quality, and much sought after by American and English shippers. Besides coffee, in 1853 there were exported 165½ hogsheads of rum; 8,221 hogsheads of molasses; 20,766,033 pounds of sugar; but only 4,463 pounds of tobacco, showing a decrease, compared with the preceding year, of over 50,000 pounds. There were, besides, 1,000 hogsheads of rum mixed with tabasco pepper (*malagueta*), a preparation constituting now a new and profitable branch of domestic industry. Imports from the United States and England are generally similar to the imports into San Juan.

Mead, or Metheglin (Ger. *Mehl, Meth*; Du. *Meede, Meedrank*; Fr. *Hydromel*; It. *Idromele*; Rus. *Lipez*), the ancient, and for a long time, the favorite drink of the northern nations. It is a preparation of honey and water.

Meal (Ger. *Mehl*; Du. *Meel*; Fr. and It. *Farine*; Sp. *Farina*; Rus. *Muka*; Lat. *Farina*), the edible part of wheat, oats, rye, barley, and pulse of different kinds, ground into a species of coarse flour. See CORN, FLOUR, WHEAT, and BREADSTUFFS.

Measures and Weights. They were invented by Phidion of Argos, 869 B.C.—*Arund. Marbles*. They became general in most countries soon afterward; and were very early known in England. Standards of weights and measures were provided for the whole kingdom by the sheriffs of London, 8 Richard I., A.D. 1197. Standards were again fixed in England, 1257. They were equalized for the United Kingdom in 1825. *Measure*, in legal and commercial sense, denotes a certain quantity or portion of any thing bought, sold, valued, or the like. See WEIGHTS and MEASURES.

Meats, Preserved. The interest which has of late attached to the subject of such meats, warrants us in bringing under examination the principles and practice on which this important branch of industry is based. The art itself is of modern invention, and differs in every respect from the old or common modes of preserving animal food. These, as is well known,

depend on the use of culinary salt, saltpetre, sugar, or similar substances, which, when in solution, do not possess the power of absorbing oxygen gas, and therefore cut off effectually all access of air to the meat they protect. It might be imagined that water alone would answer this purpose; but the contrary is the case, for pure water absorbs oxygen, and is, therefore, all the less adapted for preserving meat, in proportion as it is free from saline matter, since it is then so much the more capable of combining with oxygen gas. Thus, snow, which is pure water crystalized, has a power of producing the panary fermentation when mixed with flour; and this it is able to do in consequence of the large quantity of gaseous oxygen which it contains. Similarly, rain water, and especially dew, will bring on the putrefaction of animal matters much sooner than spring water; and the vulgar prejudice respecting the effect of the moon's rays in accelerating the corruption of meat, is, beyond doubt, dependent upon the fact, that during clear moonlight nights, there is always a large deposition of dew; and this having fallen in a minutely divided state, possesses the largest amount of free oxygen, which pure or distilled water is capable of absorbing from the atmosphere, and, therefore, has a proportionate power of decomposing—just as it also has of bleaching. Thus far our remarks have been applied solely to raw or uncooked meats; but the practical bearing of the object which we have in hand really points to those which are more or less cooked or preserved. It is with reference to provisions of this kind, that a parliamentary inquiry is now in progress; and we can not do better than show the great importance of such a subject to a maritime nation, by stating, that these provisions, when sound, are an absolute preventive of sea-scurvy—a disease said, on good authority, to have destroyed more life, and to have done more damage to commerce, than all the enemies and tempests which shipping ever encountered. We need not go far in search of evidence to prove the fearful havoc caused by this disease; for we are well furnished by the history of Admiral Anson's memorable expedition, to damage the interests of Spain in the Pacific Ocean, by intercepting the annual treasure-ship or galleon on her return to Europe. In spite of every thing that care and experience could do, Anson tells us that he lost, in all, fully four fifths of his people by scurvy. Of 400 men with whom the *Centurion* departed from England, only 200 lived to reach the island of Juan Fernandez, and no more than 8 of these were capable of doing duty; and but for a supply of others at St. Helena, there would not have been strength remaining to carry the ship to her anchorage. After describing, in the most pathetic manner, the dreadful sufferings of his crew, and rejoicing at the improvement caused by the sojourn at Juan Fernandez, the writer concludes—"I therefore shall sum up the total of our loss since our departure from England, the better to convey some idea of our past sufferings and our present strength. We had buried on board the *Centurion*, since leaving St. Helena, 292 men, and had remaining on board 214. This, will, doubtless, appear a most extraordinary mortality; but yet, on board the *Gloucester* (his other ship of war) it had been much greater: for, out of a much smaller crew than ours, they had buried the same number, and had only 82 remaining alive. It might," continues Anson, "have been expected that, on board the *Tryal* (a provision ship), the slaughter would have been most terrible; but it happened otherwise, for she escaped more favorably than the rest, since she only buried 42, and has now 89 remaining." The real object of the voyage was, however, not yet commenced; though out of 960 men with which the three vessels left England, 626 were dead before this time.

It is almost superfluous to multiply instances of the same kind; though, in order to demonstrate the great

utility of preserved meats in the navy, we shall give two or three other examples.

In October, 1788, the fleet of Admiral Keppell came into harbor, and, before the end of December, had sent 3,600 sick to the hospital at Haslar. In 1779, the Channel fleet under Sir C. Hardy, sent 2,500 to the hospital, and retained more than 1000 on board for want of hospital accommodation. Within 4 months during a subsequent year, 6,064 were sent to Haslar, and Sir H. Hawkins asserts, that, within the space of 20 years, to his own knowledge, not less than 10,000 men had died of scurvy. When Admiral Geary's fleet returned to Portsmouth, after a 10 weeks' cruise in the Bay of Biscay, 2,400 men were ill of the scurvy; and the gross number of admissions into the hospital that year was 11,732, of whom 909 died. Now the highest medical authorities in this kingdom, and also on the continent, have all expressed the opinion that this fearful disease and mortality is altogether caused by the use of salt provisions; and the evidence of a host of navy surgeons and officers can be adduced to corroborate the truth of this view; therefore, not only motives of humanity, but also of self-interest, imperatively demand that; wherever unsalted provisions can be used, their employment should be insisted on by the voice of the entire nation. Such being the case, it becomes necessary for us to inquire how far the art of preserving unsalted provisions has reached that degree of uniformity, and certainty of result, which alone can warrant their introduction into the navy.—*Brande's Diet.*

Meat-Biscuits.—The American *meat-biscuits*, now coming extensively into use, are a kind of preserve differing from most others. The manufacture is located chiefly at Galveston, Texas. The prairies of that country abound in cattle of good quality, which are procured at so low a price as to justify the manufacture on the spot, thus saving the expense of transporting the useless portion of the meat. The meat-biscuit contains in a concentrated state and portable form all the nutriment of the meat, combined with wheaten or other flour. One pound of this biscuit is said to contain the nutriment or essence of five pounds of good meat; a 22-gallon cask can contain the concentrated nutriment of 500 pounds of fresh meat with 70 pounds of flour. As compared with corn or flour, the meat-biscuit is said to be less liable to heating or molding during long voyages, and less subject to the attacks of weevils and other animals. It may be easily preserved in all climates, and for a great length of time; though it is not pretended that it possesses the lasting quality of well-canistered food. The United States' Army in Mexico was supplied with these meat-biscuits; and their use is rapidly spreading in America. The meat-biscuits are made in the following way:—Good beef is selected, and boiled by steam until all the nutritive qualities are extracted. The liquor is strained, allowed to settle, and then evaporated by heat to the consistence of thick treacle; the fat is skimmed off as it rises. While the liquor is yet hot, flour is added to it, and both are kneaded up into a stiff dough, which may then be rolled, pressed, made into biscuits, and baked. The biscuits are either kept whole or are ground to powder, and are preserved in air-tight cases. For making into soup the powdered biscuit is mixed with hot water, and boiled with the addition of salt and other condiments. Professor Lindley, in a lecture before the Society of Arts, expressed an opinion that the meat-biscuit "is one of the most important substances which the exhibition of 1851 has brought to our knowledge."

Meat, Prices of. *Prices of Meat and Bread in Cities.*—The following table of the prices of wheat-bread, beef, veal, and mutton, in 20 cities of the world, near November 15th, 1856, is derived from the report of a society in the city of New York for the improvement of the condition of the poor; the quantity of

each pound avoirdupois, and the price in cents and hundredths of a cent, American weight and money:

	Wheat bread.	Beef.	Veal.	Mutton.
	Cts. per lb.	Cts. per lb.	Cts. per lb.	Cts. per lb.
Rome	5.53	7.23	7.67	9.31
London	5.70	11.74	16.68	15.57
Paris	4.44	11.33	14.04	13.62
Glasgow	5.46	13.62	13.62	12.62
Liverpool	4.63	12.90	15.90	12.90
Dublin	5.08	12.63	15.57	12.63
Antwerp	5.44	12.90	13.62	15.40
Brussels	4.63	12.76	12.76	12.76
Amsterdam	7.49	14.33	17.24	14.33
Dantzic	6.63	10.04	13.62	9.10
Oporto	5.44	8.63	12.93	9.70
Santander	4.94	6.89	8.00	8.00
Nice	4.63	11.06	11.92	11.92
Milan	5.02	10.30	10.30	7.15
Constantinople	8.76	8.17	8.17	8.17
Smyrna	5.08	6.55	10.00	10.00
New York	5.75	13.25	14.50	15.06
Boston	5.25	14.00	14.00	13.00
Philadelphia	5.25	11.50	12.50	13.50
Cincinnati	4.00	10.00	9.50	10.00

Medals, are pieces of metal, generally in the form of a coin, and impressed with some peculiar stamp, intended to commemorate some individual or action. Medals are of very different prices—varying according to their rarity and preservation, the fineness of the metal, the beauty of the workmanship, etc.

Mechanics. The time when the simple mechanical powers were first introduced is so uncertain, and perhaps so little known, that they have been ascribed to the Grecian and other deities of the heathen mythology—for instance, the ax, the wedge, wimble, etc., are said to be the invention of Dædalus. We know nothing of the machinery by which the immense masses of stone which are found in some of the ancient edifices were moved and elevated.

	Year
The first writing on mechanics was by Aristotle, about.....	B. C. 320
The Statera Romana invented.....	..
The fundamental property of the lever and other instruments was demonstrated by Archimedes.....	205
The hand-mill, or quern, was very early in use; the Romans found one in Yorkshiro.....	..
Cattle mills, <i>mola funicularia</i> , were also in use by the Romans, and in parts of Europe.....	..
Saw-mills are said to have been in use at Angsburg. A. D. Theory of the inclined plane investigated by Cardan, about.....	1540
Work on Statics, by Stevinus.....	1586
Theory of falling bodies, Galileo.....	1638
Theory of oscillation, Huygens.....	1647
Laws of collision, Wallace, Wren.....	1662
Epileycloidal form of the teeth of wheels, Roemer.....	1675
Percussion and animal mechanics, Borelli; he died.....	1679
The water-mill was probably invented in Asia; the first that was described was near one of the dwellings of Mithridates.....	B. C. 70
A water-mill is said to have been erected on the river Tiber, at Rome.....	50
Floating mills on the Tiber.....	A. D. 536
Tide-mills were, many of them, in use in Venice, about	1073
Wind-mills were in very general use in the twelfth century.	..
Application of mechanics to astronomy, parallelism of forces, laws of motion, etc., Newton.....	1679
Problem of the catenary with the analysis, Dr. Gregory	1697
Spirit level (and many other inventions), by Dr. Hook, from 1660 to.....	1709
The Mechanics' Institute in London was formed in.....	1823
Mechanics' Institute in New York formed.....	1838

Mediterranean Pass. The nature of this sort of instrument has been described by Mr. Reeves, in his *Treatise on the Law of Shipping*, as follows:—"In the treaties that have been made with the Barbary States, it has been agreed, that the subjects of the King of Great Britain should pass the seas unmolested by the cruisers of those States; and for better ascertaining what ships and vessels belong to British subjects, it is provided that they shall produce a *pass* under the hand and seal of the Lord High Admiral, or the Lords Commissioners of the Admiralty. In pursuance of these treaties, passes are made out at the Admiralty, containing a very few words, written on parchment, with

ornaments at the top, through which a scolloped indenture is made; the *scolloped tops* are sent to Barbary; and being put in possession of their cruisers, the commanders are instructed to suffer all persons to pass who have passes that will fit those scolloped tops. The protection afforded by these passes is such, that no ships, which traverse the seas frequented by these rovers, ever fail to furnish themselves with them, whether in the trade of the East Indies, the Levant, Spain, Italy, or any part of the Mediterranean; and from the more particular need of them in the latter, they, no doubt, obtained the name of *Mediterranean passes*. For the accommodation of merchants in distant parts, blank passes, signed by the Lords of the Admiralty, are lodged with the governors abroad, and with the British consuls, to be granted to those who comply with the requisites necessary for obtaining them. As this piece of security is derived wholly from the stipulations made by the crown with a foreign power, the entire regulation and management of it has been under the direction of his majesty, who, with the advice of the privy council, has prescribed the terms and conditions on which these passes shall be granted. Among others, are the following:—They are to be granted for none but British-built ships, or ships made free, navigated with a master and three fourths of the mariners British subjects, or foreign Protestants made denizens. Bond is to be given in the sum of £300 if the vessel is under 100 tons, and in £500 if it is of that or more, for delivering up the pass within 12 months, unless in the case of ships trading from one foreign port to another; and such passes need not be returned in less than three years. It has been found expedient, at the conclusion of war, and sometimes during a peace, to recall and cancel all passes that have been issued, and to issue others in a new form. This has been done for two reasons. 1st. That these useful instruments, by various means, either accidental or fraudulent, came into the hands of foreigners, who, under cover of them, carried on in security a trade which otherwise would belong to British subjects, and which had been purchased by the crown, at the expense of keeping up this sort of alliance. 2d. That the Barbary States complained that, adhering to the rule of fitting the other part of the indenture to the passes, they were obliged to suffer ships to pass that did not belong to British subjects." We have thought it right to give this explanation, though, since the occupation of Algiers by the French, and the disappearance of the corsairs of the other Barbary powers, Mediterranean passes have fallen into disuse.

Mediterranean Sea (*Mare Internum*), an inland sea inclosed by Asia on the east, Africa on the south, and Europe on the north, and communicates with the Atlantic by the Strait of Gibraltar on the west, situated between lat. $30^{\circ} 20'$ and 43° north, and long. 6° and $37^{\circ} 30'$ east. Within this space is included the Tyrrhennian, Ionian, and Adriatic Seas, and the Sea of the Grecian Archipelago. The Sea of Marmora, the Black Sea, and the Sea of Azov, which communicate with it by the Strait of the Dardanelles, are considered as separate seas. The principal rivers which flow into the Mediterranean are the Ebro, Rhone, Arno, and the Tiber in Europe, and the Nile in Africa. The principal islands are Sicily (which divides the Mediterranean into an eastern and western portion), Cyprus, Crete, Malta, and the Ionian Islands in the east, and Sardinia, Corsica, and the Balearic Islands in the west. The most important gulfs are Taranto in Italy, Lepanto in Greece, Syrtis and Cades in Barbary, in the eastern portion; and Valencia in Spain, Lyon in France, Genoa in Italy, and Tunis in Africa, in the west. The winds of this sea are very variable; the tides are little felt, and very irregular. Fish is abundant in the Mediterranean, especially tunny, anchovies, pilchards, and mackerel, and the finest coral, sponge, and ambergris, are procured. The Med-

iterranean was called by the Hebrews "the Great Sea." The Phenicians are the first people known to have extended their commerce along its coasts; the Greeks afterward disputed it with them. After the destruction of Carthage, the Romans were sole masters of its shores; in the middle ages, the Venetians monopolized its commerce, and at present, England, by the possession of Gibraltar, Malta, and the Ionian Islands, possesses the greatest influence on its destinies. See GIBRALTAR.

It is estimated that three times as much water as the Mediterranean receives from its rivers is evaporated from its surface. *Vide* article PHYSICAL GEOGRAPHY, *Encyclopædia Britannica*. This may be an over estimate, but the fact that evaporation from it is in excess of the precipitation, is made obvious by the current which the Atlantic sends into it through the Straits of Gibraltar; and the difference, we may rest assured, whether it be much or little, is carried off to modify climate elsewhere—to refresh with showers and make fruitful some other parts of the earth. The great inland basin of Asia, in which are Aral and the Caspian Seas, is situated on the route which this hypothesis requires these thirsty winds from south-east trade-wind Africa and America to take; and so scant of vapor are these winds when they arrive in this basin that they have no moisture to leave behind; just as much as they pour down they take up again and carry off. We know that the volume of water returned by the rivers, the rains and the dews, into the whole ocean, is exactly equal to the volume which the whole ocean gives back to the atmosphere; as far as our knowledge extends, the level of each of these two seas is as permanent as that of the great ocean itself. Therefore, the volume of water discharged by rivers, the rains, and the dews, into these two seas, is exactly equal to the volume which these two seas give back as vapor to the atmosphere.—MAURY, *Phys. Geog.*

Commerce of the Mediterranean.—The United States' Consul at Trieste communicates to the Department of State, the following details as to increased steam navigation with the southern ports of the Mediterranean: "The project of establishing steam communication with the Mediterranean has long been a favorite one with a respectable class of merchants in the Atlantic States; and, if I am not mistaken, the experiment of a line to Genoa was tried some years ago, but without success. There is every prospect of the accomplishment of this important object, under the immediate patronage of the Austrian government. It is, in fact, proposed to construct three first-class steamships of 3200 tons, builder's measurement, and 1000 horse-power, to run between Trieste and New York, making 15 trips each way per annum, and touching at Corfu, Malta, Algiers, Cadiz, and Lisbon. The vessels would carry the mails, passengers, and goods from the East, received by the Lloyd's steamers and those of the Oriental Steam Navigation Company, and probably those of the greater part of the cities and ports of the Mediterranean, to the United States, and *vice versa*. The running time west, from Trieste to New York, would be 20 days and 14 hours; and east, from New York to Trieste, 19 days 5 hours, including stoppages. The steamers would be built in New York, but sail under the Austrian flag. The originator of this enterprise is Mr. Loosey, the Austrian consul-general at New York—a gentleman of great experience, who has resided for the past 12 years in the United States. I am credibly informed, also, that the new minister of finance, Baron de Bruck, warmly favors the scheme. He was formerly, indeed, a leading merchant in Trieste, and the founder of the Austrian Lloyd's Steam Navigation Company. If the project succeeds, its effect upon the commercial and political relations of the United States and southern Europe must be very great. While it will prove a stimulus to exertion, by opening new channels for the industry of the Old

World, it must necessarily increase the demand for the precious and abundant raw material and manufactures of the United States.

"The amount of goods exported direct from Trieste to the city of New York, during the years 1850, 1851, 1852, and 1853, amounted to \$2,085,282; and the amount of imports during the same years, from New York direct, amounted to \$1,550,515. The amount of imports during the year 1852, from the ports of Philadelphia, Boston, Savannah, Richmond, Baltimore, Mobile and New Orleans, amounted to \$1,628,700. But it would be very unfair to take these figures as any criterion of the business of the future. This country had then but partially recovered from the financial and political embarrassments of 1848-9, and confidence, without which commerce necessarily dwindles, had not been firmly established; while the means of internal communication and transportation were comparatively limited. Even now the success of this steamship project depends, in a great measure, upon the completion of the balance of 60 miles of railway between Trieste and Vienna—the last link in the chain which connects Trieste with the principal cities of Europe. This work is, however, in a state of forwardness, and will, probably, be finished in the course of a twelvemonth." See TRIESTE and TURKEY.

Commerce of the United States with the Ports of the Mediterranean.—The trade of the United States with the countries on the Mediterranean and in the Levant, is very irregular, and not yet developed. The statistics which we possess are of some value. MacGregor gives the best report on general commerce, and speaks, in regard to the Mediterranean trade in 1842, as follows:

"The commerce of the United States to the ports of the Mediterranean and Adriatic, consists chiefly in the export of cotton, sugar, dried and salt fish, whale-oil, etc., which are shipped to Trieste and other Austrian ports. The American ships take home in exchange wines and other manufactured articles. To Spain, the United States export cotton and other produce, for which they take wines, etc."

A few words, with some statistics, will suffice to show the condition of American commerce. Since that time this commerce has increased, and in some respects received a considerable impulse, but on the whole it presents nothing of much greater importance. The causes are clear: the Americans have paid, until now, very little attention to this important trade; they are not enough acquainted with it, while their successful rivals are thoroughly conversant in its sources, chances, and necessities. English and French merchants have, so far, the control of commerce in these important regions; they have agencies and branch houses—English, French, and Austrian steamers running in the Mediterranean regularly from port to port; while the Americans have not a single agency, and not one of their numerous steamers, such as navigate the ocean, the Pacific, and numerous rivers, are to be found in the Mediterranean and Adriatic. Notwithstanding the passiveness of American commerce in these regions, it is still progressive, as the following statistics will show:

The exports and imports of the United States, in the year 1842, were as follows:

	Exports.			Imports.
	Domestic produce.	Foreign produce.	Total.	
Gibraltar	\$466,937	\$116,961	\$582,998	\$12,268
Malta	11,644	8,261	19,905	7,300
France on the Mediter.	1,674,750	78,568	1,748,438	953,678
Spain	221,598	16,578	238,476	1,065,640
Italy	515,575	804,940	820,517	987,528
Sicily	287,861	195,797	493,658	539,419
Trieste	708,179	186,526	884,705	413,210
Turkey	125,451	76,515	202,036	870,248

From Tuscany and Sardinia we have no reports of 1842. The exports from Morocco to the United States

for the same year was \$98,500. In 1853 they amounted to \$84,000, all of which were in foreign bottoms.

The same in the year 1854, was:

	Exports.			Imports.
	Domestic produce.	Foreign produce.	Total.	
Gibraltar	\$446,445	\$81,327	\$527,772	\$59,678
Malta	148,528	21,245	169,373	83,695
France on the Mediter.	1,218,786	201,874	1,420,160	2,889,372
Spain	3,212,368	31,040	3,243,408	1,579,074
Italy	1,586,327	165,439	1,751,766	971,074
Sicily	246,151	18,900	260,051	959,300
Sardinia	188,806	2,020	190,826	85,676
Tuscany	11,785	37,082	48,767	1,152,717
Trieste & oth. Aus. ports	1,697,319	206,290	1,903,609	741,919
Turkey	219,496	105,702	325,198	803,114

From these figures it can be seen that the commerce in question has, as it regards some States, greatly increased. The most remarkable is that of Spain, in the Mediterranean. The export to that country has augmented 13 times. Also an important increase is seen in Malta, Italy, Trieste, and Turkey. The commerce of France, however, on the Mediterranean, diminished considerably, also that of Sicily. From both these reports we learn also, that the commerce of the United States in the Mediterranean has not been developed in such an admirable manner as with other transatlantic countries, to which numerous mail lines and other steamers are running. What influence these communications have on trade and commerce, the comparison between the trade of France on the Mediterranean, and of France on the Atlantic, shows:

EXPORT TO, AND IMPORT OF, THE UNITED STATES IN THE YEAR 1854, FROM FRANCE.

	Atlantic.	Mediterranean.
Export—Domestic prod....	\$29,749,466	\$1,218,756
Foreign ".....	978,855	201,874
Total.....	\$30,727,321	\$1,420,160
Import.....	32,892,021	2,889,372

The commerce in the first direction, where the steam-line exists from Havre to New York, shows \$63,013,842; and the commerce between the United States and France on the Mediterranean, where no steam communication exists, was only \$4,309,532. The difference is enormous! Marseilles is much behind Havre, which, by its direct steam communication with New York, attracted the greatest part of commerce. See FRANCE.

Let us take, now, a view of the countries on the Mediterranean in general. All depend for the expedition of their letters upon the English post-offices, if they do not prefer to send them via Trieste, Ostend, and Liverpool; for in both cases the postages are very high and expensive, and, as the letters have to pass through several different offices, the loss of time is, in both ways, very great. These difficulties, and we might add nuisances, have an influence in keeping the commerce back, and to them it is chiefly attributable that the commerce of these countries with the United States has progressed no faster. Mr. Baker, who lived for several years as American consul in the Mediterranean, and observed pretty closely the great progress of commerce between these parts of the globe, hinted to his countrymen, several times, to pay more attention to the Mediterranean trade.

"Thousands, on both sides of the Mediterranean," says Mr. Baker, "prefer American to other produce. Especially are flour and rice highly prized. The commerce with dried and salted fish is profitable. The greatest part of the staves and lumber which are used on the shores of Spain, are mostly imported from the United States. Also other produce, such as biscuit, different kinds of oats, sperm-oil, spermaceti candles, lard and provisions, find here ready and good markets. The port of Malaga is much frequented by American vessels; the same may be said of Barcelona, the great emporium of Spanish wines and brandies, where American import articles find good sale. But very

few American vessels visit Cartagena, Alicante, and Valencia, where American produce would be salable, with profit.

The cargoes which American ships take up in those places are mostly brandies, red and white wines, silk goods, shawls, cloths, woolen goods, paper, laces, saffron, nuts, raisins, and other dried fruits, olives, etc. As to the commerce with France, only Marseilles participates in it, and this very little, in comparison with the great trade with the United States. The advantages of Havre have already been stated. Of commercial ports, we name also Genoa, Leghorn and Messina. The old plan to connect Genoa, by a regular steamship line, with New York, has now been taken up anew, and will soon be in readiness. This connection is expected to give a powerful impulse to the Italian commerce, and also to awaken greater interest on the part of the Americans. Until now the Italian commerce with the United States has not been of much importance, compared with what it would be, had it frequent and regular communication. Of American articles, there are sugars of Louisiana and Cuba, as, also, American grain, highly appreciated, imported by Genoa, and again shipped to the Levant and other smaller ports. On the other hand, the articles imported from Genoa are many, and in the United States in fair demand. They consist in fresh and dried fruits, olive-oil, soap, silk goods, damasks, velvets, linen, gloves, ribbons, liquors, prepared marble, etc. American articles for export to Genoa, are indigo, dye-roots, honey, provisions, butter, etc. Rosin and pitch are bought freely in Genoa, and re-sold to other smaller ports in the Mediterranean.

The commerce of the United States with Tuscany presents interesting features. Tuscany exported, in the year 1854, to the United States, a value of merchandise of \$1,152,717—much more than Trieste and the other Austrian ports together. The United States exported to Tuscany, of her own and foreign produce, not more than \$48,767. This small figure is more remarkable, as American produce is in fair demand at Leghorn. For Sicily, the ports of Palermo and Messina are the most prominent. From these are exported to the United States, wines, fruits, extracts, oils, brandies, argols, tongues, sardines, prepared marble, senna, cantharides, soap, leeches, etc. The Americans export there stockfish, salted and dried meat, sugar, zinc, lead, indigo, cochineal, dye woods, cotton, cocoa, coffee, flour, tobacco, etc. The commerce of Sicily is important. England has, however, as will be seen, the lion's part.

As MacGregor relates, the import in Sicily was, in the year 1844, £744,690; the export, £1,035,026. The whole commerce with the exterior, £1,779,656. Of this the United States exported only £58,489, and imported from there, £224,988. In the year 1854, the United States exported to Sicily only \$260,051 (£52,000); and imported from there, \$959,300 (£191,860), which shows a decrease on both sides. This decrease is a peculiar fact, if we consider the quantity and quality of the articles there consumed. It can only be explained by the great activity of England, and the little attention paid to this quarter by Americans. Busied with the great commercial projects on the Atlantic, and culture in the interior, they have not yet found time to pay more attention to this commerce, and not being much posted up in the market prices in Sicily, they ignore partly the importance of that trade.

It is now time to act with energy. The energy will not be missed, while the communication with the Mediterranean will be facilitated and trade increased. The commerce of the United States with Trieste and other Austrian ports, is not satisfactory to the great wants in the trans-Atlantic markets, nor to the sales of Austrian manufactures, which are considered of very good quality. Cloths, woolen goods, linen and silk

goods, can be had from Austria, at cheap prices and in fair quality. Nevertheless, the import of the said articles, in 1853, was \$73,964,287. Other Austrian articles would also find good market here, by a regular and quick communication.

As to the Austrian ships, very few sail into the Atlantic. In the year 1854 only four Austrian ships came to the United States. Considering the passivity with which the commerce with the United States is regarded, it will not surprise us that so little is done between them. What has been exported from Austria to the United States, during 1854, via Trieste, and other Austrian ports, was not more than \$741,919; in fact a great sum compared to the many good industrial articles, and its navigation, as also its ports, of which especially Trieste and the world-renowned Venice seem to be called to play a great part in the future commerce of the United States. The export of the United States to Trieste is much larger than their import from Austria, and was, in the year 1854, not less than \$1,903,609.

The direct commerce of the United States with Turkey is fixed by the following data: to Turkey, the United States exported, in 1854, merchandise in value of \$825,198; importing from there \$808,714. This is a very poor trade, if we consider the means of both parties. This trade is in its first development and will soon be increased, if the Americans will take hold of it with their usual enterprise. Greece and the Ionian Islands are entirely forgotten by the Americans; no direct commerce is carried on from there to the United States.

Mr. Baker says, "The commerce with the Morea would be of the greatest importance to the Americans, if they would only attempt and explore it. The great quantity of produce would easily procure re-cargo to American vessels. The demand for zinc, lead, etc., is permanent, also of fish; rice, flour, and other American produce, would find easy market. The same," says Mr. Baker, "of the Ionian Islands, where a good trade would result."

Indirect Commerce.—As to the indirect commerce of the United States to the Mediterranean, there are very meagre data. The total export of the United States in 1854, to all ports in the Mediterranean, of goods not produced in the United States, was only \$953,417. These foreign productions consist in coffee, tea, cocoa, leather, skins, pepper, rum, dye-woods, sugar from Cuba, segars, cochineal, and honey.

As to the American indirect import from those countries, it is difficult to find it out. The lists of navigation give only the direct trade; and at the nominations of the value of importation from the States on the Mediterranean, no port is named from where sent.

England, which has the greatest trade with the Mediterranean ports, and which is from there extended in all directions, keeps no direct ship communication from there to the United States. Of the 8508 British ships, tonnage 1,748,380, which came, in 1854, to the United States, not more than 820 tons were from Gibraltar; not one single ton from Malta! The cause is natural. England finds it more in her interest to do the commercial trading with the Mediterranean and Levantine produce to the United States, not directly, but from Liverpool and other ports. The advantage of this proceeding is easily explained.

The English merchants receive, through Liverpool, regular reports by the Collins and Cunard steamers, of the standing of the trans-Atlantic markets. This puts them in the way to use there all the chances offering to dispose of their rich stocks of Mediterranean produce with advantage, to the United States. The same is the case in other ports of the European continent, which follow the same policy. In this way considerable quantities of red and white wines, fruits, drugs, and other produce of the Mediterranean, come by indirect commerce to America.

We take, for example, the corinthes, which are exported from Zante and Corfu to England, and other European ports, from where they are sent to the United States in small quantities. It is the same with other articles, to countries where the Americans have no direct communication. In addition to the ports already named, we can add, under the same category, the rich islands of the Turkish dominions in Europe and Asia, viz.: Cyprus, Rhodes, Candia, Samos, Mytilene. Even from ports regularly visited by American vessels, goods are sent indirectly to the United States. This is the consequence of the isolation in which the United States are placed, in relation to those ports. In Smyrna, the large storing place of the produce in the Levant, where merchants of all nations have a counting-room, there is no American. It is the same in other ports of the Mediterranean, the Adriatic, and Levant. This isolation is advantageous to the indirect intercourse of the English and French with the United States; both are in the fortunate situation to turn the chances of both hemispheres to their advantage. Mr. Baker, in speaking of the commerce of the United States with the French dominions in Africa, viz., Algiers, Tunis, Tripoli, and Morocco, says: "It would be very profitable for our commerce if the Americans would engage in this branch; they would convince themselves, very soon, that such an undertaking would be very profitable. This advice has not been followed up to this time; at least there are no statistics that there have been any imports from there. These are almost exclusively African, and mentioned only in general terms, without branches of commerce in these dominions."

The American export to Africa in general, in the year 1854, amounted to \$1,804,729; the imports to \$1,386,560; of which proportion, \$47,708 and \$30,007 belong to Madeira, Teneriffe, and other Canarian Islands, \$20,417 and \$39,598; Cape of Good Hope, \$299,958 and \$448,903. There is no data for the other African territories. According to late disclosures, there are considerable numbers of vessels which leave American ports to embark secretly in the slave-trade, land them at Cuba, and import a considerable quantity of goods from Africa. Americans can buy many kinds of African produce from the great caravans of the Mecca pilgrims, which traverse Africa in its greatest extremity to the Mediterranean.

From the above, it will be seen that the Americans appear in the Mediterranean as well as in the Levant as far less than a mercantile power of the first class. And it is but too plain that these great and rich territories, for hundreds of years the centre of shipping and commerce of well-advised nations, are, by the Americans, very much neglected. England and France are in opposition with steamers and manufactures on the Mediterranean, Adriatic, and Levant. The mail lines of Cunard, Collins, Bremen, and Havre, are not sufficient for our steam commerce with Europe, and a Mediterranean line, alone, will be found to answer the interests of American commerce. And through all this, the great project of the Pacific Railroad and Marine Telegraph across the Atlantic will the sooner be brought to completion. It is to be hoped that Trieste and the Austrian commercial community in general, will not allow such progressive movements to pass without considering that the same which has been done by the small city of Bremen, can be done by Trieste, with its powerful resources. Bremen can give satisfactory proof of the importance of a steam communication with the New World. Bremen has exported in 1854, not less than \$14,643,927. Bremen is much ahead of Hamburg, on account of its steam communication with New York, as its exports in 1854 were only \$2,322,971. Trieste would have double the advantage; it would have all the direct commerce with Austria, and the indirect connection with the Mediterranean and the New World. The project is great, but

promises well-paying results. It can be developed by a direct, regular, and quick connection with New York. It is also well to mention, that Austria would, by these means, come into a more productive relationship with the Orient, as the commerce of Austria can look to a very prosperous future, on account of the Marine Telegraph from Sardinia to Constantinople and Alexandria, as the connection of the Mediterranean and the Red Sea.—*Nautical Magazine*. For Commerce, etc., of the Mediterranean, see *Ed. Rev.*, vi., 478; *Hunt's Mag.*, vi., 201; *Fraser*, xxvii, 377; *Quar. Rev.*, lxxv., 280; same article in *Eclectic*, v., 83; *Living Age*, v., 361.

Melbourne, the capital of the British colony of Victoria, formerly Port Philip, in Australia, occupying the south-east portion of that continent, stretching through 9° of longitude, from Cape Howe on the east to the Glenelg River on the west. The town is situated on the north bank of the Yarra-Yarra River, about nine miles, following its windings, from its mouth, in the basin of Port Philip, latitude 37° 49' 5" S., long. 144° 58' 35" E. It was founded in 1837, and extends along the banks of the river. In 1851 it had a population of 23,000; and such has been the immigration consequent on the discovery of the gold-fields, that, including suburbs, it had on the 24th of April, 1854, 71,188 inhabitants. A considerable portion, however, of this immense population is to be regarded as migratory only, and as residing in town merely till their ultimate destination has been decided upon. This sudden increase of population raised house rent to an unparalleled height; and for some considerable time a large proportion of the population was not housed, but encamped under tents. But partly through the extraordinary stimulus which was thus given to building, and partly through the mercantile failures consequent to the overtrading of 1853 and 1854, there has been a very heavy fall of rents, which do not now (1855) exceed half their amount in 1852. The site of the town is unfortunate; for the river being obstructed by a bar and shallows, it is not generally navigable for vessels of more than 60 tons burden; and it has the further disadvantage of being low, and liable to be flooded by the overflowing of the river during the wet season. It has been proposed to facilitate the trade of the town by removing the bar at the mouth of the river, and deepening its channel: but this would be a very expensive undertaking, and one of which the success would be not a little doubtful. The excavation of a ship canal from the deep water in the bay to Melbourne has also been proposed; and it probably would be the preferable plan; but, in the mean time, a railway has been commenced, and is in progress to the bay, which, when completed, as is probably the case, will obviate many of the inconveniences which are now experienced. It seems, however, not unlikely that the trade of the town, and the greater part, perhaps, of its population, will ultimately centre at Williamstown, a village a few miles distant, on a headland extending into the bay, opposite to which all large vessels coming to Melbourne are obliged to anchor. The principal objection to Williamstown is the scarcity and bad quality of the fresh water; but this serious defect might, perhaps, be obviated by sinking wells, or by conveying thither a supply of water from some of the adjacent streams. Nothing can more strikingly illustrate the present unfavorable situation of the town for commercial purposes, and the extraordinary state of things which was lately prevalent there, than the fact that while the ordinary charge for the freight of goods from England to Melbourne Roads was in November, 1853, £3 10s. a ton, it was £5 to the quays.

There are very few goods or articles exported from the colony to the United States. The principal articles have been gum, in small quantities, a few hides, and some bones. With the exception of gold, on which

there is a duty of 60 cents per ounce (2s. 6d.), none are liable to duty.

IMPORTS, EXPORTS, AND POPULATION OF THE COLONY OF VICTORIA FROM 1839 TO 1853, BOTH INCLUSIVE.

Years.	Imports.	Exports.	Total of external trade.	Population, average of year.
1839.....	£205,000	278,000	£288,000	7,000
1840.....	392,000	155,000	547,000	10,000
1841.....	335,000	139,000	474,000	14,000
1842.....	264,000	204,000	468,000	19,000
1843.....	193,000	278,000	461,000	22,000
1844.....	151,000	257,000	408,000	24,000
1845.....	248,000	464,000	712,000	25,000
1846.....	316,000	425,000	741,000	34,000
1847.....	483,000	669,000	1,152,000	42,000
1848.....	874,000	675,000	1,549,000	50,000
1849.....	480,000	755,000	1,235,000	60,000
1850.....	745,000	1,042,000	1,787,000	70,000
1851.....	1,056,437	1,423,909	2,480,346	90,000
1852.....	4,043,896	7,451,549	11,495,445	180,000
1853.....	15,842,637	8,946,096	24,788,733	.....
1854.....	16,557,404	10,109,292	26,666,696	232,000

The following statement exhibits the quantity of gold exported from the several ports in Australia in each year from the commencement of the gold discoveries to the end of the year 1855; the exports chiefly destined for Great Britain and colonial possessions:

Gold exported from New South Wales.	Quantity.	Value.
	Oz. dwts. grs.	
1851 29th May to 31st Dec...	144,120 17 16	\$2,341,680
1852.....	962,878 16 19	18,000,880
1853.....	548,052 19 21	8,905,855
1854.....	237,910 13 23	3,866,045
1855.....	64,834 14 8	1,046,250
Total.....		\$34,160,710

Gold exported from Victoria.	Quantity.	Value.
	Oz. dwts. grs.	
1851.....	145,137 3 12	\$2,193,885
1852.....	1,983,526 10 13	30,678,640
1853.....	2,497,723 15 16	43,322,645
1854.....	2,144,699 9 29	41,277,750
1855.....	2,576,745 4 17	56,819,900
Total.....		\$174,292,820
Average during last 4 years.....		\$43,573,205

To the preceding statement we annex an official return of all the gold coined at the mint in Great Britain each year from January 1, 1846, to December 31, 1855:

Gold coined in Great Britain in—

1846.....	\$21,674,556	1853.....	\$59,761,955
1847.....	25,792,200	1854.....	20,760,915
1848.....	12,259,995	1855.....	45,043,816
1849.....	10,839,775		
1850.....	7,454,181	Total...	\$269,350,299
1851.....	22,002,055		
1852.....	43,711,851	Average	\$26,935,029

For further details, see the Articles COLONIES, PRECIOUS METALS, and CALIFORNIA. Here, as in other parts of Australia, wool, down to the discovery of the gold fields, was the principal article of produce and export. And it is seen from the following statement that its exportation went on increasing down to the present year.

ACCOUNT OF THE WOOL SHIPPED DURING THE YEARS ENDING 10TH OCTOBER, 1853, 1854.

	1853.	1854.
	lbs.	lbs.
Melbourne.....	9,870,781	11,104,130
Geelong.....	7,019,900	6,643,400
Portland.....	3,475,818	4,162,432
Port Fairy.....	1,261,925	1,456,300
Port Albert.....	336,880	232,376
Total.....	21,965,104	22,598,638

A continuous high price of wool in the English markets will afford great encouragement to the settlers to struggle with these two tendencies so greatly deteriorative to our wool; and the manufacturers of Great Britain will have to afford that encouragement, or they must gradually teach themselves to look elsewhere for a supply.

EXPORTS OF VICTORIA, 1845-1853.

Years.	Produce of Victoria.	British manufactures.	Produce of British Colonies.	Produce of foreign states.	Totals.
1845.....	£451,792	£8,479	£100	£3,226	£463,597
1846.....	409,818	10,152	.....	5,286	425,201
1847.....	652,122	13,450	.....	2,939	668,511
1848.....	657,919	13,210	2,166	2,064	671,359
1849.....	737,067	13,072	721	4,466	755,326
1850.....	1,022,064	12,945	195	6,592	1,041,796
1851.....	1,382,267	29,538	2,107	9,002	1,422,909
1852.....	7,337,925	54,898	6,434	62,292	7,451,549
1853.....	10,430,934	241,094	24,330	365,165	11,061,543

Population of census 30th April, 1854, 232,000 showing that, exclusive of the excess of immigrants over emigrants by sea, the population had gained 17,253 by overland arrivals and other causes.

ACCOUNT OF THE NUMBER AND TONNAGE OF THE SHIPS ENTERED INWARD IN THE PORTS OF VICTORIA IN 1851, 1852, AND 1853, SPECIFYING THE COUNTRIES TO WHICH THEY BELONGED, AND THE NUMBER AND TONNAGE OF THOSE BELONGING TO EACH.

	1851.		1852.		1853.	
	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.
U. Kingdom.....	95	54,021	251	168,919	630	284,719
British colonies.....	591	67,135	1,304	225,446	1,740	351,065
United States.....	1	746	13	5,820	119	53,958
Other for. states.....	23	6,924	29	8,031	105	31,700
Totals.....	712	129,426	1,657	408,216	2,594	721,473

Scale of Commercial Charges adopted at a Special General Meeting of the Melbourne Chamber of Commerce, 15th May, 1854.

Commissions.—On cash payments, when not in funds, 5 per cent.; on cash payments when in funds, 2½ per cent.; on purchase and shipment of gold dust, 1 per cent.; on purchase and shipment of gold dust, if drawn against, 2½ per cent.

On the amount of invoice in either case.

On purchase and shipment of merchandise and on other purchases when not in funds, 5 per cent.; on purchase and shipment of merchandise and on other purchases when in funds, 2½ per cent.; on private sales, including the purchase of bills for remittance, 5 per cent.; on guaranty of sales, including remittances, 5 per cent.; on goods received for sale and reshipped, and on consignments of merchandise withdrawn, on invoice value, 2½ per cent.; on debts, rents, and other accounts collected, recovered, and remitted, 5 per cent.; on granting of letters of credit, 2½ per cent.; on letters of credit acted upon, an additional charge of 2½ per cent.; on freight or charter procured for vessels, and freight or passage-money collected, 5 per cent.; on freight paid at port of departure, 2½ per cent.; on ships' disbursements and outfits when not in funds, 5 per cent.; on ships' disbursements and outfits when in funds, 2½ per cent.; on guaranty of captains' drafts on owners, taken for balance of ships' disbursements, 5 per cent.; on money obtained on bottomry or respondentia, 5 per cent.; on insurance effected, or orders written for insurance, on the assured value, ½ per cent.; on insurance losses, partial or total, settled, or on premiums recovered, 5 per cent.

All sales of goods understood to be guaranteed, unless there be special orders to the contrary.

Guaranty on security for contracts, 5 per cent.; acting as trustee on assignments, 5 per cent.; on advances on produce for shipment, 2½ per cent.

Auctioneers' commission and brokerage to be charged when incurred.

Advances and current accounts not liquidated at the end of the season, March 31st, the balance to be charged as a fresh advance, subject to a commission of 5 per cent.

Interest.—On advances for duty, freight, and lighterage, and on amounts occurring per annum, 10 per cent.

Charges.—For passing accounts with the government for emigrant ships, £21; for entering ship inward at the custom-house, when the original port of departure is Australia, Van Diemen's Land, or New Zealand, £2 2s.; for clearing ship outward, when

the port of destination is Australia, Van Diemen's Land, or New Zealand, £2 2s.; for entering ship inward from other ports, £5 5s.; for clearing ship outward, £5 5s.; for attending delivery of cargo from lighters, and giving notice to consignees, 15s. per day; fee for each surveyor within the city, £1 1s.; fee for survey of hatches and stowage of cargo, £1 1s.; fee for survey of hull of vessel, £5 5s.; on wool, for receiving, weighing, marking, and delivering, 1d. per load; in addition to the tare on wool, an allowance for draft of 1 lb. per cwt.

PILOTAGE RATES AT MELBOURNE, 1856.

	Sailing Vessel.		Steamer.		Maximum.	Minimum.
	s. d.	s. d.	s. d.	s. d.		
From without the Heads to Melbourne or Geelong, and <i>vice versa</i> , per ton.....	1	3	0	10	100	15
From within the Heads to Melbourne or Geelong, and <i>vice versa</i> , per ton.....	0	9	0	6	60	10
Into or out of Port Albert, p. ton	0	9	0	6	60	5
Into or out of all other ports....	0	6	0	4	40	4
Between Melbourne & Geelong.	0	6	0	4	40	4

The above rates include two removes by the pilots.

Exemptions.—All ships belonging to her majesty, all ships outfitting to or refitting from the fisheries, all ships employed in the coasting trade, all ships regularly trading between any port of Victoria and of any of the colonies of New South Wales, Van Diemen's Land, New Zealand, West and South Australia (the

master of such ship holding a certificate from the Pilot Board that he is competent to act as pilot to such trader), unless the services of a pilot shall have been actually received; and all ships not having actually received the services of a pilot.

The basin of port Philip, which receives the Yarra-Yarra, and other rivers, is a large circular bay, or inlet of the sea, whence the colony derived its former name. It has a narrow entrance, not more than 1½ miles in width, partly occupied with rocks and shoals. A lighthouse has been erected near the extremity of Point Lonsdale, near the west side of the entrance, lat. 38° 16' S., long. 140° 40' E., and another on Point Gellibrand, near the head of the bay, between Williams-town and the mouth of the Yarra-Yarra River, lat. 37° 52' S., long. 144° 55' E. The bay is about 40 miles in depth from south to north, and where widest is about 40 miles from east to west. It is said to cover an area of above 800 square miles, and might accommodate all the navies of all the countries in the world. The whole trade of the colony, which is already very extensive, and is increasing with extraordinary rapidity, is at present carried on from this basin. And from its advantageous situation, and its stretching so far inland, it is probable it will always continue to engross the largest share of the trade, though, no doubt, it will be partly, also, carried on from other ports. Geelong, at the head of a deep bay on the west side of the basin, has a large population, and a very considerable trade.

COMMERCE OF THE UNITED STATES WITH AUSTRALIA, FROM OCTOBER 1, 1837, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
Sept. 30, 1838.....	\$33,546	\$816	\$34,362	\$30,583	....	....	620	....
1839.....	6,790	....	6,790	58,344	....	....	1,053	....
1840.....	84,847	\$6,022	90,869	122,141	....	....	1,363	....
Total.....	\$125,188	\$6,838	\$132,021	\$211,023	....	....	3,041	....
1841.....	\$63,784	\$112,557	\$176,341	\$86,706	\$101,621	\$37,125	....	....
1842.....	52,651	....	52,651	28,693	....	....	1,787	....
1843.....	57,805	11,232	69,037	44,910	6,720	....	590	....
9 mos. 1844.....	29,667	....	29,667	....	....	....	415	....
June 30, 1845.....	69,521	790	70,311	122	....	....	....	....
1846.....	48,783	....	48,783	....	....	....	....	....
1847.....	33,289	....	33,289	....	....	....	....	....
Total.....	\$355,500	\$124,579	\$480,079	\$160,431	\$108,341	\$37,125	2,792	....
June 30, 1852.....	\$196,554	\$11,713	\$208,267	....	....	....	9,318	17,016
1853.....	4,148,828	138,174	4,287,002	....	\$7,498	....	56,944	13,034
1854.....	2,999,635	149,444	3,149,079	\$214,202	....	\$197,581	39,421	4,989
1855.....	2,703,043	820,506	3,523,549	223,593	....	....	43,858	2,479
1856.....	4,909,925	125,047	5,034,972	184,452	8,112	10,960	42,865	4,722

Memel, a commercial town of east Prussia, lat. of lighthouse 55° 43' 7" N., long. 21° 6' 2" E. Population, in 1846, 9400. Memel is situated on the north-east side of the great bay, denominated the *Currische Haf*, near its junction with the Baltic. It is, consequently, the principal entrepôt of the country traversed by the Niemen, and as such enjoys a pretty extensive commerce. The harbor of Memel is large and safe; but the bar at the mouth of the *Currische Haf* has seldom more than 17 feet water, and sometimes not more than 13 or 14 feet; so that ships drawing more than 16 feet water are frequently obliged to load and unload a part of their cargoes in the roads, where the anchorage is but indifferent, particularly when the wind is north or north-west. A lighthouse, originally 75, but now 100 feet in height, has been erected on the north-east side of the entrance to the harbor. The light, which is fixed and powerful, may be distinguished in clear weather at more than 20 miles' distance. The outer buoy lies in 6 fathoms water, about a mile without the lighthouse, which bears from it south-east by east ¼ east. The channel thence to the harbor is marked by white buoys on the north, and red on the south side. Three beacons to the north of the town, when brought into a line, lead directly into the harbor. Inasmuch, however, as the channel is subject to frequent changes,

both in depth and direction, it is always prudent, on arriving at the outer buoy, to heave-to for a pilot; but this is not obligatory; and the Prussian authorities have issued directions for ships entering without a pilot, which may be found in NORIE'S *Sailing Directions for the Cattegat and Baltic*, p. 36. Timber forms the principal article of export; for though that of Dantzic be considered better, it is generally cheaper, and almost always more abundant, at Memel. Here, as at Dantzic, the best quality of all sorts of wood articles is called *khron*, or crown, the 2d, *brack*, and the 3d, *bracks brack*. Large quantities of hemp and flax are also exported, as are bristles, hides, linseed (the finest for crushing brought to England), wax, pitch, tar, etc. The exports of grain are sometimes very considerable. The wheat of Lithuania is reckoned the best. All flax and hemp shipped from Memel must be *bracked*, or assorted, by sworn selectors. See FLAX and HEMP. The imports consist principally of salt, herrings, coffee, sugar, spices, dye-woods, tobacco, tea, iron, cotton stuffs and yarn, cutlery, wine, etc. Merchants at Memel generally send their bills to Königsberg to be sold, charging their correspondents with 1 per cent. for bank commission, postages, etc. The navigation generally closes about the latter end of December, and opens about the middle of March.

Mercantile Agency System, U. S.—The Mercantile Agency is a name applied to various houses in the leading cities of the United States, and in Montreal and London. The principal object of the Agency is to supply, to annual subscribers, information respecting the character, capacity, and pecuniary condition of persons asking credit. The valuable services it has rendered to the domestic trade of the country, as a check upon our credit system, are acknowledged by the mercantile community. Its history, together with an explanation of its mode of operation, may not be without interest to the general reader and foreign merchant.

The Agency was first established in 1841 in the city of New York, by Mr. Lewis Tappan, and was conducted by him, upon a comparatively limited scale, until 1846, when Mr. Benjamin Douglass became his coadjutor, and assumed the chief management. From this time the business increased rapidly, and assumed a permanent and recognized position among the mercantile institutions of the country.

Our limits will not permit us to trace, step by step, the growth of the Agency, or to dwell upon the personal aspects of its history. Founded upon the interests of merchants, and conducted from the beginning by men of ability, capacity for work, high character, and thorough knowledge of the wants of mercantile business, its progress has been uninterrupted. From New York it has extended its branches and associate offices to seventeen other cities, viz.: Philadelphia, Boston, Montreal, Baltimore, Richmond, Petersburg, Charleston, New Orleans, Pittsburgh, Cleveland, Cincinnati, Chicago, Milwaukee, Dubuque, St. Louis, Detroit, and London, England. All these branches are under the direction of the proprietors at New York, and are governed by uniform rules. A daily interchange of information facilitates the answering of the inquiries of the respective subscribers for all parts of the country.

It is obvious that the gigantic labor of reporting the business men of Canada and the United States could not be performed by any one office, nor could the expense be borne by the merchants of any one city. It is performed by means of their system of branch offices, each supported by the subscriptions of the merchants, bankers, and manufacturers of the city in which it is located. The district allotted to each office is the country of which its city is the centre of trade. For instance, the Boston office reports that portion of the New England States of which it has the chief trade; the Dubuque, the greater part of Iowa; the Milwaukee, Wisconsin; the Charleston, South Carolina and Georgia; while the Ohio Valley is divided between the offices at Pittsburgh, Cincinnati, and Louisville.

This subdivision of labor is the means of securing a minuteness and accuracy of reports, which, to any one unacquainted with the machinery of the Agency, is very great. The operations of a branch office do not embrace a large extent of country. They are usually limited to the 150 or 200 counties, the majority of whose traders buy their goods chiefly at the city where it is established. In each of these counties the principal of the office secures one, two, three, or more correspondents, the number varying with the population, and the division of the local trade among towns. These correspondents are selected for their integrity, long residence in the county, general acquaintance, business experience, and judgment. Their duties are to advise the Agency promptly, by letter or telegraph, of every change affecting the standing or responsibility of traders; to notify it of suits, protests, mortgages, losses by fire, indorsements, or otherwise; to answer all special inquiries addressed to them by any of the associate offices; and to revise before each trade season, or oftener if required, the previous reports of every trader in the county, noting any change for the better or worse. No report is considered full unless it embraces, in regard to each trader, his business, the

length of time he has pursued it, his success or the contrary, his age, character, habits, capacity, means, prospects, property out of business, real estate, judgments, mortgages, or other liens upon his property. The greatest care is taken in selecting the agents, who furnish the bulk of the information to the Agency. Their integrity of character, freedom from prejudice, and from any entangling connections with mercantile men, which might bias them in their reports, their social position, influence, and opportunities for knowing thoroughly the men they are reporting, are all taken carefully into consideration, and the very great success and expansion of the business is, we have little doubt, to be attributed, in a great measure, to the judgment and careful discrimination which has been exercised in this particular. Nevertheless, after all this care in the selection of the agents, prudence would seem to require some check upon them. This is done by traveling agents who are sent through the country, and who report the traders upon their own resources, and generally without any knowledge of what the local agent has previously reported. Their reports are compared carefully with those of the local agent, and any discrepancy thoroughly investigated. Again, much information of a most valuable character is derived from special correspondents, as bank cashiers, insurance agents, notaries public, sheriffs, and others, whose official position gives them peculiar opportunities of knowing not only the resources and character of business men, but also the degree of promptness with which they meet their business obligations. Another source of information is that afforded by merchants themselves, who frequently make "statements" of their own affairs from their books. These are given under their own signature, with the avowed purpose of having them used by the Agency as a basis for credit. The leading facts contained in such "statements" are of course always made matter of special investigation. As, for instance, a merchant in his "statement" says he owns a farm or a number of town lots, in a certain county, worth a certain sum. The records of the county are examined to see if any such property stands in his name; the estimate he puts upon it is compared with that given by persons acquainted with the value of property in that locality; and, lastly, a careful examination is made to ascertain if any incumbrance exists against it not mentioned in the voluntary statement of the merchant. All the other facts in his statement are scrutinized in like manner, and it is thus subjected to a very searching analysis. Reports obtained with the care thus exhibited, and from such a variety of sources, must certainly approach as near perfection as is practicable under any circumstances.

The records of each office are arranged according to counties. Each partnership and individual name is indexed for convenience of reference on inquiry being made by subscribers. The reports coming in daily are copied without delay in the book for the county to which they refer, and transmitted by mail or express to the next or central office. All unfavorable information is promptly copied on slips, and sent simultaneously to all the offices whose subscribers' interests are probably involved therein. Serious embarrassments, assignments, and failures, are telegraphed. The mass of information thus contributed by the branches to the central office passes into the hands of the chief clerk, is distributed by him to the heads of departments, by them in their turn parceled out among the clerks, and by these last recorded and indexed in the proper books. The records of the New York office of the Mercantile Agency contain the aggregate knowledge of traders possessed by the seventeen most extensive mercantile communities in North America.

A comparison of the system of the Mercantile Agency with that of the "Commercial Traveler," which it superseded, is much to the advantage of the former, as regards the item of cost as well as information. From

a large dry-goods house we learn that, in old times, its expenses for travelers counted by thousands, and that it was, to a vexatious extent, in the power of clerks, who were anxious to make sales, and whose good opinion was too often won by civilities than by responsibility. Now it holds an efficient check upon its salesmen, who travel not to choose customers, but to make collections, and obtain orders.

It has been urged as an objection to the Agency that it is *secret* in its operations, and that to the casual observer it partakes of the nature of a system of espionage, seemingly at variance with that candor and love of open dealing so characteristic of our commercial usages. This objection, with the explanations herein given, will appear utterly futile. It is necessarily of a confidential, and, to a certain extent, of a secret nature, because such communications must always be so. What merchant, banker, or president of an insurance company, who asked for and received such information as that kept by the Agency, from a business cor-

respondent, would think of using it in any other way than as confidential, and to be kept strictly secret? What would his correspondent say if his communications were used as though they were not so regarded? Who would give such information, however pure the inquirer's motive might be, unless he were assured that he could implicitly rely upon this?

The principal Mercantile Agency established in the United States is that in the city of New York. Branches and associate offices are at all the following points: New York, Boston, Philadelphia, Baltimore, Cincinnati, Louisville, St. Louis, New Orleans, Charleston, Pittsburgh, Richmond, Chicago, Cleveland, Ohio; Detroit, Michigan; Dubuque, Iowa; Milwaukee, Wisconsin; Montreal, Canada East; London, England.

[It is proper to add that the editors do not entirely coincide with the writer of the above as to the merits of the Mercantile Agency system, but insert the article as being valuable and reliable as to statements and statistics.—*Eds. Cyc. of Com.*]

STATISTICS OF BANKRUPTCY IN THE UNITED STATES FOR THE YEAR 1857.

	Number of Stores	Failures.		Ordinary Failures.		How many have arranged with Creditors, and at what Average.
		Number.	Liabilities.	Number.	Liabilities.	
New York City, New York*	13,854	915	\$135,129,000	600	\$53,951,000	218, average 51 cts.
Albany	731	35	338,000	18	480,000	10, average 42 cts.
Buffalo	793	72	4,224,000	53	2,195,000	13, average 43 cts.
Oswego	504	13	161,000	12	155,000	
Rochester	408	31	351,000	27	707,000	8, average 48 cts.
Syracuse	305	29	436,000	22	268,000	4, average 31 cts.
Troy	351	24	1,607,000	12	682,000	3, average 43 cts.
Utica	298	20	535,000	9	576,000	5, average 47 cts.
Balance of the State	15,875	447	6,783,000	378	5,568,000	
Boston, Massachusetts	4,374	253	41,010,000	212	32,255,000	182, average 48 cts.
Balance of the State	10,257	230	2,611,000	202	1,711,000	
Philadelphia, Pennsylvania	7,404	280	32,954,000	155	16,975,000	63, average 54 cts.
Pittsburgh	1,374	28	1,183,000	22	918,000	23, average 47 cts.
Balance of the State	13,526	226	2,283,000	204	2,005,000	
Chicago, Illinois	1,350	117	6,572,000	82	4,571,000	11, average 54 cts.
Balance of the State	11,459	199	2,766,000	149	2,093,000	
Cincinnati, Ohio	2,513	56	3,898,000	69	2,387,000	54, average 48 cts.
Cleveland	553	30	613,000	24	390,000	10, average 47 cts.
Balance of the State	15,746	220	2,357,000	178	1,742,000	
New Orleans, Louisiana	2,230	58	6,285,000	36	4,388,000	8, average 55 cts.
Balance of the State	1,667	5	246,000	2	26,000	1 amounting to \$18,000, pays 50 c.
St. Louis, Missouri	1,530	49	5,522,000	25	3,582,000	4, average 50 cts.
Balance of the State	4,581	29	438,000	17	247,000	
Providence, Rhode Island	1,100	15	4,564,000	22	2,136,000	12, average 40 cts.
Balance of the State	566	4	105,000	3	60,000	
Baltimore, Maryland	1,970	53	3,206,000	39	2,472,000	17, average 44 cts.
Balance of the State	3,368	41	725,000	37	708,500	
Detroit, Michigan	649	34	1,514,000	24	1,199,000	18, average 41 cts.
Balance of the State	3,706	98	1,004,000	71	722,000	
Dubuque, Iowa	403	36	735,000	21	463,000	4, average 44 cts.
Balance of the State	4,308	108	1,333,000	79	1,059,000	
Louisville, Kentucky	1,080	19	757,000	12	412,000	
Balance of the State	5,715	31	1,007,000	24	496,000	
Charleston, South Carolina	900	31	922,000	23	812,000	8, average 42 cts.
Balance of the State	2,538	24	805,000	20	245,000	
Territories	1,697	63	1,705,000	46	1,302,000	
Indiana	7,337	129	1,636,000	114	1,411,000	15, average 49 cts.
Richmond, Virginia	1,583	30	781,000	22	694,000	3, average 53 cts.
Balance of the State	7,781	90	982,000	70	749,000	
Milwaukee, Wisconsin	633	19	880,000	14	312,000	3, average 73 cts.
Balance of the State	3,757	101	1,244,000	62	1,150,000	
North Carolina	3,233	62	1,171,000	42	668,000	
New Jersey	4,433	86	1,142,000	72	836,000	
Connecticut	4,203	61	1,129,000	50	995,000	
Maine	4,912	51	1,060,000	71	832,000	
New Hampshire	2,700	70	928,000	60	775,000	
Vermont	1,962	57	473,000	49	382,000	
Georgia	5,359	32	925,000	21	681,000	
Delaware and District of Columbia	2,727	20	261,000	18	253,000	
Arkansas	1,179	7	309,000	5	285,000	1 amounting to over \$100,000, will pay nearly all.
Alabama	2,694	16	255,000	14	265,000	
Mississippi	2,235	11	445,000	10	435,000	2, average 50 cts.
Tennessee	4,887	40	712,000	28	618,000	
Florida	783	7	250,000	5	220,000	2, average 52 cts.
Texas	2,447	15	593,000	12	353,000	
Total United States	204,061	4937	\$291,750,000	3703	\$192,305,500	
Toronto, Canada West	380	25	2,714,000	17	1,270,000	3, average 53 cts.
Balance of Canada West	3,414	109	2,172,000	73	1,631,000	8, average 45 cts.
Montreal, Canada East	909	15	523,000	12	445,000	4, average 52 cts.
Balance of Canada East	1,764	15	1,267,000	13	66,000	3, average 35 cts.
Nova Scotia and New Brunswick	1,797	22	1,375,000	21	1,333,000	3, average 50 cts.
Total British Provinces	8,303	186	\$8,051,000	136	\$4,775,000	
Total United States and British Prov.	212,364	5123	\$299,801,000	3839	\$197,080,500	

* Includes Brooklyn and Williamsburg.

Mercantile Law. Among the ancient Romans, trade and manufactures were accounted degrading and dishonorable employments; and what was done in that way was performed by slaves. None who had been employed in trade, or whose father had been a slave, could be chosen into the senate; and no senator, or father of a senator, could, by law, keep a bark above a certain small burden, in order, no doubt, to prevent his engaging in commerce. The Comorists likewise despised trade; and at the Council of Melfi it was solemnly determined that none could exercise any traffic, nor follow the profession of the law, with a safe conscience.

These notions, however, were singular, and very different from the policy which has ever prevailed in England. According to a law of Athelstan, if any merchant made three voyages on his own account beyond the British Channel, or narrow seas, he was entitled to the privilege of a Thane; and it is especially provided by Magna Charta (c. 30), that all merchants, unless publicly prohibited beforehand, shall have safe conduct to depart from, to come into, or to tarry in and go through the realm, for the exercise of merchandise, without any unreasonable imposts, except in time of war; and that if a war breaks out with another country, the merchants of that place shall be attached, but in their person only, till the king is informed how our merchants are treated in the land with which we are at war; and if our merchants are secure, theirs shall be so too. Upon this Montesquieu remarks, with admiration, that the English have made the protection of foreign merchants one of the articles of their national liberty; and also that the English know much better than any other people on earth how to value at the same time these three things, religion, liberty, and commerce. These, indeed, are the common rights of mankind. They are also inseparably connected together; and as liberty is the life of commerce, so commerce is in its turn the parent of man's advantages, moral and physical, personal, and political. Its protection and encouragement are now, therefore, an established principle of the law of nations.

Trade and commerce being thus the immediate offspring of natural liberty, the *lex mercatoria*, or the law of merchants, is less a branch of this or that system of municipal law, than the law of nations, or that universal law which reason teaches all men. It is, if one may so call it, an ambulatory system of civil law, not confined to any one place or locality, but attaching to the persons of men in all their commercial transactions throughout the world; the custom of merchants being everywhere acknowledged, as their persons and property are by the law of nations everywhere protected.

Thus, not to enter here at large into all the details of mercantile law, which will be found in other parts of this work, divers sorts of writing used among merchants and trading people in commercial transactions, are sustained in our courts, after the example of other States, although not executed with all the formalities of common deeds. Missive letters, *in re mercatoria*, are valid, although not holograph, and commissions from merchant to merchant, though not signed before witnesses; nor do fitted accounts among merchants, in mercantile matters, require the writer's name or witnesses. But of all obligations, *bills of exchange*, which owe their origin to merchants, are the most favored. The risks and accidents of trade have also caused particular favor to be extended to persons engaged therein, who have fallen into bankruptcy; provision being made by statute for their entire discharge on their surrendering their effects to their creditors. See LAWS OF COMMERCE.

Mercator Gerard, one of the most celebrated geographers of his time, was born at Rupelmonde, in 1512. He applied himself with such industry to geography and mathematics that he is said to have fre-

quently forgotten to eat and drink. The Emperor Charles V. had a particular esteem for him, and the Duke de Juliers made him his cosmographer. He composed a chronology, some geographical tables, and an atlas, having engraved and colored the maps himself. He died in 1594. His method of laying down charts is still used, and bears the name of *Mercator's Charts*.

Mercator's Charts. The true inventor of these charts is said to have been a Mr. Wright, who made several voyages; and in his absence Mercator published the charts in his own name, 1556.—PARDON. They are, however, now confidently ascribed to Mercator's own ingenuity. In these charts the meridians and parallels of latitude cut each other at right angles, and are both represented by straight lines, enlarging the degrees of latitude as they recede from the equator.

Mercator's Chart, or Projection, is a representation of the sphere on a plane, in which the meridians are represented by equidistant parallel straight lines, and the parallels of latitude also by straight lines perpendicular to the meridians. This projection, which is universally adopted for nautical charts, by reason of the facilities which it affords in navigation from the circumstance that the rhumb, or sailing course between two points, is represented by a straight line, was invented by Gerard Mercator (his true name was *Kauffman*, of which Mercator is the Latin equivalent), a native of Rupelmonde, in East Flanders, born in the year 1512. But, though Mercator gave his name to the projection, it does not appear that he knew the law according to which the distance of the parallels from the equator increases. The true principles of the construction were found by Edward Wright, of Caius College, Cambridge, who explained them in his treatise, entitled *The Correction of certain Errors in Navigation*, published in 1599, and are as follows: Suppose one of the meridians on the globe to be divided into minutes of a degree; one of these, taken at any parallel of latitude, will be to a minute of longitude, taken on that parallel, as the radius of the equator to the radius of the parallel; that is, as radius to the cosine of the latitude, or as the secant of the latitude to radius. This proportion holds true on the map in this sense, that if a minute of the equator be taken as the unit of a scale, and that unit be considered as the radius of the tables, then the representation of a minute of latitude will be expressed by the number in the trigonometrical tables which is the secant of that latitude. Hence, in the map, while the degrees of longitude are all equal, the degrees of latitude marked on the meridian form a scale of which the distances go on increasing from the equator toward the poles, each being (approximately) the sum of the secants of all the minutes of latitude in the degree. The numbers resulting from the addition of the secants of the successive minutes, reckoned from the equator, form a scale of meridional parts, which is given in all books of navigation. The very remarkable property of this projection, namely, that the divisions of the meridian are analogous to the excesses of the logarithmic tangents of half the respective latitudes augmented by 45° , above the logarithm of the radius, was discovered by Bond about the year 1645; but was first demonstrated by James Gregory, in his *Exercitationes Mathematicæ*, published in 1668.—*URE'S Dict.*

Mercator's Sailing is that which is performed by Mercator's charts.

Merchant, a person who buys and sells commodities in gross, or deals in exchanges, or one who traffics in the way of commerce, either by importation or exportation. The merchants of London and Amsterdam were accounted the most enterprising and richest in the world. An attempt was made by Queen Anne's ministry to exclude merchants from sitting in the House of Commons, in 1711; but it failed. The Mer-

chant Adventurer's Society was established by the Duke of Brabant in 1296. It extended to England in Edward III.'s reign, and was formed into an English corporation in 1564.—HAYDN.

Laws of Merchants.—The laws controlling merchants and commercial transactions are numerous, and are treated of in detail in the article **LAWS OF COMMERCE**. As an analysis of these laws, it may be stated, that most of the European and American countries have left uncontrolled the free action of the merchant. In Lubec every merchant is required to be a citizen. Russia has established numerous restrictions. The body of merchants are divided into three guilds or classes, to which none but Russian subjects or denizens (*i. e.* naturalized foreigners) may belong. In each guild a certain tax is imposed, and a determinate amount of capital is required; also, the nature and extent of the commercial operations permitted have proportioned limitations. Nearly every country, except Great Britain, France, and the United States, prescribes the enrollment in a public register of commerce, of the name of the merchant, the nature of his business, the name of each partner of the firm, and the dormant partners included in the firm and company, the power conferred on any party to act per procuracion, and every particular connected with the formation and dissolution of the partnership. In some countries these details must be published in the gazette and newspapers. This register is either established at the tribunals of commerce or at the civil courts. Every publicity is given to such enrollments; and any person, by paying a small fee, may obtain extracts from them. The parties interdicted from engaging in trade are, with a few exceptions, only those who are laboring under a civil disqualification.

General Regulations.—The institutions of guilds or privileged companies are of Roman origin. Traces of them still exist in London and in Scotland; but the convivial meetings in which are expended the grants, which, in ancient times, they received from government, are the only evidences of periodical revival. The word "guild" was originally applied to a society of merchants, as by the statutes of the guild in 1283, and by the statute of William, c. 35, but out of them arose all the different corporations of craftsmen. A decree, arbitral, promulgated in Edinburg, dated from "Halyrudhouse, the twenty-two day of Apryl, the year of God, one thousand four hundred fourscore three years," thus expresses the union of merchants and craftsmen in the gildry: "Toward the lang controversies for the gildrie, it is finally, with common consent, appoyntit, agreit, and concludit, that als weil craftsmen as merchants sall be received and admitted gild brether, and the one not to be refusit nor secludit therefra mair the uthir, they being burgesses of the burgh, als met and qualified thairfore; and that gild-brether to have liberty to use merchandice;" and by the same decree it is ordered, "That na manner of person be sufferit to use merchandice or occupy the hardiewark of any free craft within this burgh, or yet to exerce the liberty and privilege of the said burgh without he be burgess and freeman of the same." This decree was ratified in Parliament; and, therefore, after this period, the general right of the original gilding, or society of merchants of the realm, was abridged so far that they could not trade in Edinburg unless they were admitted as burgesses. The commercial regulations of Lubec are still founded on the same system; the merchants are divided into nine companies and colleges, and administrators, all of which bear the stamp of antiquity. Russia, besides the forming of merchants into guilds, divides commerce into various branches, and specifies what commercial operations include, with some notices of commerce with patent. France determines what are acts of trade with regard to the competency of tribunals of commerce. Holland, Wurtemberg, and a few

other countries, have similar determinations of what is comprised in commercial operations.

Who may be Parties to Mercantile Contracts.—It was once the doctrine of the English courts, that the law-merchant did not apply to any contracts between parties who were not merchants. But this view has passed away; and it has long been a well-established rule in that country as well as this, that the law merchant applies to mercantile contracts, such as negotiable notes, bills of lading, charter parties, policies of marine insurance, and the like, whoever may be the parties to them. All mercantile transactions begin and end in contracts of some kind—express or implied, executed or to be executed; and the first element of every contract is the existence of parties capable of contracting. Generally, all persons may bind themselves by contract. Whoever would resist a claim or action founded on his contract, on ground of incapacity, must make this out. See *PARSON'S Mercantile Law*.

Minors.—By the English law, a minor can not contract commercial engagements; yet he may act as a partner, and perform other functions for beneficial purposes, without being liable for contracts entered into during his minority. In Scotland, a minor may become a trader; and when he holds himself out as a major, he becomes responsible. In France, minors, by being emancipated, may engage in trade previous to the 18th year of their age, when authorized by a registered act, either of their parents or family council, or by civil authorities. They are allowed, in this case, to pledge or mortgage their estates. Similar principles are adopted in Spain, Portugal, Prussia, etc., etc.

The age at which minority ceases, is: In England, Scotland, British Colonies, United States, Hungary, Roman States, France, Normandy, Two Sicilies, etc., 21 years; in Mauritius, British Guiana, 24 years; in Cape of Good Hope, Ceylon, Holland, 25 years; in Gurnsey, Jersey (Coutume of Normandy), 20 years.

Married Females.—In London, a married female may engage in trade as a *feme sole*, but she must trade within the city, and on her account; she is, therefore, liable to be a bankrupt. In England she may engage in trade when authorized by her husband, but she is not responsible. Her endorsement, acceptance, negotiation of bills of exchange, are null, and no action can be maintained against her. The husband is liable for the debts contracted by her in a separate trade. In Scotland, parties may settle, by marriage contract, their several rights and interests. A married female can not act by or for herself.

In France, Spain, Portugal, Prussia, and Sardinia, the authority of the husband is necessary for her engaging in trade. Her property by dowry, and that held in common, are responsible for the obligations she contracts with reference to trade. The authority of the husband ought to be made public, as also the revocation of the same. In America, the common law of England is generally retained, with some exception, in Pennsylvania, Louisiana, and South Carolina. In Lower Canada and St. Lucia, same as the Coutume of Paris; and in the Mauritius it is regulated by the civil code. In Malta, a married woman may engage in trade with the consent of her husband, but she can not be imprisoned for debt. In Lubec, married females must receive the authority of the Senate for opening a shop. In Wallachia, a married female can not engage in trade without a marriage contract.

Aliens.—In Great Britain, United States and America generally, aliens enjoy the same privileges as natives with regard to trade. In France they enjoy the greatest liberty, and the same rights as the natives. In Russia and Sweden, a variety of provisions are enacted with regard to aliens, but a restriction prevails in all. In Spain and Portugal, aliens not naturalized may engage in trade, but they are established according to existing treaties with their respective govern-

ments. In Lubeck, the restrictions on foreigners are extended even to deny them the power of establishing themselves as residents, without the authority of the tribunal of judicial police. See *LEVI'S Com. Law*.

Mercury, or Quicksilver (Fr. *Vif argent*; Ger. *Quicksilber*; It. *Argento vivo*; Sp. *Azogue*; Rus. *Rtut*; Lat. *Hydrargyrum*; Arab. *Zibak*; Hind. *Parah*; Sans. *Pārada*). This metal was known in the remotest ages, and seems to have been employed by the ancients in gilding, and separating gold from other bodies, just as it is by the moderns. Its color is white, and similar to that of silver; hence the names of *hydrargyrum*, *argentum vivum*, *quicksilver*, by which it has been known in all ages. It has no taste or smell. It possesses a good deal of brilliancy; and when its surface is not tarnished, it makes a very good mirror. Specific gravity 13.568. It differs from all other metals in being always fluid, unless when subject to a degree of cold equal to -39° , when it becomes solid. The congelation of mercury was first observed in 1759.—*THOMSON'S Chemistry*. Mercury is found in various parts of the world. Among the principal mines are those of Almaden, near Cordova, in Spain; Idria, in Carniola; Wolfstein and Morsfield, in the Palatinate; Guanacavelica, in Peru, etc. Most of the ores of mercury are readily distinguished from those of any other metal: in the first variety, globules of the metal are seen attached to or just starting on the surface, which is at once a sufficient criterion, mercury being unlike every other metal; in the second, by the fine white color, and the action of the blow-pipe, which sublimes the mercury and leaves the silver behind; the third, by its beautiful deep red tint, varying from cochineal to scarlet red, excepting in those termed hepatic cinnabars, which are generally of a lead gray; the fourth, by its gray color, its partial solubility in water, and its complete volatilization by heat, emitting at the same time an arsenical odor. Before the blow-pipe, these varieties burn with a blue flame and sulphurous odor, leaving more or less residue behind them, and which may consist of earthy matter, as siliceous and alumina, together with the oxyds of iron and copper.—*JOYCE'S Chem. Min.*

Mercury is often adulterated by the admixture of lead, bismuth, zinc, and tin. When the metal quickly loses its lustre, is covered with a film, or is less fluid and mobile than usual, or does not readily divide into round globules, there is reason to suspect its purity. Our supplies of mercury are derived almost wholly from Spain. The imports usually amount to from 2,000,000 to 3,000,000 lbs., of which about 300,000 lbs. are retained for home consumption, the surplus being exported to South America, France, the East Indies, etc. The exports of quicksilver from Spain in 1848 amounted to 48,868 quintals, of which nearly 40,000 quintals were furnished by the mines of Almaden. The province of Idria, in Austria, has also some rather productive quicksilver mines. And the produce of this metal in California, and other parts of in South America, is said to be already considerable, and to be increasing. There are two sulphurets of mercury; the black or *ethiops mineral*, and the red or *cinnabar*. When mercury and sulphur are triturated together in a mortar, the former gradually disappears, and the whole assumes the form of a black powder, denominated *ethiops mineral*. If this powder be heated red-hot, it sublimes; and on a proper vessel being placed to receive it, a cake is obtained, of a fine red color, which is called *cinnabar*. This cake, when reduced to powder, is well known in commerce by the name of *vermilion*. Cinnabar may be prepared in various other ways. Calomel, or protochloride of mercury (*mercurius dulcis*) is the most useful of all the preparations obtained from it. It is in the form of a dull white, semi-transparent mass, having a specific gravity of 7.176. It is more generally employed, and with better effect, than almost any other remedy in the whole range of

materia medica. Besides its uses in medicine, mercury is extensively employed in the amalgamation of the noble metals, in water-gilding, the making of vermilion, the silvering of looking-glasses, the making of barometers and thermometers, etc. For the imports of mercury into the United States, see *QUICKSILVER*.

Meridian, in geography, a great circle supposed to be drawn through any part of the surface of the earth and the two poles, and to which the sun is always perpendicular at noon. In astronomy, this circle is supposed to be in the heavens, and exactly perpendicular to the terrestrial one.

Meridional Distance, in navigation, is the same with departure, or easting and westing, being the difference of longitude between the meridian under which the ship now is, and any other meridian which she was under before. Meridional parts, miles, or minutes, in navigation, are the parts by which the meridians in a Mercator's chart increase as the parallels of latitude decrease.

Meridian, First. The meridian from which longitudes are reckoned. The choice of the first meridian is entirely arbitrary; and most nations reckon the longitudes from their capital, or meridian passing through their principal observatories. Thus, in English works, the longitude is reckoned from Greenwich; in French, from Paris; in Russian, from St. Petersburg, etc. Ptolemy employed the Canary Islands, the French formerly reckoned from Ferro, and the Dutch from the Peak of Teneriffe. Mercator chose the Island Del Corvo. See *LONGITUDE*.

Meridian Line. A line traced on the surface of the earth, coinciding with the intersection of the meridian of the place with the sensible horizon.

Meridian of a Globe; or the Brass Meridian, is a graduated circular ring, within which the globe is suspended and revolves, and by means of which it is connected with the frame bearing the horizontal scale. Meridian lines are also traced on the globe itself, usually at 15° distance, or a difference of longitude corresponding to an hour of time. It is probable that these, with the parallels of latitude, suggested to Descartes the idea of *co-ordinates*, which he applied so successfully to connect algebra with geometry.

Merino Sheep. A breed of sheep till lately peculiar to Spain, but now reared in Saxony, England, and more particularly in Australia, chiefly for the superior fineness of their wool. The word *merino* signifies overseer of pasture lands, and is applied to this breed of sheep, because in Spain they are kept in immense flocks, under a system of shepherds, with a chief as a head, and with a general right of pasturage all over the kingdom. The best flocks of Spanish merinos are found in Leon and Castile: of the Saxon variety, at Stolpen and Rochsburg; but merinos are to be found in North America, the Cape of Good Hope, and, above all, in New South Wales, which promises to be one of the principal wool-growing countries in the world. See *WOOL*.

Merschaum (Ger.; Eng. *sea-froth*; Fr. *Ecume de Mer* *Magnésie carbonatée siliceuse*), is a white mineral, of a somewhat earthy appearance, always soft, but dry to the touch, and adhering to the tongue. Specific gravity 2.6 to 3.4; affords water by calcination; fuses with difficulty at the blow-pipe into a white enamel, and is acted upon by acids. It consists, according to Klaproth, of silica, 41.5; magnesia, 18.25; water and carbonic acid, 39. Other analysts give silica 50, magnesia, 25, water 25. It occurs in veins of kidney-shaped nodules, among rocks of serpentine, at Egribois, in the Island of Negropont, Eski-Schehir, in Anatolia, Brussa, at the foot of Mount Olympus, at Baldissero, in Piedmont, in the serpentine veins of Cornwall, etc. When first dug up, it is soft and greasy, and lathers like soap; and is on that account used by the Tartars in washing their linen. The well known Turkey tobacco-pipes are made from it, by a process analogous to that for making pottery-ware. The bowls of the pipes,

when imported into Germany, are prepared for sale by soaking them first in tallow, then in wax, and finally by polishing them with shave-grass.

Messina, *Zante* and *Messana*, a city and sea-port of Sicily capital of a province on the Strait of Messina, eight miles north-west from Reggio. Latitude of light-house $38^{\circ} 11' 10''$ N., long. $15^{\circ} 34' 7''$ E. Population 83,772. It is built on the west side of a noble harbor, inclosed by old walls; has wide, handsome streets, paved with lava, and lined with white stone houses. The port, defended by several fortifications, is formed by a long curved tongue of land, projecting north-east from the main land, and then bending westward in the form of a sickle, whence its ancient Greek name. It is about four miles in circumference, has deep water throughout, and large vessels can load and unload close to the quays. The trade is considerable. The exports comprise oranges and lemons, silk, olive-oil, wine and spirits, linseed, salt, fish, etc. The imports consist of colonial produce, cotton and woolen fabrics, hardware, and other manufactured goods. It has an active tunny and other fisheries, and manufactures of damasks and satins. Population of the province in 1851, 349,484. *The Strait of Messina (Faro di Messina)*, separates Sicily from South Italy, and unites two basins of the Mediterranean. Length, north to south, 22 miles; breadth, 10 miles to $\frac{1}{2}$ miles at its north extremity, between the Faro Tower, Sicily, and the Rock of Scylla. No bottom has been reached in it with 200 fathoms of line. On its shores are the cities of Reggio and Messina, opposite which latter is the whirlpool of Charybdis.

A treaty of reciprocity between the United States and the Two Sicilies was concluded on the 1st of December, 1845, and ratified on the 1st of June, 1846. The terms of the treaty are faithfully adhered to, inasmuch as the citizens of the United States are treated in the same manner as the subjects of the Two Sicilies. The commercial intercourse of the United States is dependent solely on the regulations of the mother country: the existing regulations are neither temporary nor fixed to a definite period, but permanent. There are no privileges permitted to the commerce of other nations which are denied to the United States. There are restrictions imposed on commerce of others which have not treaties of commerce with the Sicilian government, as to be seen in the custom-house regulations. All goods imported by privileged vessels have a per centage allowed of 10 per cent. on the import duty, and the vessels themselves enjoy all the privileges and exemptions of national vessels, except the coasting trade. The few articles shipped to the United States, on which an export duty is paid, are brimstone, oil, and linen rags; if shipped by American or Neapolitan vessels to the United States they enjoy a drawback of 10 per cent. on the export duty. The port charges consist of the tonnage duty and some small charges in the police, the custom-house, and the health-office. The tonnage duty is 8 Sicilian grains, or 4 Neapolitan bajocs per ton, which is equal to $\frac{3}{4}$ American cents. The small charges amount to nearly the same, consequently the whole port charges are from $\frac{7}{8}$ to 8 cents, United States' currency, per ton. Pilotage is \$5 for a vessel of any size. The transshipment of goods in vessels belonging to the United States is not permitted for another port in the kingdom of the Two Sicilies, although it is allowed for foreign ports without any privilege or restriction. United States' vessels may complete their cargoes in one or more ports of this kingdom, or on the Island of Sicily, without being subject to pay the tonnage duty more than once. The moneys, weights, and measures known and in common use at the different ports are not the same as those established by the supreme law of the mother country; and they are even at variance in the ports of Messina, Catania, and Syracuse.—*Com. Rel. U. S.*, 1856-7.

Metalliques, a kind of Austrian stock, so called because the interest is paid in the precious metals, and not, like the interest of other stocks, in paper money. The name was afterward used in Russia and other countries, for stocks of a similar kind.—E. A.

Mexico. Discovered in A. D. 1518. It was conquered by the Spaniards under Cortez, whose name is infamous on account of his cruelties to the vanquished, A. D. 1521. The mint of Mexico, the richest in the world, was begun in 1535. This country, like other States in the New World, has recovered its independence. Iturbide made emperor, May, 1822. Mexican constitution proclaimed by the president, Vittoria, October, 1823. Iturbide shot, July 19, 1824. Treaty of commerce with Great Britain ratified, April, 1825. Titles suppressed, May, 1826. The expulsion of the Spaniards decreed, March, 1829. Spanish expedition against Mexico surrendered, September 26, 1829. Mexican revolution; the president Guerrero deposed, December 32, 1829. The independence of Mexico, previously recognized by the great European powers, also recognized by the Emperor of Brazil, June, 1830. Civil war between Bustamente and Santa Anna, 1832. Santa Anna elected president, March, 1834. Declaration of war against France, November 30, 1838. Castle of San Juan de Ulloa taken by the French, November, 27, 1838. This war terminated March 9, 1839. Civil war, with change of leaders at various times. Santa Anna displaced Bustamente again, October 6, 1841. Insurrection of General Paredes against Santa Anna, November 5, 1844; succeeds without bloodshed, and Herrera made president, December, 1844. Paredes overturns Herrera, December, 1845. War with the United States, 1846; Mexicans defeated at Palo Alto, May 8, 1846, and subsequently at Matamoras. Santa Fé captured, August 23, and Monterey September 24, 1846. Mexican Congress authorized their government to raise \$15,000,000 for the war against the United States, upon the mortgage or sale of church property, January 8, 1847. Battle of Buena Vista, February 22, 1847. Vera Cruz surrendered to General Scott, March 29, 1847. Battle of Cerro Gordo, April 18. General Paredes landed at Vera Cruz in disguise, August 14, 1847. Battles of Contreras and Churubusco, August 20, 1847; of Chapultepec, September 12. Surrender of City of Mexico to American General Scott, September 14, 1847. Treaty of peace with the United States ratified at Queretaro, May 30, 1848. Mexico evacuated by the American troops, June 12. Paredes excites a revolt at Guanajuato, June 15. Herrera becomes president, July 6. Bustamente defeats Paredes, July 18. Vera Cruz surrendered by the United States, August 1. Signor de la Rosa first Mexican minister to the United States after the war, presented his credentials, December 2, 1848. See *MAYER'S Mexico*; *POINSETT'S Notes on Mexico*; *DE BOW'S Rev.*, ii., 27, 165 (J. R. POINSETT), v., 401; *North Am. Rev.*, xliii., 226 (Judge BULLARD), xx., 77 (J. SPARKS); *HUNT'S Mag.*, x., 118 (B. MAYER), xv., 250, xvi., 455.

The territory constituting the republic of Mexico has an area of 855,964.49 square miles, and forms, in its political divisions, 21 States, a Federal District, and three Territories. The population has somewhat augmented since the time of its independence, and the census (Tejada's) of 1850 states its position and numbers as follows:—No two authorities agree as to the area and population of Mexico.

Area in 1821.	Ceded to U. S. by treaty of 1848.	Area in 1852.*	Population in 1851.
Sq. leagues.	Sq. leagues.	Sq. leagues.	
216,012.27	109,944.80	106,067.47	7,659,919

* By the treaty of Dec. 30, 1853, defining more accurately the boundary between Mexico and the United States, additional territory was ceded to the latter, for the consideration of \$10,000,000.

More recent returns would indicate a greater increase of the white than other classes of population;

but it is probably explained by the fact that certain literary acquirements define color, and that successful efforts have been made to advance the common education in many of the States. A census stated to have been taken in 1864, makes some very slight alterations in the preceding table. It raises the population to 7,853,394.

Along the eastern declivity of the Cordillera of the Andes, from 3000 to 4000 feet above the level of the sea, grow the coffee and tobacco, both of unusual excellence; but the coffee is heavily burdened with the internal taxes of the States, and the sale of tobacco is a monopoly of the government; so that, with these restrictions upon them, their cultivation languishes. From this elevation to the sea is the country of cane, of the product of which little is at present exported. Cochineal, which has greatly diminished in quantity within the past few years, has become of little importance. Wheat, the growth of the table-lands, is equal to the best in the world, and, when not absolutely forbidden, a heavy duty rests upon the imported article, which, unless in times of scarcity, is equal to a prohibition. The lands of the people of the hot and temperate climates are chiefly taxed with this great difference; and, in consequence, the flour is brought to them, often a distance of 200 miles, on mule-back, instead of being received at a fair and cheaper rate from abroad, by the sea. This weight falls heavily upon the State of Vera Cruz, and exists for the benefit of the proprietors of the wheat-fields, principally of Puebla; but force and wealth prove ever to abide with the latter State, in every attempt to obtain relief. Nor do the burden and vexation stop here. Notwithstanding the exemption seemingly given to the imported article from other than the federal duties, the owner has often to pay other sums at the ports of entry, in the nature of municipal duties, and at every remove from State to State.

Maize, although indigenous to the table-lands, and growing in every climate of the republic, is rarely to be found at a low price anywhere; and this, not from any failing of industry or a want of knowledge in its cultivation, but from droughts that continue, at times, for years, and sometimes until districts are half depopulated. Even in the fertile valley of Mexico, about the capital itself, corn usually bears a price of about \$2 the bushel. The cotton, wherever it has been attempted to be raised, has been materially and discouragingly affected by insects; and the article is yearly the subject of special licenses to individuals, to be introduced at Vera Cruz at rates lower than those designated by the tariff, to supply the calls of cotton manufactories. The vine and the olive have been attempted to be cultivated since the revolt from Spain, but with poor, or only partial success. The price of the *maguey*, both in its natural state as *pulque*, and as the distilled liquor made from it, *mescal*, is an important item in the economy of considerable territories, but of no consideration in commerce. The pith of some varieties of the plant, baked like a potato, is, in many places, the food for nearly the year round of the half-wild tribes of the *sierras*; and the spirituous extract is the inebriating draught that keeps a large portion of the population about the cities and towns where it can be raised or bought, in a state of wretchedness and physical destitution.

The principal manufactures of Mexico are sugar and rum, aloe, wine, and brandy, earthen and stone ware, glass, paper, and tissues of cotton, wool, and silk. M. Lerdo de Tejada estimates the entire value of the manufactures of all kinds in Mexico, annually, at \$80,000,000 to \$90,000,000.

The production of gold and silver in the republic has arrived at a state of great prosperity; but the inadequate supply of quicksilver is felt as a considerable obstacle to the still greater development of the mineral wealth of Mexico.

Manufactures.—The principal products of Mexican industry are brandy, and sugar made from cane, mescal, made from the juice of the maguey, oil, wine, and brandy made from grapes, earthen and glass wares, paper and spun and woven cotton, silk and woolen. Sugar is made in mills on all the estates where the cane is cultivated, and which are found chiefly in the States of Vera Cruz, Tabasco, Yucatan, Mexico, Guerrero, Michoacan and Guadaluajara; and brandy by stills in most of them. Although the ancient and imperfect system is generally pursued, some improvements have begun to be introduced, of which may be cited the apparatus lately put up on the hacienda of La Puga, near Tepic, that of San Carlos, in the Cañada of Cuautla, and in Silva, four leagues from San Juan Bautista de Tabasco, for sugar-making and distilling brandy. For the making of oil there are already in the capital 49 mills, besides those in Tacubaya, Toluca and Puebla. Not only oil is made in them from olives, which nearly supplies the consumption, but from ajonjote, linseed, rape-seed, colwort, higuierola, almonds, cacahuates, small nuts, and finally from calves' and pigs' feet, etc., to oil wheels and machinery. With respect to grape-wine and brandy, although there were vineyards in several States, they are manufactured only in those of Guanajuato, Coahuila, Lower California, Sonora, and Chihuahua, from the last of which are annually made more than 600 barrels of brandy, 300 of wine, and 200 tierces of raisins. For the manufacture of earthen vessels of all kinds there are establishments in the republic, where they are made with much skill, the best in Mexico, Guanajuato, and Guadaluajara. In fine pottery, great improvements have been recently made in Puebla, where the business has been carried on from very remote times, in Salamanca, in the state of Guanajuato, and lately in the capital a manufactory excels all the rest. There are four establishments for plain glass in the capital, and the States of Mexico and Puebla, the product of which exceeds the consumption. There are eight paper mills in the Federal District, and the States of Mexico, Puebla and Jalisco, which not only supply the demand for the press, but for other purposes, particularly writing-paper equal to that of other countries. The scarcity of linen rags requires most of the paper to be made of cotton, though some is made of linen, and also of the filaments of the maguey. Although many hand-wheel looms are used in making cotton fabrics, as rebozos, mantas and other ordinary articles, there are 62 large establishments moved by machinery, in the Federal District, and the States of Coahuila, Durango, Jalisco, Puebla, Mexico, Queretaro, and Vera Cruz. Although some pretty fine linens are made in them, they are but few, the chief part being hilazas and mantas, which in 1845 amounted to 3,000,000 pounds of the hilazas and 1,000,000 pieces of the latter. The manufactory of rebozos in the city of Zamora in the State of Morelia, is worthy of particular notice. For woolen fabrics, besides the numerous shops in which are manufactured ordinary cloths and various common articles, there are seen large establishments in the district and the States of Mexico, Queretaro, Zacatecas and the territory of Hoxcala, in which are made cloths, cassimeres, carpets, baize, etc., which compete with those imported, both in quality and in price. In spinning and winding silk, more than 60 hand machines are in the capital, Puebla and Guadaluajara, and the products are preferred to the foreign. In the capital is a machine by horse-power, on the French plan, which can spin above 100 lbs. a day. About 40,000 lbs. are estimated to be spun in Mexico annually. The only woven silk yet made are some rebozos and bands. All kinds of fancy trimmings are made in Mexico, as buttons, cords, braids, and many ornaments of cotton, wool, and silk; and the best factory is that of the Hopicio for the poor in the capital, where they are as well made as in Europe. Gold and

silver thread of all kinds are made, and bugles, spangles, galloon, cords and belts of silver and gold, and bells of silver and copper. Oil-cloths are made, of qualities and patterns equal to foreign. Many other minor articles are also manufactured, to a considerable amount annually. An establishment for stearine candles has been commenced, under an exclusive privilege. According to the estimates of Señor Quiros in 1817, this branch of products amounted to \$16,011,818; they are now, probably, not less than \$80,000,000 or \$90,000,000.

Mineral Resources of Mexico.—In a period of 27 years, from 1825 to 1851, both inclusive, the average value of the precious metals annually exported was \$9,481,042, as appears from a recent work of Miguel Lerdo de Tejada, "*Comercio de México des de la Conquista hasta hoy*," which gives the following table of the amounts legally exported in coin and otherwise, during the period designated:

Years.	Value.
1825.....	\$3,702,447
1826.....	3,547,795
1827.....	9,669,428
1828.....	12,287,288
From July, 1829, to June, 1830.....	12,022,312
" 1830 " 1831.....	10,584,974
" 1831 " 1832.....	7,280,808
" 1832 " 1833.....	14,160,146
" 1833 " 1834.....	13,587,759
" 1834 " 1835.....	8,062,213
" 1835 " 1836.....	12,705,471
" 1836 " 1837.....	8,471,826
" 1837 " 1838.....	4,459,745
1839.....	11,625,143
1840.....	6,402,135
1841.....	11,661,491
1842.....	8,511,556
1843.....	10,645,683
1844.....	11,661,296
1845.....	11,930,901
1846.....	9,687,829
1847.....	888,195
From January, 1848, to June, 1849.....	10,994,733
From July, 1849, to June, 1850.....	12,166,806
" 1850 " 1851.....	8,608,081
Aggregate.....	\$287,026,061
Average.....	9,481,042

It is believed that immense quantities of sulphur, sufficient, it is stated, to supply the manufacturing wants of the whole world, are to be found in the State of Puebla. A late Mexican paper says, in reference to these sulphur-beds: "The volcano of Popocatepetl is no uncertain or chance enterprise. It possesses a real and certain treasure, and that treasure is the inexhaustible amount of pure sulphur which is springing up every day in infinite abundance from its bowels." The *Siglo* newspaper, published in Mexico, says: "The United States consume annually, in manufactures, sulphuric acid to the amount of the enormous sum of \$18,000,000 to \$22,000,000; and, perhaps, it would not be out of the way to estimate the imports of sulphur into Great Britain at nearly the same amount. In these two countries alone, we should find a market for over \$30,000,000 worth annually. The price of sulphur is now at about \$50 per ton, in the English and American markets, for the article brought from Vesuvius and the sulphur-beds of Italy. The article from Popocatepetl would, of course, command a higher price, from its superiority. * * * The supply in Vesuvius is limited, while that of Popocatepetl would find little diminution by the labor of a century." There seems to be no doubt of the existence of incalculable quantities of pure sulphur in the vicinity of this volcano. From observations actually made, and estimates formed on the spot, by scientific officers, it is believed that the sulphur thrown up and hardened may be set down at millions of millions of arrobas. The government of Mexico has already given attention to this subject. The stipulations by which commercial relations between the United States and the republic of Mexico are regulated are found in the treaty of April 5, 1831, and that of May 30, 1843; the latter known as the treaty of Guadalupe Hidalgo.

Article 8d of the latter treaty provides that all the custom-houses then in possession of officers of the United States should be immediately restored to the Mexican authorities, together with all bonds and evidences of debt for duties on imports and exports not fallen due; and further, that all duties collected at such custom-houses by the United States' officers, from and after the ratification of the treaty, shall, after deducting the cost of collection, be delivered over to the Mexican government, at the city of Mexico, within three months after the exchange of ratifications.

Articles 6 and 7 relate to the navigation of the Gulf of California, the Rivers Colorado and Rio Bravo del Norte (annulled by 4th article of the treaty of December 30, 1853, ratified and exchanged 30th June, 1854). Article 17 revives treaty of 1831 for 8 years, with the usual stipulation of 12 months' notice by either party desirous of terminating the same. From the treaty of 1831 the "additional article" is excepted, and also such stipulations as are incompatible with the treaty of 1848. Article 20 continues in force, for 60 days after the ratification of the treaty, the tariff established by the United States at ports and places occupied by their forces. Article 21 provides for the appointment of commissioners or arbitrators to settle any disagreements which may hereafter arise between the two governments concerning the political or commercial relations of the two countries. Article 22 prescribes rules and proceedings to be followed, should a war unhappily break out between the two republics, and covenants protection, etc., for the citizens of each residing in the other; and also provides that this article shall not be annulled under the pretense that war dissolves all treaties, or under any other pretense whatever.

The treaty of 1831, revived by the 17th article of the treaty of 1843, secures to the citizens of each country, in the territory of the other, equal footing with the citizens and subjects of all foreign nations, and provides that neither country shall grant any particular favor to other nations in respect of commerce and navigation, that shall not immediately become common to the other party; no higher or other duties, imposts, or fees whatsoever, to be paid by the citizens or vessels of either country in the ports of the other, than are, or may be, paid by the citizens or vessels of the most favored nation; all merchandise, the produce, growth, or manufacture of either country, imported into the other, to be subject to no higher or other duties than similar importations from any other foreign country; no export duties or prohibitions to be prescribed by either country, that shall not equally apply to all other foreign nations; the vessels of both countries, in the ports of either, to be placed on the footing of national vessels, as respects tonnage duties, light or harbor dues, pilotage, salvage in case of damage or shipwreck, or any other local charges, the coasting trade being reserved by each of the high contracting parties to its own vessels, respectively; the duties on imports and exports of articles, the growth, produce, or manufacture of either country, to or from the ports of the other, to be the same, whether such importations or exportations take place in vessels of the United States or of Mexico; all merchants, captains, commanders of vessels, and other citizens of either country, to have full liberty to manage, themselves, their own affairs, or choose their own brokers, factors, agents, or interpreters in the ports and territories of the other. The fourth section of the 34th article saves from the operation of this treaty all former or existing treaties with other sovereign States or powers.

Measures of Weight.—The largest measure for brandy, wine, and other liquors, is the jarva, which contains 18 cuartillos, of 1 pound, or 16 ounces of distilled water at the temperature of its greatest density. Brandy barrels are distinguished into medidos and

redouos. The former contain 262 cuartillos, and the latter 160. The redouo barrel of wine contains 150 cuartillos. Oil is bought and sold at wholesale by weight; but at retail a particular cuartillo is used, containing 17 ounces and 9 drachms of distilled water. For olive oil the same cuartillo is used as for brandy, wines, etc. At the mines the marco is used for gold and silver. The gold marco is divided into 50 castillanos, of 8 tomines of 12 grains. The silver marco has 8 echoods, of 6 tomines of 12 grains. Assayers, to determine the purity of these two metals, use the same marco. For gold, the castellano is divided into 24 quilates, of 4 granos de ley, each grano equivalent to 50 in weight. For silver, the marco is divided into 12 dineros of 24 granos de ley, each grano being equivalent to 16 in weight. Lapidaries, for the assay of precious stones, use the quilate, which is the tenth of an ounce. Apothecaries use the libra medicinal, which is divided into 12 common ounces of eight drachms, of 3 scruples, of 24 granos.

Money in Circulation.—Baron Humboldt calculated, in 1803, the value of the money accumulated in Mexico to be \$55,000,000 or \$56,000,000; which sum compared with the population then existing in New Spain, corresponded in proportion to \$10 for each inhabitant. Taking this calculation for a basis, and considering the prosperity in mining from that time to this, there is no hazard in saying that the value of the money now in the republic, notwithstanding the great exportation past and present, amounts to \$90,000,000 or \$100,000,000. Although this sum is, doubtless, sufficient for all the operations of the interior trade, which is very small, as well in agriculture as in manufactures and commerce, the circumstance of the greater part being confined to a few hands on the one side, and on the other the want of confidence, causes the frequent scarcity of the money in circulation, causing the rare phenomena of a country which produces gold and silver so abundantly, paying a higher interest on money than in countries not yielding it.

The geographical position of the States and Territories of Mexico is thus defined: 1. *Eastern or Gulf Coast.*—The States of Yucatan, Chiapas, Tabasco, Vera Cruz, and Tamaulipas. 2. *Western or Pacific Coast.*—The States of Oajaca, Puebla, and Territory of Tlascala; State of Mexico, and Federal District; States of Michoacan, Jalisco, and Territory of Colima; States of Sinaloa, Sonora, Guerrero, and Territory of Lower California. 3. *Interior.*—The States of Queretaro, Guanajuato, Zacatecas, San Luis Potosi, New Leon, Coahuila, Durango, and Chihuahua.

Yucatan.—The State of Yucatan occupies the greater portion of the peninsula which bounds the southern edge of the Gulf of Mexico. It comprises an area of about 52,947 square miles, and contains a population of 680,948.

The principal productions of Yucatan are maize, cotton, rice, tobacco, pepper, sugar-cane, dye-woods, hides, and soap. Foreign trade with Yucatan is distributed between the United States, France, England, Spain, and other countries. The proportions may be estimated from the following table, showing the value of imports into Yucatan during the year 1850, from each of the countries above designated: Spain, 1,950,000 francs; England, 1,400,000 francs; United States, 1,000,000 francs; France, 225,000 francs; other countries, 925,000 francs; total, 5,500,000 francs, or \$1,023,000.

The principal ports in Yucatan are Campeche and Sisal, both open to foreign commerce. In the former, the water is so shallow that vessels are obliged to anchor some considerable distance from the town of Campeche, and discharge and take in cargoes by means of lighters and canoes. Sisal possesses a deeper port than Campeche, but it is more exposed to the north winds, which prevail in the Gulf of Mexico from October to April. It is the dépôt for the import

and export trade of Merida, the capital of Yucatan, and for all merchandise transported to or from the interior of the State. Campeche attained, under the ancient rule, a high degree of commercial prosperity. It enjoyed a monopoly of all the imports and exports of the province; but since the independence of Mexico, its commerce has declined—a result brought about by the opening of other ports to general trade, as well as by its difficulties with the central government, and the fearful ravages of epidemics, by which, in one year, fully two fifths of its population were carried off.

Chiapas.—The State of Chiapas possesses but little commercial interest. It was incorporated into the territory of Mexico in 1833, forming, before that year, a portion of the territory of Guatemala. Its productions are corn, cocoa, sugar, tobacco, indigo (of the very finest quality, but in small quantities), tropical fruits, and timber of almost every variety. Like Yucatan, this State derives its chief interest from the ancient remains of a former advanced civilization within its territories, bearing date long anterior to the Spanish conquest. The ruins of Palenque, in Chiapas, and of Uxmal and Chichen, in Yucatan, are, perhaps, the most wonderful of all that have been discovered hitherto on the western continent.

Tabasco.—Tabasco, the smallest State of the confederacy, was, previous to the revolution, a province belonging to the intendency of Vera Cruz. Its principal productions are cocoa, coffee, pepper, sugar, tamarinds, arrow-root, palmetto, and some tobacco. Its capital, Villa de San Juan Bautista, lies about 70 miles from the Gulf, and is reached by vessels of light draught. Its commerce is chiefly carried on with the adjoining States and with Guatemala.

Vera Cruz.—The State of Vera Cruz lies under the burning sky of the tropics, and is comprised within a long, but somewhat narrow, strip of territory along the Gulf of Mexico, running from the mouth of the Tampico River in the north, to the Guasacualco and the boundaries of Tabasco on the south. It contains an area of 3199.50 square leagues, and a population of 264,725* inhabitants. The port of Vera Cruz lies in 19° 11' 52" N. lat., and 98° 29' 19" W. long. from Paris, on a sandy plain, interspersed with marshes, which bound the Gulf of Mexico. From the month of May to that of November, the usual period during which the northers cease blowing, the unhealthiness of Vera Cruz is proverbial. The principal productions of the State of Vera Cruz are tobacco, coffee, sugar, cotton, corn, barley, wheat, jalap, sarsaparilla, vanilla, mahogany, ebony, dye-woods, and every variety of tropical fruit. The port of Vera Cruz supplies a great part of the republic, and is considered by far the most important shipping point on either coast. Foreign vessels are allowed to introduce goods and effects from foreign countries only, and they are permitted to enter but one port for discharge; they may then proceed, in ballast, to any other port in the republic for the purpose of taking in cargoes of the produce of the country. During the year 1852 there arrived at the port of Vera Cruz, from all foreign countries, 173 vessels, with an aggregate of 21,958.23 tons. The total value of merchandise exported, including gold and silver, was \$10,449,070 05. Of the vessels named, there were 49 American, measuring 6284.15 tons. The character or value of their inward cargoes is not given in the United States' consular returns, but the import duties are stated to have amounted to \$159,301 20. Amount of silver exported, \$853,287; of gold, \$55,884; other products, \$205,150; total value of homeward cargoes, \$614,322.

During the same year there arrived from Great Britain 38 vessels, with an aggregate of 2655.22 tons. Total amount of exports, \$9,175,763 82, of which silver

* A census taken in 1854 raises this number to 274,686.

covered \$8,565,859 32, and gold \$47,952. France holds the next rank in the trade of Vera Cruz. The number of French vessels arrived in 1852 was 28, of 5717 tons. Inward cargoes not ascertained. Outward, total value \$421,935; of which, silver \$118,921, gold \$45,554. Number of Spanish vessels arrived at Vera Cruz during the year 1852, 26, with an aggregate of 8211.67 tons. Total value of cargoes exported \$141,287, chiefly silver and gold. The residue of the foreign trade of this port, during the same year, was distributed between 82 vessels, with an aggregate of 4189 tons, carrying, respectively, the Belgian, Danish, Hanoverian, Mexican, Portuguese, Sardinian, and Venezuelan flags. From Hamburg there were 8 vessels, exporting a total value of \$23,196.

During the prevalence of the northers, the port of Vera Cruz is considered to be very unsafe. In 1846 the United States' brig-of-war *Somers* was lost in sight of the city, making the third United States' national vessel lost during that season, in the Gulf of Mexico. A norther generally continues two or three days. "It comes on," says a publication elicited by the loss of the *Somers*, "gradually, so that the mariner who is unaccustomed to navigate the Gulf of Mexico is often unsuspecting of danger, and flatters himself with the idea that the 'stiff breeze' which impels his vessel onward will soon carry her to her port of destination. And so it does, but not in safety; for the 'stiff breeze' freshens into a gale, and the gale into a hurricane; and, at length, the vessel strikes on one of the rocks with which the harbor of Vera Cruz is studded. In that harbor the anchorage ground is, perhaps, the worst in the world. At Vera Cruz no number of anchors hardly will keep a vessel from going ashore in a norther. All that the captain of a vessel can do, under such circumstances, is to slip his anchors and stand out to sea immediately. Vessels of war, even those belonging to friendly powers, are not allowed by the Mexican government to enter the harbor of Vera Cruz. They always anchor at Sacrificios, a barren island at the entrance of the harbor. At Sacrificios the anchorage is pretty good. Mexican men-of-war, when there are any such in the harbor of Vera Cruz, are always moored to rings set in the walls of the castle of St. Juan de Ulloa, and, by that means, are secured from the effects of a norther." The official account of the loss of the *Somers*, bearing date December 12, 1846, is on file in the Navy Department, and contains many valuable suggestions relative to the dangers to which navigation is exposed in the Gulf of Mexico.

Tamaulipas.—This State is bounded north by the State of Texas; north-west by the Mexican State of Coahuila; on the west by the States of New Leon, San Luis Potosi, and Vera Cruz; and on the east by the Gulf of Mexico. In breadth it varies from 12 to 55 leagues. This State has more than 350 miles in length of sea-coast, and is fringed with lagoons varying from 4 to 18 miles in width, divided from the gulf by a bank of sand. The shallowness of the shores along the coast, and the dangerous bars which choke the mouth of the rivers, render the navigation difficult and dangerous for vessels of almost all classes. Population in 1850, 110,074; though the census of 1854 gives but 100,064. The chief productions of this State are similar to those found in the State of Vera Cruz. The coasting and foreign trade is conducted principally in the ports of Tampico de Tamaulipas and Matamoras. From these places large quantities of European and North American manufactures enter the middle and northern States of the republic. Queretaro, San Luis, Nuevo Leon, Coahuila, Zacatecas, Jalisco, Durango, Chihuahua, and Sonora, receive most of their foreign supplies from these points. Tampico de Tamaulipas, on the northern bank of the Panuco, is the principal commercial port of this State. Its bar is dangerous, and its harbor considered unsafe. The town is situated

in the midst of extensive marshes, and can not be approached by large vessels. Its foreign commerce is represented as increasing (vide *MAYER's Mexico*, vol. ii., p. 206), though a consular return from that port, bearing date February 17, 1854, says that the trade with the United States is on the decrease, owing to "high rates of duties, both impost and consumption; as also circulation and municipal."

Tampico exports hides, sarsaparilla, goat-skins, fustic, vanilla, wool, jerked beef, and Mexican hemp. Tampico is the outlet of the metals and other productions of San Luis Potosi, Guanajuato, Zacatecas, and Durango, considered to be the richest mining districts in Mexico. The foreign trade of Tampico during the year ending December 31, 1852, was as follows: Total value of inward cargoes, \$1,228,948; total value of outward cargoes, \$3,266,634; total foreign trade, \$4,495,582.

Total number of American vessels included in the above, 22, with an aggregate of 2267 tons. Value of inward cargoes, \$196,936; value of outward cargoes, \$237,944; total trade in American vessels, \$434,880. Total number of British vessels, 17; aggregate tonnage not ascertained. Of these, 14 belonged to the British Royal Mail Steamship Company, and 3 were sailing vessels. Total value of inward cargoes (exclusive of 1000 flasks of quicksilver, value not ascertained), \$237,500; total value of outward cargoes, \$2,928,418; total trade in British vessels, \$3,215,918. Total number of French vessels, 9, of 1,315 tons. Total value of inward cargoes, \$398,000; total value of outward cargoes, \$2080; total trade in French vessels, \$400,080. Total number of Spanish vessels, 7, of 728 tons. Total value of inward cargoes, \$139,300; total value of outward cargoes, \$50,176; total value of trade in Spanish vessels, \$189,476.

The residue of the trade at the port of Tampico, during 1852, was distributed between Sardinia, Hamburg, Holland, and Mexico. Matamoras lies on the right bank of the Rio Grande, or Rio Bravo del Norte, at the distance of nearly 30 miles from its mouth. For purposes of navigation, this river is, perhaps, the most important in Mexico, and has proved navigable by steamers for a considerable distance into the interior. Recent returns from this port are not at hand, but the general trade of Matamoras is not of much importance. The following facts relative to its trade are derived from French official returns: Imports into the port of Matamoras consist chiefly of breadstuffs, spices, provisions, and cloths, from New Orleans; exports, of specie, hides, and wool. In 1844 there entered 33 vessels, of 2054 tons, floating inward cargoes of the value of 1,633,000 francs; and outward about an equal amount. Two thirds of all commercial operations at this port are under the American flag. In 1841 commercial movements with the United States reached the sum of 23,000,000 francs—12,000,000 for inward, and 11,000,000 for outward cargoes. Of the imports, British merchandise imported in American bottoms reached 5,000,000, while American produce and manufactures amounted to only 2,500,000. French merchandise in American bottoms figured as high as 1,300,000 francs, and German 1,080,000. Cotton cloths (mostly British) reached, in this trade, 5,136,000 francs. The export trade to the United States during this year covered 9,000,000 francs in specie, and over 2,000,000 in hides.

Chihuahua.—The principal port in this State is El Paso del Norte, lying on the right bank of the Rio Grande. "The position of this town is an important one, inasmuch as the road by it is the only practicable one for wagons leading from Santa Fé to Chihuahua." —*MAYER's Mexico*. The valley of El Paso is the most fertile in Mexico, producing maize, wheat, and almost every variety of fruits. The commerce of the United States with this port has decreased since 1851, not half the amount of merchandise having been imported from

the United States in 1852 as in 1850 and in 1851. This decline is attributed to the failure of the crops in the State of Chihuahua, and the high duties, which amount almost to a prohibition. Mexican and foreign merchants send to the United States wine and brandy, manufactured in the El Paso valley, and sugar, soap, rebosas, saddles, bridles, leather, segars, mats, and fruits, amounting annually to about \$70,000.

Oajaca.—This State has a sea-coast on the Pacific extending 118 leagues, and comprises an area of about 4150 square leagues, containing a population of 525,101 inhabitants. The fertility of soil and richness of productions render this State, in a commercial aspect, one of the most important in Mexico. There is not, however, any port open to foreign commerce on this part of the Pacific, from the boundary line of Guatemala to Acapulco, a distance of nearly 900 miles. The coasting trade is nearly nominal, although the State possesses nine sea-ports or anchorages, namely: Tehuantepec, Huatulco, Escandido, Chachahua, and Jamiltepec. Corn, cotton, coffee, sugar, cocoa, vanilla, tobacco, cochineal, wax, honey, and indigo, are the staple productions. The indigo crop, produced in the department of Tehuantepec, is estimated at 500 garrones, of 175 pounds each, and that in the valley of Sonola at 600 garrones, making the whole crop of indigo equal to 192,500 pounds. The price paid to planters is 62½ cents to \$1 per pound. From a message of the Governor of Oajaca to the National Congress, it appears that, during the 17 months previous to March 1, 1854, the crop of cochineal produced in the State of Oajaca reached as high as 1,248,550 pounds. The price usually ranges from 50 cents to 75 cents per lb., according to quality. This State possesses, also, considerable mineral wealth. There are, at present, silver mines worked, 4; not worked, 3; gold mines worked, 5; lead mines, 1. Annual product of all the mines, \$352,000; annual products of iron mines, 244,000 pounds. On both sides of the Isthmus of Tehuantepec great quantities of mahogany and other cabinet woods, gums, etc., are produced. The cocoa raised in some parts of this State is of so superior a quality,

that, while the country belonged to Spain, it was reserved for the royal family. It still has a deserved reputation.

Guerrero.—This State comprises the districts of Acapulco, Chilapa, Tasco, and Tlapa, and the municipality of Coyucan. Its principal port is Acapulco, so spacious and secure that 500 vessels can lie at anchor in it with perfect safety. The trade of Acapulco is inconsiderable; the foreign vessels entering the port being either freighted with coals for the Pacific Mail Steamship Company, or in distress—the former being compelled to clear in ballast. By decree dated February 4, 1854, the Supreme Government made a reduction in the tonnage dues upon all vessels arriving in that port laden with coal, and consigned to any steamboat company having a dépôt of coals in the harbor, viz.: 50 cents per ton, instead of \$1 50, as formerly. During the year 1853, there entered the port of Acapulco 81 American steamships, of 107,007 tons; 8 sailing vessels (ships) carrying 4,369 tons; 1 bark, and 2 schooners. Besides Acapulco, there are other ports on the Pacific coast open to foreign trade; but the Department is not in possession of information respecting them. They possess, however, no commercial importance. The other States of Mexico, being either in the interior of the republic, or possessing no ports open to foreign commerce, are not deemed of sufficient commercial consideration to demand separate notice. Returning to the general commerce of Mexico with foreign nations, particularly with the United States, it is found that the principal articles of importation from the latter to that country are, machinery, articles of iron, small wares, linen, woolen, and cotton cloths; silks, flour (when not prohibited), raw cotton, timber for the construction of houses, prepared medicines, household furniture, vehicles, harnesses, horses, salt meats, sperm, paper, marble and other stone.

The imports into the United States from Mexico consist, principally, of gold, silver, dyewoods, dyestuffs, hides, skins of sheep, cattle, and other productions of less value. The following statement shows a decrease in the importance of our commerce.

COMMERCE OF THE UNITED STATES WITH MEXICO, FROM OCTOBER 1, 1824, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1825.....	\$951,040	\$5,519,104	\$6,470,144	\$4,044,647	\$199,946	\$2,608,198	20,487	2,618
1826.....	1,024,275	5,256,775	6,281,050	3,916,198	1,500	2,860,409	23,526	2,452
1827.....	886,907	3,236,350	4,123,257	5,281,867	800	4,005,255	23,494	2,123
1828.....	522,016	2,364,468	2,886,484	4,814,258	4,850	3,858,880	26,870	8,181
1829.....	495,626	1,835,525	2,331,151	5,026,761	4,640	4,344,946	21,692	4,719
1830.....	985,764	3,851,694	4,837,458	5,235,241	.....	4,703,716	27,295	3,551
Total....	\$4,965,628	\$23,118,916	\$28,079,544	\$28,268,972	\$211,786	\$22,371,314	143,354	18,644
Sept. 30, 1831.....	\$1,091,489	\$5,086,729	\$6,178,218	\$5,166,745	\$24,210	\$4,464,134	22,809	10,019
1832.....	845,777	2,621,764	3,467,541	4,293,954	1,600	3,626,704	24,111	9,964
1833.....	1,649,314	3,758,777	5,408,091	5,452,818	1,410	4,592,892	30,545	4,359
1834.....	1,192,646	4,072,407	5,265,053	8,066,068	.....	7,204,517	25,504	6,032
1835.....	3,016,612	6,012,609	9,029,221	9,490,446	8,895	8,343,151	44,453	11,169
1836.....	1,500,639	4,540,996	6,041,635	5,615,519	.....	4,587,418	21,273	4,588
1837.....	939,613	2,940,710	3,880,323	5,654,002	.....	4,650,973	17,502	4,018
1838.....	1,040,906	1,123,191	2,164,097	3,500,709	22,732	2,639,426	11,936	2,725
1839.....	816,660	1,970,702	2,787,362	3,127,153	4,200	2,273,548	17,816	5,620
1840.....	969,938	1,545,408	2,515,346	4,175,001	.....	3,458,892	18,348	3,025
Total....	\$18,068,294	\$33,678,288	\$46,736,882	\$54,542,715	\$62,547	\$45,841,690	234,196	60,914
Sept. 30, 1841.....	\$886,513	\$1,150,107	\$2,036,620	\$3,284,957	\$6,204	\$1,938,083	14,018	4,935
1842.....	969,371	564,862	1,534,233	1,995,696	8,680	1,842,817	15,912	1,226
9 mos. 1843.....	907,745	564,192	1,471,937	2,782,406	11,525	2,176,668	22,727	2,360
June 30, 1844.....	1,292,752	502,081	1,794,833	2,887,002	6,000	1,750,267	22,636	1,804
1845.....	754,154	368,177	1,122,331	1,702,936	.....	956,407	16,952	4,500
1846.....	901,333	629,447	1,531,180	1,386,621	1,440	698,558	14,224	3,904
1847.....	536,641	155,737	692,428	746,818	.....	328,008	10,716	2,155
1848.....	2,095,485	1,962,951	4,058,436	1,581,247	.....	850,146	62,083	4,526
1849.....	1,047,999	1,042,869	2,090,868	2,216,719	6,290	1,528,225	29,820	10,140
1850.....	1,493,791	514,036	2,012,827	2,135,366	.....	1,560,166	24,518	30,104
Total....	\$10,920,734	\$7,454,900	\$18,375,633	\$20,669,703	\$40,489	\$13,150,335	233,606	63,714
June 30, 1851.....	\$1,014,690	\$567,093	\$1,581,783	\$1,504,779	.....	\$1,088,993	31,019	20,145
1852.....	1,406,372	878,557	2,284,929	1,649,208	.....	1,093,432	22,719	17,974
1853.....	2,029,770	1,029,054	3,058,824	2,167,985	.....	1,411,855	30,810	15,804
1854.....	2,091,570	1,043,616	3,135,186	3,463,190	.....	2,525,394	29,753	15,173
1855.....	2,234,308	660,486	2,922,804	2,882,830	\$1,200	1,978,080	41,458	10,423
1856.....	2,464,942	1,287,297	3,752,239	3,568,681	450	2,714,923	47,129	7,106

This exhibit may be relied upon, having been made up from official reports on "Commerce and Navigation." It will be perceived that the commerce between the two countries decreased during the 30 years embraced in the above table. In 1854 it experienced considerable activity, exceeding in value the totals of 1850, but not reaching those of 1840, and still further below those of 1830. The value of imports in 1854, as already given, was \$3,463,190; and of exports, \$3,135,486; making a total of \$6,598,676—being \$91,666 less than for the year 1840, and \$3,474,023 less than for 1830. The importations from Great Britain into Mexico may be illustrated from a report made by order of Parliament. For a period of seven years, from 1840 to 1846, both included, the sum total of the value of the imports was \$82,246,705, making an average value of nearly \$12,000,000 per annum. The principal articles of import were as follows: drugs, haberdashery, and wearing apparel, arms and ammunition, malt liquors, printed books, manufactures of brass and copper, furniture, carriages, coals, cordage, manufactures of cotton, earthenware of all kinds, glass wares, hardware and cutlery, hats, iron and steel in bars, manufactured lead, prepared skins, harnesses and saddles, manufactures of flax, machinery and machines, and musical instruments. Of these articles, the manufactures of cotton rank highest; the estimated value of the importation for the seven years amounting to more than \$57,000,000, while that of manufactures of linen (which comes next in order of value) was more than \$12,000,000, leaving only some \$12,000,000 or \$13,000,000 as the aggregate value of all the other imports from Great Britain into Mexico. The character and value of merchandise entering into the commercial movement of Mexico with France may be exemplified by those of the year 1851, as exhibited from the data furnished by the official returns of France. The reason of the shipments thither of the precious metals being in so small amounts, is, that the exchange with England can always be more conveniently arranged than with that country.

Description of merch.	Values.	Description of merch.	Values.
Manufs. of silk.....	\$1,249,038	Perfumery.....	\$42,957
" cotton.....	644,134	Precious stones.....	40,000
" wool.....	625,447	Clocks and watches.....	39,943
" glass.....	323,533	Carriages, etc.....	32,630
Engravings, b'ks, etc.	278,065	Jewelry.....	35,558
Wines.....	245,693	Furniture.....	32,531
Arms.....	231,419	Machines and machinery.....	25,541
Manfs. of metal.....	179,850	Musical instruments.....	23,003
Haberdashery, etc.	126,549	Stearine oil.....	21,675
Rabbit & hare sk's.....	504,216	Medicines.....	19,867
Mech. & oth. tools.....	103,040	Iron and steel.....	19,747
Dressed skins.....	67,017	Prepared skins.....	19,293
Cutlery.....	56,531	Silk (raw & manuf.).....	15,861
Fish, pickled, etc.....	55,546	Toys.....	15,073
Artificial flowers & fancy goods.....	47,310	Olive-oil.....	13,976
Spirits and liqueurs.....	47,257	Umbrellas and parasols, silk.....	13,525
Manufs. of flax and hemp.....	45,921	Sundries.....	221,966

The importation to Mexico from Germany consists principally of linen textures, such as Silesian linen, creas, etc., etc.; to which are added, in smaller quantities, some chintzes, muslins, silk handkerchiefs, cloths, cassimeres, crystals, plain glass, fine and common hardware, arms, carriages, furniture, and pianos.

The quantities of linen exported from Hamburg and Bremen to Vera Cruz and Tampico, during the years designated, were as follows:

Kinds of linen.	1839.	1840.	1841.
	Pieces.	Pieces.	Pieces.
Silesian.....	116,220	59,133	52,354
Creas.....	29,566	20,754	19,654
Ruanes.....	1,973	1,155	1,470
Bretañas.....	12,795	11,022	4,160
Estopillas.....	7,177	7,150	5,888
Listados.....	7,563	10,442	2,325
Osnaburck.....	2,949	1,046	150
Cascerillas.....	10,852	4,164	200
Canamazos.....	3,835	1,154	1,330
Coties.....	753	1,966	1,559

STATEMENT SHOWING THE VALUES OF IMPORTS FROM HAMBURG AND BREMEN INTO THE PORTS OF VERA CRUZ AND TAMPICO, WITH THE NUMBERS OF VESSELS ENGAGED DURING THE YEARS SPECIFIED.

Years.	No. of vessels from			Values of merch as per invoice.
	Hamburg.	Bremen.	Both ports.	
1837.....	10	5	..	\$1,466,000
1838.....	11	5	2	1,760,000
1839.....	11	3	1	1,970,500
1840.....	14	6	..	1,750,000
1841.....	12	4	1	1,485,200
Aggregate.....				\$5,432,000
Av. an'l value.....				1,686,400

STATEMENT EXHIBITING THE AMOUNT OF IMPORT DUTIES COLLECTED AT THE PORT OF VERA CRUZ DURING THE FOUR YEARS ENDING WITH 1854, AS COMPILED FROM THE CUSTOM-HOUSE BOOKS OF THAT PORT.

Years.	Tariff.	Averin imposts.	Mole tax.	Totals.
	Dollars.	Dollars.	Dollars.	Dollars.
1851....	1,954,388 37	435,912 14	110,607 13	2,500,907 64
1852....	2,915,591 39	200,988 40	106,548 33	3,223,128 12
1853....	2,454,723 03	242,676 52	124,770 95	2,822,170 85
1854....	2,583,636 74	278,514 94	114,489 27	2,981,640 95
Aggregate	9,913,339 53	1,158,092 30	456,415 63	11,527,847 56
Average.	2,478,334 89	289,523 07	114,108 92	2,881,961 89

The foregoing is exclusive of city and hospital contributions, and *internacion*, or internal duty, levied upon the same goods when dispatched to the interior.

The commerce of Mexico is confined to the reception of foreign goods sufficient for the necessities or luxury of a very small class of the population, for which is given in exchange a large portion of the products of the mines, and some few products of the soil. As the yield of the mines is estimated only at \$26,000,000 annually, the amount of commerce can not much exceed that sum. The total number of Mexican merchant vessels, all of which are small, does not exceed 50, and of these more than half belong to the merchants of Yucatan.

The following account of the trade and commerce of the republic for the year 1851-52 is compiled from the official returns:

Ports.	Total.	Passengers.	
	Tonnage.	Arrived.	Departed.
Vera Cruz.....	28,203	1,429	1,346
Tampico.....	7,704	178	126
Campeachy.....	6,992	4,975	1
Sisal.....	4,239	43	95
Tabasco.....	3,730	51	21
Acapulco.....	181,530	31,242	23,540
Manzanilla.....	1,402	11	..
San Blas.....	30,321	4,863	4,200
Mazatlan.....	30,762	5,095	5,000
Altata.....	1,153	81	9
Guayamas.....	4,335	718	85
Total.....	256,692	43,516	40,153

Of the vessels arriving, 68 belonged to Mexico, 435 to the United States, 103 to England, 69 to France, 60 to Spain, 13 to Hamburg, 24 to Peru, 5 to Belgium, 8 to Bremen, and 1 each to Portugal, Nicaragua, Sweden, Hanover, and Venezuela.

Among the arrivals were 219 steamers, viz., 145 at Acapulco, 7 at Vera Cruz, 4 at Tampico, 27 at San Blas, 35 at Mazatlan, and 1 at Guayamas. Of these, 145 were United States' vessels.

Of the classes of vessels, beside steamers, there were 55 frigates (vessels of war), 114 barks, 165 brigs, 63 hermaphrodite brigs, 155 schooners, and 63 pilot boats.

The chief coasting trade of the republic, on the Gulf of Mexico, is performed by schooners between Tampico, Tuspan, Sisal, Campeche, Tabasco, Minatitlan, Alvarado, and Tlacotalpan. For this trade, a few vessels exist of about a hundred tons burden, built at Campeche, and are equal to American vessels of like quality in respect to capacity, sailing properties, and durability. National vessels make voyages only to the ports of New Orleans and Cuba; and in the year 1852 only seven sail were thus employed, and the amount of coasting in the same time was very small. There appears to be no increase in this trade, nor in the building of vessels. The commerce with foreign

countries is reported recently to have decreased; and with the United States, in particular, to be on the decline. The cause of this change is considered to be the high rates of duties, both on imports and exports, and the additional charges, local as well as internal. It is known that the late President of Mexico (Santa Anna), a short time before his abdication, had granted privileges and special concessions to certain European houses for the introduction of foreign merchandise on the Pacific coast, at from 25 to 30 per cent. less than the regular impost by the established tariff. As this involved a palpable violation of the treaty between the United States and Mexico, the American minister to that country, under date of April 10, 1855, protested against such privileges and special concessions. Under such a system, American merchants were reduced to the necessity of witnessing the products of the United States contributing to the fortunes of European merchants; while they were denied the right, notwithstanding treaty stipulations, of importing similar merchandise on the same terms, under a penalty of confiscation, and a fine to the extent of the market value of the cargoes at the place of importation.

The Principal Ports are Acapulco, lat. $16^{\circ} 50' 30''$ north, long. $90^{\circ} 46'$ west, the best sea-port on the western coast of Mexico, and is capable of containing a large navy with perfect safety. Tampico, a considerable commercial port on the eastern coast of Mexico, in lat. $22^{\circ} 15' 30''$ north, long. $97^{\circ} 52'$ west. The shifting of the bar at the mouth of the river, and the shallowness of the water on it, which is sometimes under 8 feet and rarely above 15 feet, are serious obstacles to the growth of the port. Vessels that can not enter the port, load and unload by means of lighters, mooring outside the bar, so that in event of a gale from the north, they can readily get to sea. Vera Cruz, the principal sea-port on the eastern coast of Mexico, lat. $19^{\circ} 11' 52''$ north, long. $96^{\circ} 8' 45''$ west. The harbor lies between the town and the island of San Juan de Ulloa, about 2400 feet wide; it is insecure, the anchorage being very bad, and no vessel is safe unless made fast to iron rings fixed into the wall of the castle on the island, and even then accidents sometimes occur. Guaymas, a sea-port town of Sonora, on the Gulf of California, at the mouth of a considerable river, lat. $27^{\circ} 55'$ north, long. $110^{\circ} 16'$ west. It is neither large nor well built, but its harbor is the best on the western coast of Mexico, and it has an active and increasing trade.

New Ports Open for Foreign Trade.—Guaymas, Camargo, Mier, Piedras-negras, Monterey, Laredo, Tonala, Zapaluta, Guatzacoalcos, La Ventosa.

Tonnage Duties and Port Charges at Vera Cruz.—On foreign ships and national vessels from foreign ports, per ton (the Mexican ton is 12 per cent. less than that of the United States), \$1 50; fees of captain of the port, \$3 50; water dues (Mexican vessels in the coasting trade pay $6\frac{1}{2}$ cents per ton, as water tax, but are exempt from tonnage duty), 12 $\frac{1}{2}$ cents; stamped paper

for entering and clearing, \$8 50; pilotage, either way, per foot, \$2 50; pilot-boat, with four or six oars, \$8; bills of health, if required, \$4; to consul of country where destined, \$4; visit of health officer, \$2. Wharfage and municipal dues are very insignificant. The moneys, weights, and measures, in use in Mexico, are the same as those of Spain. At the port of Tampico, the dues and charges are quite the same as at Vera Cruz. Hospital dues at the former port are \$10.

Tariff Regulations.—The tariff regulations of Mexico have been subject to frequent changes of late. The rates established by the tariffs of 1845, 1855, and 1856, will be found in the *Comparative Tariffs* issued by the State Department, Part II. The details of the tariff of January 31, 1856, are as follows:

Charges on Vessels.—Tonnage, \$1 per ton; free of tonnage, if in ballast to load logwood, specie, etc.; or if bringing coal for the Mexican deposits; or if only bringing passengers or mails.

Prohibitions.—Brandy, of sugar-cane; and all other except that made out of grape—excepting gin, rum, and others named in the tariff, in bottles, or jars; sugars, of all kinds; rice; buttons, with the Mexican or foreign arms; coffee; wax, made up in candles; obscene pamphlets, books, etc.; flour of wheat, except at Acapulco, Yucatan, Tampico, Matamoros, and the custom-houses of the northern frontier. For regulations, see *Comparative Tariffs*, Part II. Boots, shoes, slippers of leather with soles; rein-bits and spurs of Mexican fashion; books prohibited by competent authority; lard, subject to the same exceptions (omitting Acapulco) as flour; saddles, and appurtenances of Mexican fashion; playing-cards, of Mexican fashion; scarfs, Mexican fashion, of all kinds; speckled or printed textures imitating the same; wheat, and all kinds of grain and seeds; blankets, woolen or cotton, or mixed, excepting coverlets and bed-coverings of piqué, without seams.

Additional Duty to Tariff.—1. Municipal duty will be 12 $\frac{1}{2}$ cents on each package of 8 arrobas weight, payable at the time of importation. 2. For improvement of the country, 20 per cent. on the import duty. 3. International duty, 10 per cent. on importation duty, payable at the time of sending the goods to the interior. 4. *Contra registro*, is 20 per cent. on import, payable at the final place where goods are sent. 5. Amortization duty of the public debt liquidated and consolidated: this duty will be 25 per cent. on the import duty, and be payable in full at the General Treasury Department of the nation, with bonds of the public debt liquidated and consolidated.

Export Duty.—On coin and wrought gold, 1 $\frac{1}{2}$ per cent.; on coined silver, $3\frac{1}{4}$ per cent.; on silver bars, stamped by mint, 7 per cent. All the remaining goods, products, and national manufactures, not specified, may be exported without paying any duty.

All laws, decrees, circulars and orders, which are in conflict with this tariff, directly or indirectly, will cease immediately after publication of the present new one.

PRO FORMA INVOICE UNDER NEW TARIFF OF JANUARY 31ST, 1856.

Invoice of the following goods shipped by the subscriber for Captain to the consignment of merchants of the port of Vera Cruz (Mexico), whether this vessel is bound.

Marks.	Numbers.	Number of packages.	Gross weight of each.	Description of packages.	Total net weight of each which pay by weight.	Total measurement by length of goods which pay by measurement.	Width of goods exceeding one vara.*	Class of goods specified.	Value.
P. M. R.	1 to 10.	10 (ten).	1 (one) quintal.	Bales of common size.	....	100,000 (one hundred thousand) yards.	1 (one) yard.	White ordinary cotton.	....

New York, (date.)

(Signature).

* 100 yards English are equal to 109 11-100 Mexican.

In this manner all invoices are to be made out, specifying every one of its packages. The total number of packages to be specified in words also.—*Com. Relations, U. S.*

Michigan, a north-western State of the republic, lies between lat. $41^{\circ} 43'$ and 48° north, and between $82^{\circ} 25'$ and $90^{\circ} 34'$ west from Greenwich, or $5^{\circ} 24'$ and $18^{\circ} 33'$ west from Washington. It consists of

two peninsulas, and contains 56,243 square miles. Population in 1810, was 4528; in 1820, 9448; in 1830, 31,639; in 1840, 212,276; and in 1850, 397,654.

Physical Features, etc.—The surface of the lower, or southern peninsula is generally level, having few elevations which may be denominated hills. The interior is gently undulating, rising gradually from the lakes to the centre of the peninsula. This central region may be regarded as a table land, elevated about 300 feet above the level of the lakes, covered with fine forests of timber, oak plains, and prairies. Along the eastern shore of Lake Michigan are sand-hills, thrown up by the winds into fantastic forms generally quite barren and naked. The part lying between Lake Huron and Saginaw Bay is low and swampy. No part of the United States is better supplied with fish, aquatic fowl and game.

There were, in this State, in 1850, 1,929,110 acres of land improved; and 2,454,780 acres of unimproved in farms; cash value of farms, \$51,872,446, and the value of implements and machinery, \$2,891,371. Live stock—horses, 58,506; asses and mules, 70; milch cows, 99,676; working oxen, 55,350; other cattle, 119,471; sheep, 746,435; swine, 205,847; value of live stock, \$8,008,734.

Agricultural Products, etc.—Wheat, 4,925,888 bushels; rye, 105,871; Indian corn, 5,641,420; oats, 2,866,056; barley, 75,249; buckwheat, 472,917; peas and beans, 74,254; potatoes, 2,359,897; sweet potatoes, 1177; value of products of the orchard, \$132,650; produce of market gardens, \$14,738; pounds of butter made 7,065,878; of cheese, 1,011,492; maple sugar, 2,439,794; molasses, 19,823 gallons; beeswax and honey, 359,232; wool, pounds produced, 2,043,283; flax, 7152; silk cocoons, 108; hops, 10,663 pounds; of tobacco, 1245; hay, tons of, 404,934; clover seeds, 16,989 bushels; other grass seeds, 9285; flax seed, 519 bushels; and were made, 1654 gallons of wine; value of home-made manufactures \$340,947; of slaughtered animals \$1,328,327.

Of the northern peninsula, Mr. Schoolcraft says:—"Portions of it are the mere development of sublime scenery which pertains to that comparatively elevated portion of the continent. Mountains and lakes, plains, rivers, and forests, spread over it with a boldness of outline which may be said to constitute almost a peculiar type of North American Geography. This division embraces the mineral region. It is of little value for the uses of agriculture. The interior abounds in small lakes. On the shore of Lake Superior are several large bays and good harbors. Recent explorations here have discovered immense deposits of rich copper ore; on the southern shore of Lake Superior is a series of lofty bluffs and isolated rocks, having the appearance of ruins, tottering walls, and caverns. *La Chapelle*, or the Arched Rock, is a beautiful specimen of this character, as are the Pictured Rocks, etc. There are also several picturesque cascades."

The southern peninsula of Michigan is drained by several large rivers and numerous smaller streams, which, rising in the interior, pass off in easterly, westerly, and northerly directions into the lakes. Raisin and Huron Rivers flow into Lake Erie, Rouge River into Detroit Strait, Clinton and Black Rivers into the Strait of St. Clair, Saginaw River formed by the junction of Titibawassee, Flint, and Cass Rivers enters Saginaw Bay. Thunder Bay, Cheboigan River, and some smaller streams fall into Lake Huron. St. Joseph, Grand, Kalamazoo, and Muskegon Rivers flow into Lake Michigan. Many small lakes of pure water, stocked with fish of fine quality, are found in the interior. This State borders on four of the great lakes, viz., Erie, Huron, Michigan, and Superior. The principal rivers of the upper peninsula are Ontonagon, Huron, Menomonee, Montreal, St. Mary, Eagle, Cedar, White Fish, Black, Sturgeon, Rapid, and Manistie. The principal islands are Drummond, Sugar, St.

Joseph, Bois Blanc, Mackinaw, Manitou, and Beaver Island, in Lakes Huron and Michigan; Isle Royale and the Apostles, in Lake Superior.

Manufactures, etc.—There were in this State in 1850, 15 woolen factories, with a capital of \$94,000, employing 78 males and 51 females, manufacturing 141,570 yards of cloth, valued at \$90,242; 1 establishment making pig iron, with a capital of \$15,000, employing 25 persons, producing 660 tons of pig iron, etc., valued at \$21,000; 63 establishments with a capital of \$195,450, employing 337 persons, and making 2070 tons of castings, etc., valued at \$279,697; 231 flouring and grist mills, 477 saw mills, 45 tanneries; 57 printing offices, 58 newspapers, 3 daily, 2 semi-weekly, 47 weekly, 2 semi-monthly, and 3 monthly publications. Aggregate number of copies published, 3,247,736. Capital invested in manufactures, \$5,764,645; value of manufactured articles, \$10,407,285. There were, January, 1856, 590 miles of railroad in operation.

The principal places in the State are Detroit, the metropolis, Monroe, Ann Arbor, Ypsilanti, Adrian, Jackson, Marshall, Kalamazoo, Lansing, the capital, St. Josephs, Mackinac, Grand Haven, and Sault St. Marie. There were in 1854, 6 banks and 1 branch, with an aggregate capital of \$1,084,718. Exports (1852) in American vessels, of domestic produce, to the value of \$100,436; in foreign vessels, \$31,930; of foreign produce in American vessels, \$4338; in foreign vessels, \$8448. Total value, \$145,142. Imports in American vessels, \$191,976; foreign vessels, \$4264. Total value, \$196,240. Tonnage, 1853, 4,591,284.

The shipments from Detroit were as follows:

	1854.	1855.
Flour.....bbls.	337,143	640,393
Wheat.....bush.	397,159	737,890
Indian corn....."	557,439	629,395

White Fish.—One of the largest and most important items in the commerce of Detroit, is the trade in white fish. From the head of Lake Erie to the head of Lake Superior, including Lake Michigan, during the fall and spring months, the fisheries form an important branch of our western commerce. But probably there is no place of the same area along our lakes and rivers which is so valuable in this particular, as the river contiguous to this city. From Fighting Island, to the northern point of Belle Isle, a distance of 17 miles, there is one complete fishery, from which large numbers of fish are yearly taken. The cost of taking them, when the run is fine, is very light, and fishermen realize large profits. They are known through all the States, and are esteemed among the choicest delicacies to be had in any market. The large demand creates a corresponding valuation, and in every city they have become the first brand of fish sought. The river fish are generally larger, fatter, and better flavored than those of the lakes, and are, therefore, always in greater demand, and always command better prices. In New York, Boston, New Orleans, and even San Francisco, the Detroit River white fish are eagerly sought for.

The season of 1855 was a remarkably good one. At the fisheries (about 50 in number), between Fighting Island and Belle Isle, over 7000 barrels, or some 700,000 fish, have been taken. About half of these have been sold fresh, at an average of 11 cents each, bringing in a revenue of \$3850. The remaining portions are mostly held by the fishermen until navigation shall open to them the southern and eastern trade. These 3500 barrels, when sold, will nett the holders about \$30,000, or in the neighborhood of \$8 or \$9 per barrel. From the fisheries upon Belle Isle about 7000 fish were taken, a majority of which were sold fresh. The remainder of them were caught below the city, mostly upon the American side of the river.

The method of catching fish here in the river differs somewhat from the means adopted for lake fishing. There gill-nets are the principal agency employed, while seines are the instruments here used.

The number of barrels caught annually in the lake fisheries is nearly as follows:

Lake Superior.....	Bbls. 8,000	Lake Erie.....	Bbls. 8,000
Lake Michigan.....	15,000	Detroit River.....	7,000
Lake Huron.....	14,000	Total.....	42,000

These are sold at an average price of \$11 per barrel, the aggregate amount of sales being \$462,000, or nearly \$500,000. Probably one sixth of all the fish caught in Lakes Michigan, Huron, and Superior, are trout; the remainder being white fish. They are commonly caught by gill-nets, set some 10 miles distant from the shore. Large quantities of the fish are taken from the Detroit River, which they ascend from Lake Erie to spawn. On their return to the lake they are captured. The number of fisheries in the river is 50.

In some of the rivers that flow into the lakes, enor-

mous quantities of pickerel are caught. Not less than 1000 barrels are taken annually from Fox River, Wisconsin; from Saginaw River, Michigan, 1500 barrels; St. Clair River, Michigan, 1500; Maumee River, Ohio, 8000 barrels, and an equal quantity of bass, mullet, etc., making a total of 10,000 barrels, which are sold for \$8 50 per barrel, or \$85,000 in the aggregate. The annual product of the lakes and tributary rivers is thus shown:

	Bbls.	Value.
The Lakes.....	25,000	\$385,000
Detroit River.....	7,000	77,000
Other rivers.....	10,000	85,000
Total.....	52,000	\$547,000

See HUNT'S *Mag.*, vi., 333, xix., 19 (J. R. WILLIAMS), xxii., 131.

FOREIGN COMMERCE OF THE STATE OF MICHIGAN, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Tonnage Cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821.....	\$59,290	....	\$58,290	\$29,076	....	....	302	304
1822.....	694	....	694	18,377	....	....	....	....
1823.....	1,010	....	1,010	2,159	....	....	....	....
1824.....	....	....	....	1,886	....	....	....	....
1825.....	....	....	....	5,095	....	....	....	....
1826.....	1,320	....	1,320	3,774	....	....	....	....
1827.....	....	....	....	3,440	....	....	....	....
1829.....	....	....	....	2,957	....	....	....	....
1830.....	1,538	....	1,538	21,315	50	....	....	....
Total.....	\$57,902	....	\$57,902	\$88,679	50	....	....	....
Sept. 30, 1831.....	\$12,392	....	\$12,392	\$27,299	43	....	....	1,202
1832.....	9,234	....	9,234	22,643	....	....	....	....
1833.....	9,054	....	9,054	63,576	644	210	....	....
1834.....	36,021	....	36,021	106,202	2,767	215	....	....
1835.....	63,480	\$1,350	64,830	130,629	1,680	629	....	....
1836.....	57,181	4,050	61,231	502,287	750	803	....	....
1837.....	69,790	....	69,790	....	1,379	3,253	....	....
1838.....	125,660	....	125,660	256,662	1,480	1,543	....	....
1839.....	133,305	....	133,305	176,221	8,708	1,936	....	....
1840.....	162,229	....	162,229	138,610	4,786	6,370	....	....
Total.....	\$678,346	\$5,400	\$683,746	\$1,424,434	17,737	14,964	....	....
Sept. 30, 1841.....	\$88,529	....	\$88,529	\$137,800	875	4,734	....	11,524
1842.....	262,229	....	262,229	80,784	1,714	4,640	....	....
9 mos., 1843.....	262,994	....	262,994	76,370	499	1,507	....	....
June 30, 1844.....	293,901	....	298,901	120,673	18	5,757	....	....
1845.....	251,220	....	251,220	41,952	1,807	8,542	....	....
1846.....	251,890	....	251,890	154,923	540	27,920	....	....
1847.....	93,795	....	93,795	37,603	440	86,171	....	....
1848.....	111,194	\$441	111,635	115,760	180,800	87,614	....	....
1849.....	127,844	5,007	132,851	98,141	33,919	90,605	....	....
1850.....	132,045	....	132,045	144,102	7,982	46,719	....	....
Total.....	\$1,875,641	\$5,448	\$1,881,089	\$1,008,113	228,534	314,209	....	....
June 30, 1851.....	\$183,443	\$7,978	\$191,426	\$132,146	7,255	45,102	....	41,774
1852.....	132,366	12,786	145,152	196,240	4,884	65,097	....	....
1853.....	295,809	57,376	353,185	211,230	8,005	71,928	....	....
1854.....	405,181	29,314	434,495	204,286	9,405	22,790	....	....
1855.....	526,825	41,266	568,091	281,379	24,415	38,196	....	....
1856.....	895,624	85,404	981,028	880,663	22,072	27,128	....	....

The principal port is Detroit, a large and flourishing city on the Detroit River, opposite Windsor, the terminus of the Great Western (Canada) Railroad, which here connects by ferry with the Michigan Central Railroad, together forming a convenient line between Niagara and Chicago. It is also the south-western terminus of the Detroit and Milwaukee Railroad; and a line (the Detroit and Toledo Railroad) is now in progress to connect with the railroads centering at Toledo. It has one of the finest harbors in the United States, and is admirably adapted for commerce. It has also extensive manufactures, chiefly machinery, agricultural implements, etc., and a large trade in lumber. On the whole, it is a most flourishing place, and ranks as the first city of the State. Population in 1855, 50,448. Detroit was founded in 1760 by the French, and was for many years the State capital. Twenty-five years ago it had only 2000 inhabitants. The tonnage of Detroit in 1856 was 58,688 tons.

Port Huron.—A town at the mouth of Black River, on the St. Clair, and two miles south of Lake Huron. It has a large lumber business and fine general trade.

Microscopes. Invented nearly at the same time in Italy and Holland, A. D. 1621. Those with double glasses were made at the period when the law of refraction was discovered, about 1624. The honor of this invention is awarded to Drebel and Torricelli. Solar microscopes were invented by Dr. Hooke. In England, great improvements were made in the microscope by Henry Baker, F.R.S., who wrote two treatises upon it about 1763.—*Biog. Dict.*

Mile (Lat. *mille passuum*, a thousand paces). The Roman pace being five feet, and a Roman foot being equal to 11-62 modern English inches, it follows that the ancient Roman mile was equivalent to 1614 English yards, or very nearly 11-12ths of an English statute mile. The English statute mile was defined (incidentally, it would seem) by an act passed in the 35th year of the reign of Queen Elizabeth, by which persons were forbidden to build within three *miles* of London; and the mile was declared to be 8 furlongs of 40 perches of 16½ feet each. The statute mile is, therefore, 1760 yards, or 5280 feet. See WEIGHTS AND MEASURES.

The mile is used as an itinerary measure in almost

all countries of Europe, particularly those which were formerly under the sway of the Romans; but it is very difficult to conjecture the cause which has given rise to the great diversity of its values. It has been supposed that in some countries the Roman mile was confounded with the ancient Celtic league. The following table shows the length, in statute miles of 1760 yards, of the modern mile, and also the leagues of various countries in English yards:

MILE OF DIFFERENT NATIONS.

English yds.	English yds.
Arabian mile..... 2,145	Irish mile..... 8,098
Bohemian..... 10,137	Italian..... 2,025
Brabant..... 6,082	Lithuanian..... 9,784
Burgundy..... 6,188	Oldenburg..... 10,820
Chinese mls..... 628	Persian Parasang..... 6,086
Danish mile..... 8,244	Polish (short mile)..... 6,095
English..... 1,760	" (long mile)..... 8,101
English (geog.)..... 2,025	Portuguese leguas..... 6,760
Eng. (geog.) leagues..... 2,075	Prussian mile..... 8,468
Flemish..... 6,869	Roman (ancient)..... 1,613
French art. leagues..... 4,860	" (modern)..... 2,085
" marine..... 6,075	Russian versta..... 1,167
" legal leagues,	Saxon mile..... 9,905
of 2,000 toises..... 4,263	Scotch..... 1,984
German miles (geog.)..... 8,100	Silesian..... 7,083
" (long)..... 10,126	Spanish leguas, legal..... 6,630
" (short)..... 6,859	" com..... 7,416
Hamburg mile..... 8,244	Suatin mile..... 10,125
Hanover..... 11,559	Swedish..... 11,704
Hesse..... 10,547	Swiss..... 9,166
Dutch..... 6,895	Turkey berries..... 1,821
Hungarian..... 9,118	Westphalian mile..... 12,155

Milford-Haven, a harbor of England, on a basin or deep inlet of the Atlantic, on the coast of South Wales, county Pembroke, forming one of the best ports in the British dominions. Latitude of St. Anne's Heads, the north-western extremity of the entrance, and on which are three light-houses, with fixed lights, $51^{\circ} 41' N.$, long. $50^{\circ} 10' 25'' W.$ Length of haven about 15 miles; average breadth, 2 miles. It is completely land-locked, has deep water, and the whole shipping of the empire might ride here as safely as in dock, in any weather; while the access is easy, and the egress can be accomplished, by aid of the strong ebb, even in head winds. It has for some time been a favorite scheme with the southern States to have a line of steamers between this port and Norfolk, Virginia, and thereby secure a portion of the importing and carrying trade now absorbed by the ports of New York and Boston.

Milk (Fr. *Lait*; It. *Latte*; Lat. *Lac*), a fluid secreted by the female of all those animals denominated *mammalia*, and evidently intended for the nourishment of her offspring. The milk of every animal has certain peculiarities which distinguish it from all other milk. But the animal whose milk is most used by man, and with which, consequently, we are best acquainted, is the cow. The external character of all milk is that of a white opaque fluid, having a sweetish taste, and a specific gravity somewhat greater than that of water. When allowed to remain at rest, it separates into 2 parts; a thick whitish fluid called *cream*, collecting in a thin stratum over its surface, and a more dense watery body, remaining below. Milk which has stood for some time after the separation of the cream, becomes acedent, and then coagulates. When the coagulum is pressed gently, a serous fluid is forced out, and there remains the caseous part of the milk, or pure cheese. Butter, one of the most valuable animal products, is solidified cream, and is obtained artificially by churning. Milk has always been a favorite food of most European nations, and especially of the British. *Lacte et carne vivunt*, says Cæsar of our ancestors; and the same articles still continue to form a large part of our subsistence. See articles BUTTER, CHEESE, DAIRY.

Millet (Ger. *Hirse*; Fr. *Millet*, *Mil*; It. *Miglio*, *Panicastrello*; Sp. *Mijo*; Lat. *Milium*, *Panicum miliaceum*). There are 3 distinct species of millet; the Polish millet, the common or German millet, and the Indian millet. It is cultivated as a species of grain;

and is sometimes employed to feed poultry, and as a substitute for rice. The Indian millet grows to a large size; but the autumns in England are seldom dry and warm enough to allow of its being cultivated here.—*LOUDON'S Encyc. of Agriculture*.

Milliner. Defined by Shakspeare and Johnson as a seller of ribbons and dresses for women, a very ancient occupation; the term is supposed to be derived from Milan. There are men-milliners, and the adoption of such a trade by the male sex has been strongly and justly censured. In 1810, men-milliners and other classes of an epicene character were very strongly censured in the Society of Arts. Young females are employed at all seasons, and in all weathers, to carry handboxes through the streets, exposed to the insolence of libertines, and the perils of vicious example, while the perfumed coxcomb ["He was perfumed like a milliner."—*Shakspeare*.] measures ribbons safely at home, or folds gauzes, and licks the while in lady phrases to females of distinction.—*Butler*.

Mill-stones (Ger. *Mühlsteine*; Fr. *Pierres meulières*; It. *Mole macine*; Sp. *Muelas de Molino*; Rus. *Schernowoi kamen*), the large circular stones, which, when put in motion by machinery, grind corn and other articles. The diameter of common mill-stones is from 5 to 7 feet, and their thickness varies from 12 to 18 inches. These stones have been principally imported from Rouen and other parts of France; the burr-stones of that country being supposed to be more durable than our own. The island of Milo, in the Archipelago, furnishes mill-stones of a very excellent quality. They are exported to Greece, Italy, and other countries on the Mediterranean, where they are employed in grinding the hard wheat, or *grano duro*, used in the manufacture of macaroni, vermicelli, etc. The quarries are wrought on account of government, and the stones sold at moderate prices fixed by a tariff, which, however, leaves a handsome profit to the State.—*TOURNEFORT, Voyage au Levant*; *STRONG'S Greece*. The stones used by millers are of various sizes, according to the intensity of moving power obtainable. Technically, the two stones are called the runner and the bedder; and the operation of "hanging a runner," or adjusting the upper stone over the lower, is one of some delicacy; since not only must the two be rigorously parallel, but the distance between them must depend on the fineness of the flour to be produced and on the rapidity with which the upper stone rotates. Other things being equal, the greater the velocity, the closer must the stones be together, else the centrifugal force would drive away the corn unground or half-ground.

Mineral Pitch, Maltha. A solid, softish bitumen. Sp. gr. about 1.5.

Mineral Tar. The bituminous substance called *petroleum*. It is brown, viscid, and unctuous. Its specific gravity is 0.88. It is found in Britain, and on the continent of Europe, in the West Indies (Barbadoes tar), and in Persia. It may be resolved by distillation into naphtha and petroleum.

Mines (*Mine*, Fr.; *Mwyn*, or *Mwen*, Welsh), a subterranean work or excavation for obtaining metals, metallic ores, or other mineral substances.

STATISTICS SHOWING THE PRODUCTIONS OF THE MINES OF THE PRINCIPAL COUNTRIES IN THE WORLD.

Austrian Empire.

Iron—Average produce.....cwt.	30,000,000	£3,000,000
Coal.....quintals.	4,289,841	
Copper....."	44,800	
Gold.....marcs	5,600	
Silver....."	94,195	

Russian Empire.

Silver.....lbs.	17,500	£50,000
Copper.....tons	13,000	1,200,000
Tin....."	5,500	550,000
Lead....."	50,000	1,000,000
Iron....."	1,850,000	9,000,000
Coal, 1850....."	88,000,000	19,000,000
Salt, alum, etc.....		1,500,000

France.	
Annual value of minerals.....	£19,779,870
Coal produce, 1845.....	tons 4,141,617
Pig iron.....	" 600,000
Salt.....	" 898,000
Prussia.	
Value, 1849.....	£5,298,430
Produce of mines.....	1,518,177
Produce of founderies.....	8,562,262
Zinc.....	cwt. 2,574,861
Copper.....	" 703,931
Coal.....	tons 18,197,182
Peat.....	" 8,778,222
Bar and pig iron.....	" 200,000
Russian Empire.	
Gold, 1849.....	lbs. 71,711
Fine gold.....	£3,350,728
Iron.....	tons 150,000
United States.	
See article UNITED STATES.	
Bavaria.	
Iron, 1847.....	tons 15,000
Copper refined.....	cwts. 11,012
Belgium.	
Iron, manufactured, 1850.....	tons 280,000
Coal.....	" 4,500,000
Brazil.	
Gold and silver produced in 1850 in the old American mines.....	£7,000,000
Denmark.	
Iron.....	tons 13,000
Egypt.	
There is an iron foundry, and they are able to cast 50 cwt. of iron per day, employing 50 cwt. of coal.	
Greece.	
Insignificant quantities of minerals are extracted.	
Hamburg.	
Zinc exported, 1849.....	cwts. 271,638
Holland.	
There are large engineering establishments.	
Mexico.	
Pure gold.....	marcs 7,000
Papal States.	
Bar iron.....	lbs. 2,000,000
Cream of tartar.....	" 750,000
Sulphur.....	" 4,000,000
Portugal.	
Sardinia.	
Salt.....	lbs. 8,000,000
Iron.....	tons 22,000
Spain.	
Value—Estimated produce.....	£808,000
Iron.....	tons 15,000
Sweden and Norway.	
Sweden, 1843 to 1847—Average.	
Cast iron.....	tons 156,907
Bar iron.....	" 86,218
Steel wares.....	" 10,518
Silver.....	oz. 774
Copper.....	cwts. 21,798
Brass.....	" 1,572
Turkey.	
Two Sicilies.	
Sulphur exported from Sicily, 1847.....	cwts. 1,618,358
Sumac.....	" 147,000
China.	
COLONIES:	
British Possessions—Indies.	
Canada.	
White pine, 1846.....	pieces 404,690...feet 24,698,260
Red pine.....	" 141,705... " 5,237,243
Oak.....	" 58,102... " 2,589,754
Elm.....	" 97,204... " 3,472,303
Property assessed, 1847.....	£8,567,001
Cape of Good Hope.	
Australia—New South Wales.	
Coal, 1848.....	tons 45,447
Gold mines at Bathurst.	
Western—Van Diemen's Land.	
South.	
Copper ore exported, 1848.....	tons 10,681
Jamaica.	
Ceylon.	
Mauritius.	
French Possessions—Hayti.	
Copper mines.	
Spanish Possessions—Cuba.	
Copper ore exported, 1848.....	tons 81,792
Dutch Possessions—Java.	
Tin exported, 1849.....	lbs. 8,595,855

Minim. The smallest liquid measure, generally regarded as about equal to one drop. The fluid drachm is divided into 60 minims.

Minnesota, a north-western Territory of the United States of America, lies between lat. 42° 30' and 49° N., and long. 91° and 103° 5' W. Area, 141,839 square miles. Population, 1850, whites, 6,038; colored, 89; total, 6,077; in 1857 estimated at 150,000.

Physical Features.—Minnesota is an elevated table-land, with a surface but little varied, being mostly a rolling prairie, abounding with lakes of pure water, and streams which flow in all directions, excepting toward the west. The soil is a fertile, sandy loam, easily cultivated, and well adapted to agricultural purposes. The Mississippi River rises centrally in the Territory, in Itasca Lake, a beautiful sheet of water. The river flows first in an eastern, thence in a southern direction, to the confines of the Territory, in its course to the ocean. It is also drained by the Missouri and its numerous tributaries, the Red River of the North, whose waters pass off to Hudson Bay, and the St. Louis entering Lake Superior on the eastern border of the Territory. Forests of pine and other valuable woods for timber, border the principal streams, and lead and copper ore have been found to some extent, and iron ore on the shore of Lake Superior. There were in the Territory in 1850, 5,035 acres of improved land, and 23,846 acres of unimproved land in farms. Cash value of farms, \$161,948; and the value of implements and machinery, \$15,981. **Live Stock.**—Horses, 860; asses and mules, 14; milch cows, 607; working oxen, 655; other cattle, 740; sheep, 80; swine, 734. Value of live stock, 92,859. **Agricultural Products.**—Wheat, 1,401 bushels produced; rye, 125; Indian corn, 16,725; oats, 30,582; barley, 1,216; buckwheat, 515. Value of the products of market gardens, \$150; pounds of butter made, 1,100 lbs.; maple sugar, 2,950; beeswax and honey, 80; tons of hay, 2,019; potatoes, 21,145 bushels; wool, 85 lbs.; sweet potatoes, 200; peas and beans, 10,002. Value of slaughtered animals, \$2,480. The common traveling roads and military roads are the only improvements yet constructed. The route of the great Northern Pacific railroad has been explored across the Territory. Congress, in May 1856, appropriated over 1,000,000 acres for the construction of railroads.

The French were the first Europeans to explore the region now comprised in Minnesota, and the Mississippi River was explored by the Jesuit fathers, even beyond the Falls of St. Anthony, at a very early period. The first American military post was established here in 1819, and called Fort Snelling. This county has formed a part of several territorial governments: the last were Iowa and Wisconsin. It was formed into a Territory with its present name (in 1849), which it derives from the original Indian name of St. Peter's River.

Mint. Athelstan first enacted regulations for the government of the mint, about A.D. 928. There were several provincial mints under the control of that of London. Stow says the mint was kept by Italians, the English being ignorant of the art of coining, 7 Edward I., 1278. The operators were formed into a corporation by the charter of King Edward III., in which condition it consisted of the warden, master, comptroller, assay-master, workers, coiners, and subordinates. The first entry of gold brought to the mint for coinage, occurs 18 Edward III., 1343. Tin was coined by Charles II., 1634; and gun-metal and pewter by his successor, James. Between 1806 and 1810, grants amounting to £262,000 were made by Parliament for the erection of the present fine structure in London. The new constitution of the mint, founded on the report of the Honorable Mr. Wellesley Pole, took effect in 1815. The master is now the chief officer.

The general appropriation bill makes provision for

the expenses of the mint and branches of the United States for the fiscal year, to the following effect:

Mint at Philadelphia.....	\$177,200
" New Orleans.....	63,200
" Charlotte, N. C.....	11,600
" Dahlonega, Ga.....	10,880
" San Francisco.....	277,800
" New York Assay Office.....	62,200

Congress loses sight of the fact that the coinage of the branches at New Orleans, Dahlonega, and Charlotte, could be easily dispensed with, and with decided advantage to the Treasury. Those branches were established at periods when the bulk of American gold was produced in the southern Atlantic States. Now the supplies are mainly from California, and the expenses at the three branches named are a dead weight upon the Treasury. The coinage at Dahlonega and Charlotte, particularly, is too trifling to render either necessary or expedient any further operations there. The coinage at each place last year, and the appropriations for the coming year, are as follows:

	Coinage—1855.	Expenses—1855.
Philadelphia.....	\$12,045,752 93	\$177,200
New Orleans.....	2,368,500 00	63,200
Dahlonega.....	116,773 50	10,880
Charlotte.....	217,935 50	11,600
San Francisco.....	21,121,752 43	277,800
New York Assay Office.....	20,441,813 63	62,200
Total.....	\$56,812,732 99	\$602,880

The coinage at Philadelphia, in 1855, was suspended for several months, in order to make extensive improvements, and to make the building, for the first time, fire proof. The coinage of the parent mint has of late years been over 50,000,000 annually. The above statement will, however, show that the coinage at New Orleans costs nearly 3 per cent., Dahlonega 9 per cent., and Charlotte over 5 per cent. A Report of the Committee on Commerce, in 1850, demonstrated that the actual cost of coinage for a series of years was as follows:

	Per cent.
At Philadelphia.....	2-23
New Orleans.....	6-63
Charlotte.....	9-00
Dahlonega.....	9-97

This, be it remembered, was when the coinage at the southern branches was more than double what it now is—the production of gold in that region being either actually less, or its profits less. The coinage at the three southern branches has now dwindled down to such small sums as to demand the closer attention of the government, and indicates the expediency of cessation at all those points. The following is a summary of the gold of domestic production for each year, 1850—1855:

Years.	New Orleans.	Charlotte.	Dahlonega.
1850.....	\$4,580,021	\$320,289	\$247,698
1851.....	8,770,722	816,061	379,809
1852.....	8,777,784	430,900	476,789
1853.....	2,006,673	805,157	452,290
1854.....	981,511	218,606	280,225
1855.....	411,517	216,988	116,652

Thus the production of gold which was at the two small branches \$567,000 in the year 1850, has gradually become reduced to \$333,000, and in order to maintain the *show of coinage* at these two points, an annual expenditure of \$22,000 is by Congress deemed expedient, when the same work could be done at Philadelphia for \$6000. Since 1838, the gross product of the gold mines of North Carolina, as far as indicated by the mint returns was \$4,238,236, and of Georgia \$5,686,864; total, \$9,925,100; and the aggregate expense of maintaining them \$22,000 annually, or about \$400,000 for the whole period. See COINAGE.

Mirage (Fr.), an optical illusion very common at sea, and especially in high latitudes, and sometimes also witnessed on land, particularly in Egypt and Persia, and on the margin of rivers and lakes, or on the sea-shore. It arises from unequal refraction in the

lower strata of the atmosphere, and causes remote objects to be seen double, as if reflected in a mirror, or to appear as if suspended in the air. When the effect is confined to apparent elevation, the English sailors call it *looming*; when inverted images are formed, the Italians give it the name of *Fata Morgana* (see the term). Ships in the whale fisheries are often despoiled, and sometimes known, by means of the mirage, at considerable distances. Captain Scoresby recognized his father's ship at the distance of more than 30 miles, and consequently when below the horizon, by its inverted image in the air, though he did not previously know that it was cruising in that part of the fishery. The mathematical theory of the phenomenon is given by Biot, in the *Memoires de l'Institut* for 1809. See also CADDINGTON'S *Optics*; BIOT'S *Traité de Physique*, tome iii.; BREWSTER'S *Optics*, *Cabinet Cyclopedia*.

Mississippi, one of the southern United States, is situated between 30° 10' and 35° N. lat., and between 80° 30' and 81° 35' W. long. It is 339 miles long from north to south, and 150 broad, containing 47,151 square miles. Population in 1816 was 45,929; in 1820, 75,448; in 1830, 136,806; in 1840, 375,651; and in 1850, 606,555.

The tract of land which now belongs to the present State of Mississippi was in olden times comprised under all those different ancient and general names under which the whole northern shore of the Mexican Gulf became known to Europe. In the year 1798 the name of the river was for the first time given to a Territory, and the great "Mississippi Territory" was erected, which included also the present State of Alabama. In the year 1817 the eastern portion of this Territory was separated from it and received the name of Territory of Alabama, while the western portion, with a very limited sea-shore (from Pearl River to Grande Bay), was admitted into the Union as the State of Mississippi.

The southern part of the State, for about 100 miles from the Gulf of Mexico, is mostly a sandy, level pine forest, interspersed with cypress swamps, open prairies, and inundated marshes, and a few hills of a moderate elevation. This region is generally healthy, and by cultivation produces cotton, Indian corn, sugar, indigo, etc. As you proceed further north, the country becomes more elevated and agreeably diversified, and the soil is a deep rich mold, producing abundantly cotton, Indian corn, sweet potatoes, indigo, peaches, melons, and grapes. The natural growth of timber consists of poplar, hickory, black walnut, sugar-maple, cotton-wood, magnolia, lime, and sassafras. The country in the north of the State is healthy and productive, and the lands watered by the Yazoo through its whole course in the north-west are very fertile.

There were in this State in 1850, 3,444,358 acres of land improved, and 7,046,061 of unimproved land in farms; cash value of farms, \$54,738,634, and the value of implements and machinery, \$5,762,927.

Live Stock.—Horses, 115,460; asses and mules, 54,547; milch cows, 214,231; working oxen, 83,485; other cattle, 436,254; sheep, 304,929; swine, 1,582,734. Value of live stock, \$19,403,662.

Agricultural Products, etc.—Wheat, 137,990 bushels; rye, 9,606; Indian corn, 22,446,552; oats, 1,503,288; barley, 228; buckwheat, 1121; peas and beans, 1,072,757; potatoes, 261,482; sweet potatoes, 4,741,795; rice, 2,719,856 pounds. Value of products of the orchard, \$50,405; produce of market gardens, \$46,250. Pounds of butter made, 4,346,234; of cheese, 21,191; sugar, hogsheds of, 888; molasses, 18,318 gallons; beeswax and honey, 397,460 pounds; wool, pounds produced, 559,619; cotton, 484,293; flax, 665; silk cocoons, 2; hops, 473; pounds tobacco, 49,960; hay, tons of, 12,504; hemp, 7 tons; clover seeds, 84 bushels; other grass seeds, 533; flax seed, 26 bushels; and

were made 407 gallons of wine. Value of home-made manufactures, \$1,164,020; of slaughtered animals, \$3,636,582.

The Mississippi River, with its various windings, forms the entire western boundary of the State, and its margin consists of inundated swamps, covered with a large growth of timber. Back of this the surface suddenly rises into what are called bluffs, and behind them the country is a moderately elevated table land with a diversified surface. Cotton is the principal production of the State. The Yazoo is the largest river that has its whole course in the State. It rises in the north-west part, and after a course of 250 miles, enters the Mississippi. The Pascagoula River, after a course of 250 miles, enters the Gulf of Mexico. At its mouth it widens into a bay. It is navigable for a considerable distance for small vessels. The Big Black River, after a course of 200 miles, enters the Mississippi just above Grand Gulf. It has a boat navigation of 50 miles. Pearl River rises in the central part of the State, and passing through it to the south, forming in its lower part the boundary between this State and Louisiana, enters Lake Borgne. Its navigation is much impeded by sand bars and obstructions of timber. The Homochitto is a considerable river which enters the Mississippi. Beside these, there are a few other small rivers and creeks. A chain of low, sandy islands, six or seven miles from the shore, enclose several bays or sounds, the largest of which are Mississippi Sound, Pascagoula Sound, and Lake Borgne.

Manufactures, etc.—There were in the State in 1850, 2 cotton factories, with a capital invested of \$38,000, employing 19 males and 17 females, producing 171,000 pounds of yarn, valued at \$30,500; 8 establishments, with a capital of \$100,000, employing 112 persons, and making 924 tons of castings, etc., valued at \$117,400; 157 flouring and grist mills, 266 saw mills, 130 tanneries, 53 printing offices, 56 newspapers, 2 tri-weekly, 2 semi-weekly, and 52 weekly publications. Capital invested in manufactures, \$1,835,395; value of manufactured articles, \$2,962,098. There were, January, 1856, 10 railroads in the State, 87 miles completed and in operation.

The principal places in the State are Jackson, the capital, Natchez, Grand Gulf, Washington, Vicksburg, Columbus, Aberdeen, and Holly Springs. On the 1st of January, 1854, there was one bank, with a capital of \$240,000. Total tonnage of the State, 1853, 2,509,000 tons.

DIRECT FOREIGN COMMERCE OF THE STATE OF MISSISSIPPI.		
Years.	Exports.	Imports.
1826.....	\$10,623
1836.....	5,650
1837.....
June 30, 1854 to June 30, 1850.	\$304,831	4,338
1851 and 1852.....	6,721

These returns are very incomplete, and only include the direct commerce. Most of the imports for Mississippi are entered in the port of New Orleans.

Mississippi River, the largest river of North America; and in length of navigable tributaries, and in extent of facilities afforded to commerce, the greatest river in the world.

Discovery of the Mississippi.—There seems to be little doubt that Pinedo, the Captain of Garay, saw for the first time the mouth of the Mississippi when he accomplished, in the year 1519, his first circumnavigation of the whole Mexican Gulf. We have no special report of Pinedo's proceedings. But on the few maps or sketches of the Mexican Gulf which were made in Spain soon after Pinedo's return (of the years 1520, 1521, and 1529), there is to be found, near the centre of the northern gulf shore, a large inlet called "Mar pequena" (the little sea), and a mighty river leading into it called "Rio del Espiritu Santo." Diego Ribero, on his large and accurate map (of 1529), which he made for the Emperor Charles V., has this bay and

the mouth of the river already under 29° north latitude, which is very remarkable, because it is the true latitude of the Mississippi mouth, and because it nearly decides the question that not Mobile Bay, as some have supposed, but the Mississippi, was indicated by it. Nobody could have made this discovery, given these names, and brought home the news of it, but Pinedo. Since that time the "Mar pequena" and the great River "Del Espiritu Santo" appear on the old maps. We can trace and follow them on the Spanish maps through the whole of the 16th century, and find them always, with some slight variations, in the middle part of the northern gulf shore, and generally under the latitude from 29° to 30° north.

It is thought that with the name "Mar pequena" is meant that great bay which is included between the projecting promontories formed by the Mississippi passes and the northern gulf shore, and for which we have no general name. The Mississippi passes must have appeared to the old Spanish navigators as very dangerous and difficult of approach. And very often they put the name of the Holy Cross to capes of this description.

The second traveler after Pinedo who saw and crossed the Mississippi was no doubt Cabeça de Vaca and his companions, between the years 1530-1535. From Cabeça de Vaca's report, it is evident that his commander, Narvaez, and his companions, got lost about Mobile or Perdido Bay, or somewhere else not very far to the east of the Mississippi. Once, he says, they believed themselves to have arrived at the "Bay of Espiritu Santo, near the Mississippi." Afterward Cabeça and his followers wandered westward in the direction of New Mexico; so they must have crossed the Mississippi. But that is all we can say. He mentions so many great rivers in his report, that we can not recognize among them the true "Rio Grande," the Mississippi.

De Soto.—Fernando de Soto was the third discoverer and principal old Spanish explorer of the Mississippi. He arrived at its borders, in the neighborhood of the so-called Chicawas bluffs, 1542, and ascended and descended the river, which in the reports of his expeditions is generally only called "Rio Grande," up and down. He died on the shore of the river, and was buried near its waters somewhere about the mouth of the Arkansas River. De Soto's successor, Moscoso, carried the rest of the Spanish army, in the year 1543, down the whole river, and he was the first commander who sailed from the mouth of the river into the sea. Which of the passes it was can not be made out. Biedma, one of the writers on De Soto and Moscoso, and one of their companions, states, however, that the river had different mouths and branches. In one of the reports on De Soto's expedition (by Garcilasso de la Vega) it is said that the Indian name of the great river was "Chucagua." Probably, in consequence of this, the geographers put sometimes on their maps the name "Chucagua" to the river. Generally, however, the old name of "Rio del Espiritu Santo" (River of the Holy Ghost) prevailed after De Soto for a long time. One of the historians of De Soto, the so-called "Portuguese gentleman of Elvas," sometimes calls it "the Great River of Guachoya." Guachoya was one of the places along the river where De Soto encamped. "In Guachoya," says Garcilasso, "the great river is called 'Tamalliseu'; in Nilco, 'Tapala'; in Coça, 'Mico'; at the port or mouth it is called 'Ri.'"

Luna.—In the year 1557 the Governor, Luna, was sent to Pensacola Bay, and from thence, with his captains and men, made many inroads into the interior toward the north and west. It is very possible, though it is nowhere exactly stated, that some of his men also got as far east as the Mississippi.

Marquette and La Salle.—The French Marquette (1673) and soon after him the Sieur de la Salle (1682) re-discovered the Mississippi, and saw a greater part

of the river than was ever seen before them. De la Salle was, after Moscoso (1643), the first who sailed (1682) down the whole river to its mouth, and entered the Mexican Gulf. He explored in boats the whole delta of the passes, and saw, without however naming them, all the principal passes. A little above the dividing point of the passes he erected a monument with the arms of France. This was on the 8th of April, 1682. On the 7th of the same month he had explored the principal branches of the river and seen the sea. He observed also the latitude of this place; but there is a great diversity about the results of his observations. Some say that he observed the latitude 27° north, as, for instance, that remarkable document of the taking possession of the country at the mouth of the river by La Salle. Also, Barcia says that La Salle observed the latitude of the mouth between 27° and 28° north latitude, "though," he adds, "some heard La Salle say that the mouth was between 28° and 29° north latitude." After this, La Salle ascended the stream again to the north.

Father Marquette (1672) was the person who introduced for the first time into geography the Indian name of the river, "Mississippi." He, however, gave it at the same time the Christian or French name "*Riviere de Conception*." La Salle seems to have ratified this latter name. He called the river, after the great French minister, "*Riviere de Colbert*." On some maps even the whole upper Mississippi country is called "La Colbertie" (Colbert's land). The name Riviere Colbert may be called La Salle's name for the Mississippi. It seems, however, soon to have given way to the Indian name Mississippi, which really was already longer known to the European missionaries, and which was already oftener adopted in books and in commerce than those new inventions of the European discoverers.

Tonti.—The next man after De la Salle who came down the Mississippi was the Sieur de Tonti, or Tonty, who had already accompanied La Salle on his first navigation. De Tonti had heard that La Salle had set out from France to the mouth of the river, and he came, in the year 1685, down to meet him at the shores of the Gulf. He arrived there during "the Holy Week" (Easter) of 1686, but did not find La Salle, who had reached the coast of Texas instead of that of the Mississippi passes.

Origin of the Name.—"One of the names of the river under which Iberville, in 1699, had heard it called," says Charlevoix, "was *Malbouchia*." But the name Mississippi seems already then to have been quite common. At least the first journal written in this colony—that of Captain Sauvol (1699, 1700)—uses always the name Mississippi, and not once that of Riviere Colbert. In the year 1712 an attempt was made to give the river still another name. The great King of France himself ordered, in the letters patent to Crozat, that the great river "heretofore called Mississippi" should henceforward be called "*Riviere St. Louis*." But this name, newly sent out from France by royal authority, did not keep its ground against the old long-ago adopted Indian name. Charlevoix, who traveled along the river in 1721–22, and published his work in 1744, never uses it. He always calls it "*Mississippi*" or "*Micissipi*." Into general use the name Riviere St. Louis has certainly not come; but on maps made by royal geographers or great savans like D'Anville, we find it still used in the year 1732, though always besides the name Mississippi.

The name "Mississippi" is an Ojibbeway word, which the first discoverers of that stream heard pronounced in their missions round Lake Superior. According to some, its meaning is "*the Great Water*." Others, for instance the Reverend Bishop Baraga, explain it as "rivers," or "waters from all sides."

The French authors generally write "Missisipi;" Spanish authors have always "Misisiipi." We now

double every consonant in it, and write "Mississippi," in which word, I have no doubt, some letters could be spared.—J. G. KOHL.

Description.—Its extreme source, according to the explorations of Schoolcraft, July 13, 1832, is Itaska Lake, 47° 10' N. lat., and 95° 54' W. long., at an elevation of 1500 feet, and the distance of 3160 miles above the Gulf of Mexico. Itaska Lake is a beautiful sheet of water, lying among hills surmounted by pines. The outlet of the lake is 10 or 12 feet broad, and from 12 to 18 inches deep. Its course is then northwardly and north-eastwardly, and it passes through Lakes Irving and Travers, and then eastwardly and south-eastwardly, and through some small lakes, to Lake Cass. This lake is of considerable extent, and contains a large island, 182 miles below its source, and its surface is elevated 1330 feet above the Gulf of Mexico. Its course is west to Lake Winnipeg, then south-west, through Little Winnipeg Lake, until it receives Leech Lake Fork, the outlet of a considerable lake of the same name. The most northern point attained by the river is a few minutes short of 48°; it then pursues a winding course eastwardly, passing through some small lakes, until it attains a southwardly direction. The average descent of the Mississippi, from its source to its entrance into the Gulf of Mexico, is a fraction over five inches per mile. The region about the source of the Mississippi is an elevated table land, abounding in small lakes of pure water, and fed chiefly by springs.

EXTENT OF STEAM NAVIGATION ON THE RIVERS, BAYOUS, ETC., CONNECTED WITH THE MISSISSIPPI BY CHANNELS NAVIGABLE FOR STEAMERS, 16,674 MILES.

MISSISSIPPI AND BRANCHES, BAYOUS, ETC.

	Miles.		Miles.
Mississippi, proper.....	2,000	Spring.....	50
St. Croix.....	80	Arkansas (navigable at high water, 850 m.)..	600
St. Peter's.....	1,120	Canadian.....	60
Chippeway.....	70	Neosho.....	60
Black.....	60	Yazoo.....	300
Wisconsin.....	180	Tallahatchee.....	800
Rock.....	250	Tallahatchee.....	80
Iowa.....	110	Big Sunflower.....	70
Cedar.....	60	Little Sunflower.....	150
Des Moines.....	250	Big Black.....	90
Illinois.....	245	Bayou de Glaze.....	140
Mareme.....	60	" Care.....	40
Kaskaskia.....	150	" Rouge.....	60
Big Muddy.....	5	" La Fourche.....	12
Obion.....	60	" Plaquemine.....	96
Forked Deer.....	195	" Teche.....	12
Big Hatchu.....	75	Grand River.....	
St. Francis.....	300	Bayou Sorrell.....	12
White.....	500	" Chien.....	5
Big Black.....	60		

MISSOURI AND BRANCHES.

	Miles.		Miles.
Missouri, proper.....	1,500	Osage.....	275
Yellow Stone.....	800	Grande.....	100
Platte or Nebraska.....	40	Big Sioux.....	150
Kansas.....	150		

OHIO AND BRANCHES.

	Miles.		Miles.
Ohio, proper.....	1,000	Kentucky.....	62
Alleghany.....	200	Salt River.....	35
Monongahela.....	60	Green.....	150
Muskingum.....	70	Barron.....	80
Kanawha.....	65	Wabash.....	400
Big Sandy.....	50	Cumberland.....	400
Scioto.....	50	Tennessee.....	720

RED RIVER AND BRANCHES.

	Miles.		Miles.
Red River, proper.....	1,500	Tensas.....	150
Washita.....	375	Lake Bistenaw.....	60
Saline.....	100	Lake Caddo.....	75
Little Missouri.....	50	Sulphur Fork.....	100
Bayou d'Arbonne.....	60	Little River.....	65
" Bartholomew.....	150	Kiamichi.....	40
" Beauf.....	150	Boggy.....	40
" Macon.....	175	Bayou Pierre.....	150
" Louis.....	80	Atchafalaya.....	860

The average width of the Mississippi below the Missouri is about a mile; but the large rivers which enter it greatly increase its depth. Its medial current is about four miles an hour. At the head of the delta, the depth is from 75 to 80 feet; at New Orleans it is

100. At the distance of 105 miles below New Orleans, by the course of the river, but 90 in a direct course, this majestic river enters the Gulf of Mexico by several mouths, the principal of which are called the Balize, or North-east Pass, in $29^{\circ} 08' 30''$ N. lat., and $89^{\circ} 01' 24''$ W. long. Draining a country of over 1,000,000 square miles in extent, it would naturally be expected that its spring floods would be vast; and in consequence of them, it overflows its banks at that season to a great extent. From the sources to the mouth of the Missouri, the flood commences in March, and does not subside before the last of May, at an average height of 15 feet. From the Missouri to the Ohio it rises 25 feet, and below the Ohio, for a great distance, 50 feet. At every flood it overspreads a country, chiefly on its western side, from 10 to 30 miles wide, 550 miles from its mouth. This river is extremely winding in its course; and sometimes a bend will occur of 30 miles in extent, in which the distance across the neck will not exceed a mile. This circumstance undoubtedly impedes the current, and thus favors navigation.

There are three light-houses at the passes, and one at the head of the South Pass, viz.: the one at the north-east is a fixed light, elevated 78 feet above the surface of the Gulf, and visible $13\frac{1}{2}$ nautical miles; at the South Pass is a revolving light, on a tower of 54 feet above the sea; at the south-west pass is a fixed light, elevated 60 feet above the surface of the Gulf, and visible 12 nautical miles; and one with a fixed light at the head of the South Pass, built of iron in 1852: it shows a fixed light.

The acquisition of Louisiana and Florida by the United States having included within their boundary the whole river from its source to the Gulf of Mexico, and the stipulation in the treaty of 1783, securing to British subjects a right to participate in its navigation, not having been renewed by the Treaty of Ghent, in 1814, the right of navigating the Mississippi is now vested exclusively in the United States.—WHEATON'S *International Law*, p. 258.

"The right of the United States to participate with Spain in the navigation of the River Mississippi, was rested by the American government on the sentiment written in deep characters on the heart of man, that the ocean is free to all men, and its rivers to all their inhabitants. This natural right was found to be universally acknowledged and protected in all tracts of country, united under the same political society, by laying the navigable rivers open to all their inhabitants. When these rivers enter the limits of another society, if the right of the upper inhabitants to descend the stream was in any case obstructed, it was an act of force by a stronger society against a weaker, condemned by the judgment of mankind. The then recent case of the attempt of the Emperor Joseph II., to open the navigation of the Scheldt from Antwerp to the sea, was considered as a striking proof of the general union of sentiment on this point, as it was believed that Amsterdam had scarcely an advocate out of Holland, and even there her pretensions were advocated on the ground of treaties, and not of natural right. This sentiment of right in favor of the upper inhabitants must become stronger in the proportion which their extent of country bears to the lower. The United States held 600,000 square miles of inhabitable territory on the Mississippi and its branches, and this river with its branches afforded many thousands of miles of navigable waters penetrating this territory in all its parts. The inhabitable territory of Spain below their boundary, and bordering on the river, which alone could pretend any fear of being incommoded by their use of the river, was not the thousandth part of that extent. This vast portion of the territory of the United States had no other outlet for its productions, and these productions were of the bulkiest kind. And, in truth, their passage down the

river might not only be innocent, as to the Spanish subjects on the river, but would not fail to enrich them far beyond their actual condition. The real interests, then, of the inhabitants, upper and lower, concurred in fact, with their respective rights."—WHEATON'S *International Law*, pp. 258, 259.

Missouri, one of the western United States, is situated between 36° and $40^{\circ} 36'$ N. lat., and between 89° and $95^{\circ} 30'$ W. long. It is 287 miles long, and 230 broad, containing 65,037 square miles. Population in 1810 was 19,833; in 1820, 66,586; in 1830, 140,074; in 1840, 383,702; and in 1850, 682,043.

Physical Features, etc.—This State presents a great variety of surface and soil. Alluvial or bottom land is found on the margin of the rivers; receding from them the land rises in some places gently, and in others very abruptly, into elevated barrens or rocky ridges. In the interior, bottoms and barrens, naked hills and prairies, heavy forests and streams of water, may often be seen at one view, presenting a diversified and beautiful landscape. The south-east part of the State has a very extensive tract of low, marshy country, abounding in lakes, and liable to inundations. Back of this a hilly country extends as far as the Osage River. This section is rich in minerals. The lead region covers an area of more than 3,000 square miles. In St. Francis county is the celebrated "Iron Mountain," elevated 300 feet above the surrounding plain, and $1\frac{1}{2}$ miles across its summit, and 80 per cent. of its mass pure iron. Five miles distant is the Pilot Knob, 300 feet high, and with a base a mile and a half in circumference of the same species of rich ore. Between the Osage and Missouri Rivers is a tract of country very fertile, and agreeably diversified with woodland and prairie, and abounding with coal, salt, etc. The country north of the Missouri is emphatically "the garden of the West." There is no part of the world where a greater extent of country can be traversed more easily when in its natural state. The surface is for the most part delightfully undulating and variegated, sometimes rising into picturesque hills, then stretching away into a sea of prairies, occasionally interspersed with shady groves and shining streams.

There were in this State in 1850, 2,938,425 acres of land improved, and 6,794,245 of unimproved land in farms; cash value of farms, \$63,225,543, and the value of implements and machinery, \$3,981,525. *Live Stock*.—Horses, 225,319; asses and mules, 41,667; milch cows, 230,169; working oxen, 112,168; other cattle, 449,173; sheep, 762,511; swine, 1,702,625; value of live stock, \$19,887,580.

Agricultural Products, etc.—Wheat, 2,981,652; rye, 44,268; Indian corn, 36,214,597; oats, 5,278,079; barley, 9,631; buckwheat, 23,641; peas and beans, 46,017; potatoes, 939,006; sweet potatoes, 335,505; rice, 700 pounds; value of the product of the orchard, \$514,711; produce of market gardens, \$99,454; pounds of butter made, 7,834,359; of cheese, 203,572; maple sugar, 178,910; molasses, 5,636 gallons; beeswax and honey, 1,328,972 pounds; wool, 1,627,164 pounds produced; flax, 527,160; silk cocoons, 186; hops, 4,130; tobacco, 17,113,784; hay, 116,925 tons; hemp, 16,028 tons; clover seeds, 619 bushels; other grass seeds, 4,346; flax seed, 13,696; and were made 10,563 gallons of wine. Value of home-made manufactures, \$1,674,705; of slaughtered animals, \$3,367,106. The Mississippi winds along the entire eastern boundary of the State for a distance of 400 miles, and receives in its course the waters of the Great Missouri, which indeed deserves to be regarded as the main stream. Through the central and richest part of the State the Missouri rolls its immense volume of water, being navigable for five months in the year for steamboats 1,800 miles from its entrance into the Mississippi. The La Mine, Osage, and Gasconade on the south, and the Grand and Chariton on the north side, are navigable

FOREIGN EXPORTS FROM THE PORT OF MOBILE FOR THE YEAR 1856, AND FOR THE FIRST SIX MONTHS OF 1857.

	In American vessels.	In foreign vessels.	Total.
1st quarter, 1856.....	\$5,351,249	\$5,094,144	\$10,545,393
2d " " ".....	3,130,612	3,855,928	6,516,540
3d " " ".....	286,890	446,287	732,517
4th " " ".....	1,776,972	845,962	2,122,934
Total, 1856.....	.....	.....	\$19,917,884
" 1855.....	.....	.....	16,813,005
" 1854.....	.....	.....	15,952,221
1st quarter, 1857.....	\$8,987,187	\$4,550,847	\$12,887,534
2d " " ".....	3,999,964	833,085	4,833,999
Total, 6 months.....	.....	.....	17,720,533

TABLE OF ENTRIES AND CLEARANCES OF VESSELS AT THE PORT OF MOBILE (EXCLUSIVE OF STEAMERS AND OTHER CRAFT NAVIGATING THE RIVERS AND BAY), FOR THE YEAR ENDING JUNE 30TH, 1857.

Character.	Entries.			Clearances.		
	Vessels.	Tons.	Crew.	Vessels.	Tons.	Crew.
American.....	92	60,563	2,094	187	111,866	8,091
Foreign.....	58	49,756	1,418	52	44,881	1,258
Coastwise.....	556	247,084	9,780	217	71,618	2,254
Total.....	706	357,403	13,296	456	227,860	6,603

EXPORTS OF COTTON TO FOREIGN PORTS, WITH THE WEIGHT AND VALUE ATTACHED, FOR THE YEAR ENDING AUGUST 31ST, 1857.

	Bales.	Pounds.	Value.
Gt. Britain, in Am. vessels	123,712	64,534,437	\$8,378,741
" Brit.	81,143	41,252,609	5,201,531
" Sw.	1,371	696,436	83,937
Total to Great Britain.....	211,281	106,480,582	\$13,664,215
France, in Amer. vessels...	84,695	42,789,533	\$5,294,014
" " Sard.	145	72,904	9,614
Total to France.....	84,840	42,862,527	\$5,303,628
Belgium.....	2,297	1,157,501	\$151,424
Sweden.....	2,068	1,038,260	122,825
Hamburg.....	2,545	1,905,476	166,675
Russia.....	8,190	4,145,050	545,984
Holland.....	1,470	750,544	91,136
Denmark.....	1,123	570,838	74,200
Spain.....	1,225	611,112	86,544
Total to other for. ports	18,918	9,578,781	\$1,238,648
Total foreign.....	314,989	158,921,940	\$20,206,491

COMPARATIVE VIEW OF THE EXPORTS OF COTTON FROM MOBILE FOR FOUR YEARS, COMMENCING 1ST SEPTEMBER.

Ports.	1856-57.		1855-56.		1854-55.		1853-54.	
	Bales.	Pounds.	Bales.	Pounds.	Bales.	Pounds.	Bales.	Pounds.
Liverpool.....	196,865	340,812	213,616	227,462				
Hull.....	4,774	.....	.....	.....	
Glasgow and Greenock.	3,059	5,183	.....	.....		
Cowes and a market...	6,533	5,695	1,632	.....			
Total to Great Britain.....	211,281	351,690	215,248	231,230				
Havre.....	84,563	94,012	110,074	76,827				
Rochelle, etc.....	132	304	1,016	.....			
Marseilles and Dieppe...	145	1,946	.....	.....		
Total to France.....	84,840	96,262	111,090	76,827				
Amsterdam & Rotterdam	1,470	955	2,900	2,960				
Antwerp.....	2,297	9,901	2,539	6,037				
Hamb'g, Bremen, St. Pet.	10,735	10,779	1,550	8,894				
St. Paul, Ghent, etc.	2,068	7,381	.....	1,525				
Gibraltar and Barcelona	1,225	5,017	8,777	8,406				
Havana, etc.....	.....	.....	.....	100				
Genoa, Trieste, etc.....	.....	3,050	1,939	5,709				
Other ports.....	1,123	.....	1,268	413				
Total to oth. for. ports	18,918	87,083	13,973	29,094				
New York.....	28,736	23,492	80,955	35,414				
Boston.....	47,412	65,307	26,953	43,230				
Providence.....	22,932	17,772	15,75	23,406				
Philadelphia.....	6,531	2,975	1,518	5,047				
Baltimore.....	5,899	4,543	3,804	8,921				
New Orleans.....	60,036	73,707	32,087	64,556				
Other ports.....	2,510	8,585	1,800	2,981				
Total coastwise.....	174,055	196,286	112,792	178,505				
Grand total.....	489,044	681,321	458,108	515,656				
RECAPITULATION.								
Great Britain.....	211,281	351,690	215,248	231,230				
France.....	84,840	96,262	111,090	76,827				
Other foreign ports.....	18,918	87,083	13,973	29,094				
Total foreign.....	314,989	435,035	340,311	337,151				
Total United States.....	174,055	196,286	112,792	178,505				
Grand total.....	489,044	681,321	458,108	515,656				

COTTON CROP OF SOUTH ALABAMA FOR TWENTY-EIGHT YEARS.

Years.	Annual increase.		Annual decrease.		Years.	Annual increase.		Annual decrease.	
	Bales.	Bales.	Bales.	Bales.		Bales.	Bales.	Bales.	Bales.
1830	102,684	22,355	.....	.....	1844	468,126	.....	14,505	.....
1831	113,075	10,391	.....	.....	1845	517,550	49,424	.....	.....
1832	125,605	12,530	.....	.....	1846	421,669	.....	95,881	.....
1833	129,366	3,761	.....	.....	1847	322,516	.....	69,153	.....
1834	149,518	20,147	.....	.....	1848	438,324	115,808	.....	.....
1835	197,847	48,334	.....	.....	1849	517,846	79,522	.....	.....
1836	237,590	39,743	.....	.....	1850	350,297	.....	167,549	.....
1837	232,685	.....	4,905	.....	1851	451,697	101,400	.....	.....
1838	309,307	77,122	.....	.....	1852	549,772	98,075	.....	.....
1839	251,742	.....	53,065	.....	1853	546,514	.....	8,258	.....
1840	445,725	193,933	.....	.....	1854	538,110	.....	8,404	.....
1841	317,642	.....	126,038	.....	1855	454,595	.....	83,515	.....
1842	317,315	673	.....	.....	1856	659,738	205,143	.....	.....
1843	482,631	164,316	.....	.....	1857	503,177	.....	156,561	.....

STOCK OF COTTON AT THE PORT OF MOBILE IN PRESSES, WAREHOUSES, AND ON SHIPBOARD, AUGUST 31ST, 1857.

Factor's press and warehouses.	Shipper's Bales.	Planter's mark. Bales.	Ship marked. Bales.	Total.
Factor's press and warehouses.....	559	2,477	.....	773
Shipper's " " ".....	196	219	.....	196
Alabama " " ".....	14	.....	.....	14
Selma warehouse.....	13	.....	.....	13
Pickeries, stores, etc.....	26	.....	.....	26
Arrived by railroad.....	.....	.....	.....	.....
Total.....	1,795	2,696	.....	4,491
Arrived since.....	18	.....	.....	18
Total stock, Aug. 31, 1857.....	1,808	2,696	.....	4,504

COMPARATIVE IMPORTS OF THE FOLLOWING STAPLE ARTICLES INTO THE PORT OF MOBILE FOR FIVE YEARS.

Articles.	1856-7.	1855-6.	1854-5.	1853-4.	1852-3.
Bagging.....pieces	16,460	23,176	23,938	21,063	22,327
Bale rope.....coils	32,731	38,399	31,597	21,562	24,107
Bacon.....hlds	21,415	12,626	16,929	17,744	13,227
Coffee.....sacks	32,636	33,556	23,936	20,678	34,508
Corn....." "	143,432	43,436	101,225	189,029	92,104
Flour.....bbls.	73,590	59,073	41,920	62,057	64,444
Hay.....bales	31,995	13,556	17,858	25,101	22,830
Lard.....kegs	14,103	16,692	22,083	15,788	22,389
Lime.....bbls.	23,100	6,790	14,632	11,953	21,252
Molasses....." "	7,607	17,695	29,380	30,799	19,631
Oats.....sacks	29,895	88,912	33,893	60,426	43,895
Potatoes.....bbls.	17,695	19,308	12,099	23,261	21,844
Pork....." "	13,602	19,944	12,446	14,700	15,841
Rice....." "	2,893	1,961	11,421	2,949	1,899
Salt.....sacks	172,015	234,321	139,901	169,031	123,266
Sugar.....hlds.	6,133	7,570	7,431	8,398	8,852
Whisky.....bbls.	31,244	25,308	19,702	24,695	21,754

COMPARATIVE VIEW OF THE STOCKS OF THE FOLLOWING STAPLE ARTICLES TO DATE AT MOBILE, FOR SIX YEARS.

Articles.	1857.	1856.	1855.	1854.	1853.	1852.
Bagging.....pieces	5,282	3,595	5,058	3,013	3,788	1,852
Bale rope.....coils	4,946	1,263	4,290	3,374	7,602	2,290
Bacon.....hlds.	706	507	422	454	273	556
Cotton.....bales	4,504	5,005	23,519	29,278	7,516	2,319
Coffee.....sacks	6,602	4,164	1,197	1,476	3,932	1,455
Corn....." "	6,729	2,277	5,530	7,434	9,655	1,900
Flour.....bbls.	2,063	2,222	1,368	1,843	1,285	629
Hay.....bales	2,630	1,296	2,180	3,492	2,994	2,172
Lard.....kegs	1,171	1,000	1,427	858	520	516
Lime.....bbls.	550	1,117	8,155	1,550	8,113	2,175
Molasses....." "	314	794	445	1,256	1,236	793
Oats.....sacks	4,632	4,932	2,824	4,677	1,153	313
Potatoes.....bbls.	307	43	328	89	174	179
Pork....." "	943	451	243	590	403	515
Rice....." "	601	146	72	224	43	23
Salt.....sacks	47,149	22,666	10,705	28,174	14,388	3,337
Sugar.....hlds.	274	833	310	605	673	113
Whisky.....bbls.	7,079	3,551	1,916	2,033	3,498	3,203
Candles.....boxes	23,73	1,663	1,365	1,580	832	1,304

* Including 3,800 bags French and 700 of Turk's Island.

EXPORTS OF COTTON FROM MOBILE FROM 1846 TO 1851, COMMENCING SEPTEMBER 1ST.

Ports.	1850-51.		1849-50.		1848-49.		1847-48.		1846-47.	
	Bales.	Bales.	Bales.	Bales.	Bales.	Bales.	Bales.	Bales.	Bales.	Bales.
Great Britain.....	250,118	162,159	290,336	228,329	181,156					
France.....	46,005	39,973	63,290	61,512	22,200					
Other for. ports.....	26,373	11,927	44,525	29,070	19,784					
Total foreign.....	322,496	214,059	398,151	319,211	190,239					
Total U. S.	96,929	111,452	140,993	120,350	116,674					
Grand total.....	419,525	325,511	539,142	439,561	306,913					

Tariff of Charges on Cotton at Mobile.—The proprietors of the several presses and warehouses at Mobile, have adopted the following uniform tariff of charges on cotton: Factor's storage on cotton for the season, 20 cents per bale; compressing cotton, 50 cents per bale; extra ropes on compressed cotton, each $6\frac{1}{2}$ cents per bale; labor on ship marked cotton, 5 cents per bale; drayage, compressed cotton, 5 cents per bale; wharfage, compressed cotton, 5 cents per bale; storage on cotton going coastwise, per week, 5 cents per bale; turning out and re-storing cotton, 5 cents per bale; arranging, 3 cents per bale.

Alabama Finances.—The Comptroller and Treasurer of this State have published the biennial reports for the fiscal year ending September 30, 1856, which show a total of receipts into the treasury, from all sources,

of \$798,008 46; of which sum \$616,863 15 was on the assessment of taxes for the year 1855; the balance, \$81,145 31, making up the first sum, was derived from taxes of 1844, 1847, 1851, 1853, 1854, from State Bank branches, bonus from Stock Banks, Marietta and Ohio Railroad, 16th section fund, and 2 and 8 per cent. funds, etc. The above sum of receipts, \$798,008 46, with the balance in the treasury, September 30, 1855, of \$1,192,652 96, makes \$1,990,656 42. The disbursements for the year ending 30th September last, amount to \$486,867 52, of which \$158,552 21 were paid for educational purposes, \$100,000 to Bank Commissioner, \$61,745 50 to pay members of the Legislature, etc., \$26,350 87 to insane hospital, and the balance to the judiciary, university fund, etc., etc. There was in the treasury on September 30, 1846, \$1,503,788 90.

FOREIGN COMMERCE OF THE STATE OF ALABAMA, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Tonnage cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.		American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821.....	\$108,960	....	\$108,960	....	....	....	614	5,576
1822.....	209,748	....	209,748	\$36,421	2,080	35	....	....
1823.....	202,387	....	202,387	125,770	2,187	....	....	....
1824.....	457,725	\$3,002	460,727	91,604	6,847	1,449	....	....
1825.....	691,897	738	692,635	113,411	9,896	884	....	....
1826.....	1,518,701	8,411	1,527,112	179,554	16,056	1,807	....	....
1827.....	1,380,770	45,594	1,376,364	201,909	18,696	8,073	....	....
1828.....	1,174,737	7,822	1,182,559	171,909	16,859	4,765	....	....
1829.....	1,679,885	14,573	1,694,458	238,720	14,494	4,953	....	....
1830.....	3,291,825	3,129	2,294,954	144,823	22,277	4,059	....	....
Total....	\$9,666,135	\$83,269	\$9,749,404	\$1,299,121	102,932	20,975	....	....
Sept. 30, 1831.....	\$2,412,862	\$1,032	\$2,413,894	\$224,435	14,707	10,958	2,136	3,925
1832.....	2,733,554	2,833	2,736,387	306,845	18,764	12,884	....	....
1833.....	4,522,221	5,740	4,527,961	265,918	29,067	9,256	....	....
1834.....	5,664,047	6,750	5,670,797	395,361	29,272	10,614	....	....
1835.....	7,572,128	2,564	7,574,692	525,955	32,795	12,665	....	....
1836.....	11,183,788	873	11,184,661	651,618	85,840	17,867	....	....
1837.....	9,652,910	5,898	9,658,808	609,385	58,522	10,725	....	....
1838.....	9,638,049	195	9,638,244	524,548	27,191	11,996	....	....
1839.....	10,388,159	....	10,388,159	895,251	48,236	17,006	....	....
1840.....	12,854,694	....	12,854,694	874,501	94,551	23,552	....	....
Total....	\$76,622,412	\$25,390	\$76,647,802	\$4,978,917	888,795	136,548	....	....
Sept. 30, 1841.....	\$10,969,826	\$11,445	\$10,981,271	\$580,819	47,481	35,795	5,589	10,125
1842.....	9,965,675	....	9,965,675	368,871	51,247	38,095	....	....
9 mos. 1843.....	11,157,460	....	11,157,460	360,655	79,107	56,900	....	....
June 30, 1844.....	9,906,195	1,459	9,907,654	442,518	47,097	58,988	....	....
1845.....	10,515,374	22,954	10,538,328	473,491	30,032	62,491	....	....
1846.....	5,260,317	....	5,260,317	259,607	46,044	51,007	....	....
1847.....	9,054,580	....	9,054,580	390,161	23,103	43,135	....	....
1848.....	11,920,698	7,056	11,927,749	419,896	67,574	49,859	....	....
1849.....	12,823,725	....	12,823,725	657,147	76,528	74,593	....	....
1850.....	10,544,858	....	10,544,858	865,362	32,268	80,717	....	....
Total....	\$102,118,608	\$42,914	\$102,161,517	\$4,768,327	550,476	545,030	....	....
June 30, 1851.....	\$18,528,824	....	\$18,528,824	\$418,446	68,747	52,518	8,578	18,749
1852.....	17,388,581	\$2,123	17,388,704	588,882	91,067	72,068	....	....
1853.....	16,786,918	....	16,786,918	809,562	79,563	64,122	....	....
1854.....	13,911,612	....	13,911,612	725,610	60,064	58,494	....	....
1855.....	14,270,565	....	14,270,565	619,964	100,750	44,865	....	....
1856.....	23,726,215	7,955	23,734,170	793,514	122,409	90,809	....	....

Mobile Bay, Alabama.—The bay sets up from the Gulf of Mexico, and is 30 miles long, and on an average 12 miles broad. It communicates with the gulf by two straits, one on each side of Dauphin Island. The strait on the west side will not admit of vessels drawing more than 5 feet water; that on the east side, between the island and Mobile Point, has 22 feet water, and the channel passes within a few yards of the point. There is a bar across the bay, near its upper end, which has only 11 feet water. The Mobile Point light-house is on the east side of the entrance into Mobile Bay. Lat. $30^{\circ} 18' 48''$ north, long. $88^{\circ} 00' 30''$ west. Shows a revolving light, elevated 57 feet above the level of the sea, and visible for a distance of 12 nautical miles. Three miles south-west of Mobile Point, is Sand Island light, lat. $30^{\circ} 11' 18''$ north, long. $88^{\circ} 02'$ west. Shows a fixed light, elevated 54 feet above the sea, and is visible for a distance of 12 nautical miles. Within the bay, a little south of the city of Mobile, is the Choctaw Point light-house; it shows a fixed light, elevated 54 feet above the surface of the bay, and is visible for a distance of 11 nautical miles.

Mocha, the principal port in the Red Sea frequented by Europeans, in that part of Arabia called Yemen, about 40 miles to the north of the Strait of Bab-el-mandeb, lat. $13^{\circ} 19' 30''$ north, long. $43^{\circ} 20'$ east. Population variously estimated; but may, perhaps, amount to from 5000 to 7000. It is encircled with walls, and indifferently fortified. Its appearance from the sea is imposing. Mocha is situated on the margin of a dry sandy plain. It is built close to the shore, between two points of land which project and form a bay. Vessels drawing from 10 to 12 feet water may anchor within this bay at about a mile from the town; but large ships anchor without the bay in the roads, in 5 or 7 fathoms water—the grand mosque bearing east south-east, and the fort to the south of the town south by east, distant about two miles from the shore. The great article of export from Mocha is coffee, which is universally admitted to be of the finest quality. It is not possible to form any very accurate estimate of the quantity exported; but we believe it may be taken at 10,000 tons, or perhaps more. The greater portion is sent to Djidda and Suez; but there

is a pretty large export to Bombay, and other parts of India, whence some is sent to Europe; occasionally, however, the exports from Mocha and Hodeida, direct from Europe, are very considerable. Besides coffee, the principal articles of export are, dates, adjuve, or paste made of dates, myrrh, gum Arabic, olibanum, senna (*cassia senna*), sharks' fins, tragacanth, horns and hides of the rhinoceros, balm of Gilead, ivory, gold dust, civet, aloes, sagapenum, etc. The principal articles of import are, rice, piece goods, iron, and hardware, etc. The ivory, gold dust, and civet, met with at Mocha, are brought from the opposite coast of Abyssinia, whence are also brought slaves, ghee, etc. The greater part of the foreign trade of Mocha is transacted by the Banians; and it is much safer to deal with them than with either Turks or Arabs. Europeans pay a duty of 3 per cent. *ad valorem* on all goods imported by them from Europe, India, or China; the duty being levied on the amount of the sales. The buyer pays brokerage, coolie and boat-hire. All kinds of foreign goods are sold on credit, and the payment is made by three instalments, or at a certain day, according as may have been agreed on. Coffee is always paid for in ready money. On the sale of other goods, the produce of the country, a credit is given; or if ready money be paid, a discount is allowed at the rate of 9 per cent. When goods are discharging the master must furnish the custom-house officer with a manifest, or account of the marks, numbers, and contents of each package. He then opens two or three bales taken at random; and if they correspond with the account delivered, no further examination is made; but if they do not correspond, the whole bales are opened, and double duty is charged upon the excess. The quantities being thus ascertained, their value is learned from the account of sales rendered by the seller, and the duty charged accordingly. In this respect there is nothing to object to at Mocha; but a good deal of extortion is practiced in the exaction of port charges, presents, etc., which may, however, be defeated by proper firmness. The port charges on ships, or *three-mast* vessels, may amount to about 400 Mocha dollars, and those on brigs to about half as much. Provisions are plentiful and cheap; but water is dear; that in the vicinity being brackish and unwholesome, whatever is used for drinking, by all but the poorest persons, is brought from Mosa, about 20 miles off. Fish are abundant and cheap, but not very good.

Mogadore, a sea-port town on the west coast of Morocco, lat. $31^{\circ} 50'$ north, long. $9^{\circ} 20'$ west. Population about 10,000. It is indifferently fortified; the country in the immediate vicinity is low, flat, sandy, and unproductive. Water is scarce and rather dear; being either rain-water collected and preserved in cisterns, or brought from a river about $1\frac{1}{2}$ miles distant. The port is formed by a small island lying to the southward of the town; but as there is not more than 10 or 12 feet water in it at ebb tide, large ships anchor without, the long battery bearing east, distant $1\frac{1}{2}$ miles. The principal imports are English woolen and cotton stuffs and hardware, German linens, tin, copper, earthenware, mirrors, glass, sugar, pepper, paper, and a variety of other articles. The exports principally consist of sweet and bitter almonds, gum Arabic, and other gums, beeswax, cow and calf skins, ivory, ostrich feathers, gold dust, olive oil, dates, etc.

"The duties levied on imported articles are not paid in money, but in kind, and on English manufactures, army and navy cloth, brass, copper, tea, and sugar, and in fact, in all cases, with few exceptions, are rated at 20 per cent., or a fifth part of the goods, whatever they may be, that are landed. This primitive mode of business is also accompanied by disadvantages, and assists, in conjunction with the high tariff, to cripple any endeavors attempted to bring the Barbary States in closer mercantile alliance with ourselves." It is to be hoped that the government of Morocco may become

alive to the mischievous consequences of this system. Nothing would do so much to promote industry and civilization in the country, as the effectual reduction, or rather the total repeal, of the existing duties on exports.

Mohair (Ger. *Mohr*; Fr. *Moire*; It. *Moer*; Sp. *Mue*, *Muer*), the hair of a variety of the common goat, famous for being soft and fine as silk, and of a silvery whiteness. It is not produced anywhere but in the vicinity of Angora, in Asia Minor. The exportation of this valuable and beautiful article, unless in the shape of yarn, was formerly prohibited; but it may now be exported unspun. The production, preparation, and sale of mohair have long engrossed the principal attention of the inhabitants of Angora; and it used to form an important article of Venetian commerce. It is manufactured into camlets and other expensive stuffs. Hitherto but little has been imported into England. See, for further particulars, *TOURNEFORT, Voyage du Levant* and *URQUHART on Turkey and its Resources*.

Moire Antique. In an ordinary woven goods the threads cross each other at right angles; the long threads forming the warp, and the short threads the weft. According as the fabric is of high quality, so do these threads intersect in a regular and equable quality; but be it as good as it may, there are always some irregularities; they may escape the eye, but they become apparent in a singular way. If good silk be wrapped tightly and carelessly round a roller, it may become moire much against the inclination of the possessor; it will have acquired an irregular kind of glossing in some parts rather than in others; and this irregular glossing, when viewed from a little distance, presents somewhat of the appearance of moire, or watering—who knows? Perhaps an accident to a piece of rolled silk suggested the first idea of watering as a distinct mode of adornment to silken goods? Such accidents have frequently occurred in the history of manufactures. However, accident or no accident, watered silks have long been in use, both in this country and in France. If a pattern be engraved upon one cylinder in relief, and a similar pattern on another cylinder, in sunken devices; and if one of these be heated from within, and if a piece of silk or velvet be drawn between the cylinders, then will the silk or velvet acquire an embossed pattern, because some parts of the surface are more pressed, and are consequently more glossy than the rest. Numerous varieties of this process are employed in the preparation of fancy goods. But this is not exactly watering. For this process two layers of silk are laid face to face, and are pressed tightly between rollers. What follows? However close the threads may be, there are still interstices between them; they follow each other in ridge and hollow fashion throughout the length and breadth of the piece. Now, if the slightest irregularity exists in the pressure, some of the threads become pressed in particular parts more than others; and the over-pressed portions present a greater gloss, a greater power of reflecting light than the rest. The more capriciously these proportions distribute themselves, the more undulatory and cloudy will be the result. We do not say that the actual process is nothing more than this, but that this is the basis on which the whole is founded. The goods may be sprinkled with water previously or not; the rollers may be both heated or both cold, or one heated and one cold; the rollers may be plain or variously indented; they may move smoothly over each other or may have a slight lateral movement—how these variations of method would produce variations of effect every one will see. The adjective "antique" is most likely given to the silks thus produced from their resemblance to the tabby silk dresses worn in former times. It is chiefly produced in France; but in Spitalfields, England, its weavers and moireurs combined, have lately copied the art so cleverly as actually to excel the French. But Spitalfields

guards its secret as sedulously as the magician in a fairy tale guards the captive princess in the castle, and will not let the world have a peep at their doings.

Molasses, or Melasses (Fr. *Sirap de Sucre, Melasses*; Ger. *Syrup*; It. *Mielazzo di zucchero*; Sp. *Miel de azucar, Chancaca*; Port. *Melasso, Assucar liquido*; Rus. *Patoka sacharnaja*), the uncrystallizable part of the juice of the sugar cane, separated from the sugar during its manufacture. It is of a brown or black color, thick, and viscid; has a peculiar odor, and a sweet empyreumatic taste. About 8 gallons of proof spirit may, it is said, be obtained from a cwt. of molasses, such as has recently been imported; but this depends, of course, wholly on the richness of the molasses. Part of the refuse that remains, after refining muscovado sugar, is a sweet syrup, which, as well as the syrup that remains after boiling molasses to obtain bastards, is called treacle. But the treacle obtained from the former is always preferred to that obtained from the latter, and fetches 50 cents per cwt. more. Molasses is sometimes used in preparing the coarser sort of preserves; and on the European continent it is extensively used in the manufacture of tobacco. The following statistics show the foreign trade of the United States in molasses, and also show the receipts to the foreign and home of this staple. The last table shows the average value of the different kinds of molasses at the port of New York for two years:

ANNUAL STATEMENT SHOWING THE IMPORT, EXPORT, STOCK, AND ESTIMATED CONSUMPTION OF MOLASSES IN THE UNITED STATES (EXCLUSIVE OF CALIFORNIA AND OREGON), FOR THE YEAR ENDING DECEMBER 31st, 1856.

Received at New York from	Hhds.	Tierces.	Barrels.
Cuba.....	39,610	3,705	6,650
Porto Rico.....	14,563	324	386
Barbadoes.....	1,456	...	79
Trinidad, P. S.....	1,047	...	84
Demerara.....	189	...	...
St. Kitts.....	195	...	4
Antigua.....	85	...	...
St. Croix.....	29	...	2
Nassau, N. P.....	141	...	...
Other foreign ports.....	99	10	9
Total receipts of foreign direct.....	57,414	4,089	7,164
Louisiana.....	...	128	85,368
Other coastwise ports.....	7,529	471	12,998
Total receipts.....	64,943	4,588	55,530
Add stock Jan. 1st, 1856.....	281	14	217
Total supply.....	65,224	4,602	55,747
Deduct export and inland shipments } to Canada.....	2,256	92	1,888
Deduct stock, Jan. 1st, 1857.....	62,968	4,560	58,969
Taken from this port for consumption	1,798	...	100
	61,170	4,560	58,969

Containing.....	9,818,923	foreign imptd. dir.	6,906,175
Total consump., 1855	12,876,484	"	5,936,878

Decrease, 1856.. 8,057,511 Increase, 1856 969,297

Received at New York (1855) from	Hhds.	Tierces.	Barrels.
Cuba.....	42,188	3,870	7,194
Porto Rico.....	6,818	263	287
Barbadoes.....	404	...	...
Port Spain, Trinidad.....	108	...	...
St. Vincent.....	...	...	...
Antigua.....	...	...	...
Other foreign ports.....	124	5	81
Total receipts of foreign direct.....	49,642	4,138	7,512
Louisiana.....	980	365	94,873
Other coastwise ports.....	21,158	476	7,124
Total receipts.....	71,780	4,979	109,519
Add stock, Jan. 1st, 1855.....	276	...	3,730
Total supply.....	72,056	4,979	113,289
Deduct export and inland ship- } ments to Canada.....	4,581	175	879
Deduct stock, Jan. 1st, 1856.....	67,475	4,804	112,860
Taken from this port for consump.	281	14	217
	67,194	4,790	112,143

Containing.....	12,876,484	foreign imptd. dir.	5,986,878
Total consump., 1854	11,742,090	"	5,439,278

Increase, 1855.. 1,184,404 447,605

RECEIPTS OF FOREIGN MOLASSES IN THE UNITED STATES, FOR THE YEAR ENDING DECEMBER 31st, 1856.

Ports.	Hhds.	Tierces.	Barrels.
New York.....	57,414	4,089	7,164
Boston—from Cuba.....	41,782	3,268	1,505
" " Surinam.....	1,111	113	50
" " Porto Rico, etc.....	2,696	183	547
Portland—from Cuba, etc.....	33,875	2,951	2,517
New Haven—from Porto Rico, etc.....	11,625	61	871
Gloucester & Providence—from Cuba	6,485	219	269
Newburyport, Salem, Bristol, War- } ren, and other eastern ports— } from Cuba, Surinam, etc.....	2,947	273	449
Philadelphia—from Cuba.....	17,319	1,891	898
" " Porto Rico, etc.....	1,618	56	8
Baltimore—from Cuba, Porto Rico, etc.....	6,360	350	1,180
New Orleans—from Cuba.....	151	...	1,170
Savannah, Charleston, and other } southern ports—from Cuba, etc.....	10,521	746	885
Total receipts.....	193,304	18,610	16,408
Add stock at all ports, Jan. 1, 1856.....	1,701	84	57
Total supply.....	195,005	18,694	16,460
Deduct exports and shipments } inland to Canada, from all } the ports, in 1856.....	8,746	1,538	8,649
	186,259	12,106	12,811
Ded. stock at all ports, Jan. 1, 1857.....	8,256	...	...
Total consumption of foreign	178,003	12,106	12,811

Containing..... Gallons,
23,014,878
Add crop of Louisiana, Texas, Florida, etc., of
1855—56, the most of which came to market
in 1856, and assuming the stock of this de-
scription, 1st Jan., of each year, to be equal }
16,594,000

Would make the total consumption in 1856. 39,608,878
Total consumption in 1855..... 47,266,085

Decrease in 1856..... 7,657,207

RECEIPTS OF FOREIGN MOLASSES IN THE UNITED STATES, FOR THE YEAR ENDING DECEMBER 31st, 1855.

Ports.	Hhds.	Tierces.	Barrels.
New York.....	49,642	4,138	7,512
Boston—from Cuba.....	52,423	4,376	1,897
" " Surinam.....	1,491	66	50
" " Porto Rico.....	663	83	...
" " from other for. ports.....	...	...	...
Portland—from Cuba, etc.....	29,147	2,692	897
Providence—from Cuba, etc.....	2,891	7	90
New Haven—from Porto Rico, etc.....	15,056	...	...
Newburyport, Gloucester, Salem, } Bristol, Warren, R. L., and other } eastern ports—from Cuba, } Porto Rico, Surinam, etc.....	9,658	400	658
Philadelphia—from Cuba.....	11,666	1,146	976
" " Porto Rico, etc.....	570	...	62
Baltimore—from Cuba, Porto Rico, etc.....	2,518	192	181
New Orleans—from Cuba.....	...	114	2,251
Savannah—from Cuba, etc.....	...	...	...
Charleston—from Cuba, etc.....	10,915	253	759
Other southern ports—from Cuba.....	...	...	...
Total receipts.....	186,625	18,467	15,828
Add stock at all the ports, Jan. 1855.....	5,051	...	200
Total supply.....	191,676	18,467	15,928
Deduct exports and shipments } inland to Canada, from all } the ports, in 1855.....	7,881	485	1,805
	183,845	12,982	14,228
Ded. stock at all ports, Jan. 1, 1856.....	1,701	84	57
Total consumption of foreign	182,144	12,948	14,166

Containing..... Gallons,
23,598,428
Add crop of Louisiana, Texas, Florida,
etc., of 1854—55, the most of which
came to market in 1855, and assum-
ing the stock of this description, 1st
Jan., of each year to be equal }
Less export of domestic, not included
in above statement of shipments..... }
887,080

Would make the whole consumption in 1855. 47,266,085
Total consumption in 1854..... 56,498,019

Decrease in 1855..... 9,226,934

It will be seen by the foregoing statistics, that the receipts of foreign molasses in the United States for the year ending December 31, 1856, were 25,035,724 gallons, against total receipts in 1855 of 24,152,446 gallons, and the total consumption of this description in 1856 was 23,014,878 gallons, against a consumption

of foreign in 1855 of 23,533,428 gallons, being a decrease in the consumption of foreign in 1856, as compared with 1855, of 2·20 per cent., while the total consumption of foreign and domestic in 1856 was 39,608,878 gallons, against a consumption in 1855 of 47,266,085 gallons, being a falling off in 1856 of 7,657,207 gallons, or the large decrease of 16·20 per cent.

The consumption of all kinds in 1856, as shown, was 16·20 per cent. less than that of 1855, while that of 1855 was 16½ per cent. smaller than the consumption of 1854. This continued large decrease is attributable, in a great measure, to the rapid decline in the yield of Louisiana cane. The following table shows the average value of molasses in New York for two years.

MOLASSES.—ITS AVERAGE VALUE AT NEW YORK FOR TWO YEARS.

Months.	1855.				1856.			
	New Orleans.	Porto Rico.	Cuba Muscov.	Cuba Clayed.	New Orleans.	Porto Rico.	Cuba Muscov.	Cuba Clayed.
	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
January.....	24—28	24—30	23—27	22—25	45—49	41—44	41—43	42—..
February.....	25—28	25—32	24—27	23—25	41—46	43—44	35—42	33—40
March.....	28—27½	25—32	22—27	20—22	40—46	43—44	34—38	33—36
April.....	28—32	25—32	23—23	21—23	42—47	37—45	32—38	30—34
May.....	27—38	25—32	26—30	23—26	46—48	39—45	32—38	30—32
June.....	27—33	25—32	26—30	25—26	47—52	40—46	37—42	34—36
July.....	29—33	28—33	27—30	25½—27	50—54	45—50	41—45	38—40
August.....	33—37	32—36	29—33	28½—31	52—56	43—48	42—46	37—40
September.....	34—38½	34—39	31—36	30—34	54—56	42—48	40—45	37—40
October.....	37—39	37—39	35—37	34—35	54—56	45—53	42—48	39—41
November.....	36—38	35—40	34—38	33—37	55—60	50—60	47—52	40—42
December.....	36—49	40—43	40—43	30—42	70—80	56—60	48—55	49—..
Average for the y'r	32	32½	30½	28½	52	46½	41½	38

STATEMENT SHOWING THE DOMESTIC EXPORT OF MOLASSES FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whither exported.	Gallons.	Value.
Hamburg.....	16,987	\$4,076
Canada.....	411,048	140,385
Other British N. Amer. pos.....	6,671	2,854
British West Indies.....	2,265	667
Ports in Africa.....	1,995	746
Mexico.....	41	25
New Granada.....	4,028	1,499
Chili.....	511	276
Whale Fisheries.....	10,769	4,102
Total.....	454,815	\$154,630

STATEMENT SHOWING THE FOREIGN EXPORTS OF MOLASSES FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whither exported.	Gallons.	Value.
Russian possessions in N. Amer.....	600	\$362
Hamburg.....	16,784	4,813
Gibraltar.....	2,103	720
Canada.....	1,079,387	251,800
Other British North Amer. pos.....	103,989	81,694
French North American pos.....	25,413	7,709
French West Indies.....	2,188	784
Madeira.....	75	30
Ports in Africa.....	430	139
Hayti.....	1,232	360
Chili.....	22,000	6,500
Whale Fisheries.....	6,989	2,314
Total.....	1,261,140	\$306,180
From warehouse.....	966,818	\$232,530
Not from warehouse.....	294,322	73,650

STATEMENT SHOWING THE IMPORTS OF MOLASSES INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Gallons.	Value.
Danish West Indies.....	5,970	\$963
Dutch West Indies.....	26,128	3,760
Dutch Guiana.....	732,319	94,282
Dutch East Indies.....	30	4
England.....	1,232	39
Canada.....	810	106
Other British North Amer. pos.....	35,439	8,585
British West Indies.....	732,022	154,299
British East Indies.....	255	47
British Guiana.....	55,277	12,419
French West Indies.....	3,704	1,007
Spain on the Mediterranean.....	1,094	154
Cuba.....	19,452,854	8,510,609
Porto Rico.....	2,521,946	585,687
Central Republic.....	11,084	1,910
Brazil.....	82	10
Sandwich Islands.....	88,488	10,882
Total.....	23,617,674	\$4,334,663

See SUGAR.

Mole, in architecture, a massive work formed of large stones laid in the sea by means of coffer dams, extended either in a right line or an arc of a circle, before a port, which it serves to close; to defend the vessels in port from the impetuosity of the waves, and

to prevent the passage of ships without leave. It is frequently fortified. *Mole* is sometimes used to signify the harbor itself, which it serves to form or defend.

Money. When the division of labor was first introduced, commodities were directly bartered for each other. Those, for example, who had a surplus of corn, and were in want of wine, endeavored to find out those who were in the opposite circumstances, or who had a surplus of wine and wanted corn, and then exchanged the one for the other. It is obvious, however, that the power of changing, and, consequently, of dividing employments, must have been subjected to perpetual interruptions, so long as it was restricted to mere barter. A carries produce to market, and B is desirous to purchase it; but the produce belonging to B is not suitable for A. C, again, would like to buy B's produce, but B is already fully supplied with the equivalent C has to offer. In such cases—and they must be of a constant occurrence wherever money is not introduced—no direct exchange could take place between the parties; and it might be very difficult to bring it about indirectly. The difficulties that would arise on such occasions, and the devices that would be adopted to overcome them, have been very well illustrated by Colonel Torrens, in his work on the *Production of Wealth*, p. 291. The extreme inconvenience attending such situations must early have forced themselves on the attention of every one. Efforts would, in consequence, be made to avoid them; and it would speedily appear that the best or rather the only way in which this could be effected, was to exchange either the whole or a part of one's surplus produce for some commodity of known value, and in general demand; and which, consequently, few persons would be inclined to refuse to accept as an equivalent for whatever they had to dispose of. After this commodity had begun to be employed as a means of exchanging other commodities, individuals would become willing to purchase a greater quantity of it than might be required to pay for the products they were desirous of immediately obtaining; knowing that should they, at any future period, want a further supply either of these or other articles, they would be able readily to procure them in exchange for this universally desired commodity. Though at first circulating slowly and with difficulty, it would, as the advantages arising from its use were better appreciated, begin to pass freely from hand to hand. Its value, as compared with other things, would thus come to be universally known; and it would at last be used, not only as the common medium of exchange, but as a standard by which to measure the value of other things. Now this commodity, whatever it may be, is *money*.

An infinite variety of commodities have been used as money in different countries and periods. But none can be advantageously used as such, unless it possess several very peculiar qualities. The slightest reflection on the purposes to which it is applied, must, indeed, be sufficient to convince every one that it is indispensable, or, at least, exceedingly desirable, that the commodity selected to serve as money should (1) be divisible into the smallest portions; (2) that it should admit of being kept for an indefinite period without deteriorating; (3) that it should, by possessing great value in small bulk, be capable of being easily transported from place to place; (4) that one piece of money, of a certain denomination, should always be equal, in magnitude and quality, to every other piece of money of the same denomination; and (5) that its value should be comparatively steady, or as little subject to variation as possible. Without the *first* of these qualities, or the capacity of being divided into portions of every different magnitude and value, money, it is evident, would be of almost no use, and could only be exchanged for the few commodities that might happen to be of the same value as its indivisible portions, or as whole multiples of them; without the *second*, or the capacity of being kept or hoarded without deteriorating, no one would choose to exchange commodities for money, except only when he expected to be able speedily to re-exchange that money for something else; without the *third*, or facility of transportation, money could not be conveniently used in transactions between places at any considerable distance; without the *fourth*, or perfect sameness, it would be extremely difficult to appreciate the value of different pieces of money; and without the *fifth* quality, or comparative steadiness of value, money could not serve as a standard by which to measure the value of other commodities; and no one would be disposed to exchange the produce of his industry for an article that might shortly decline considerably in its power of purchasing.

The union of the different qualities of comparative steadiness of value, divisibility, durability, facility of transportation, and perfect sameness, in the precious metals, doubtless formed the irresistible reason that has induced every civilized community to employ them as money. The value of gold and silver is certainly not invariable, but generally speaking it changes only by slow degrees: they are divisible into any number of parts, and have the singular property of being easily reunited, by means of fusion, without loss; they do not deteriorate by being kept; and from their firm and compact texture, they are very difficult to wear. Their cost of production, especially that of gold, is so considerable, that they possess great value in small bulk, and can, of course, be transported with comparative facility; and an ounce of pure gold or silver taken from the mines in any quarter of the world, is precisely equal, in point of quality, to an ounce of pure gold or silver dug from the mines in any other quarter. No wonder, therefore, when all the qualities necessary to constitute money are possessed in so eminent a degree by the precious metals, that they have been used as such, in civilized societies, from a very remote era. "They became universal money," as Turgot has observed, "not in consequence of any arbitrary agreement among men, or of the intervention of any law, but by the nature and force of things." When first used as money, the precious metals were in an unfashioned state, in bars or ingots. The parties having agreed about the quantity of metal to be given for a commodity, that quantity was then weighed off. But this, it is plain, must have been a tedious and troublesome process. Undoubtedly, however, the greatest obstacle that would be experienced in early ages to the use of gold and silver as money, would be found to consist in the difficulty of determining the degree of their purity with sufficient precision; and the discovery of some means by which their weight and fineness might be readily and cor-

rectly ascertained, would be felt to be indispensable to their extensive use as money. Fortunately these means were not long in being discovered. The fabrication of coins, or the practice of impressing pieces of the precious metals with a stamp indicating their weight and purity, belongs to the remotest antiquity. GOUGET, *De l'Origine des Loix*, etc., tome i., p. 269. And it may safely be affirmed, that there have been very few inventions of greater utility, or that have done more to accelerate the progress of improvement.

It is material, however, to observe, that the introduction and use of coined money make no change whatever in the *principle* on which exchanges were previously conducted. The coinage saves the trouble of weighing and assaying gold and silver, but it does nothing more. It declares the weight and purity of the metal in a coin; but the *value* of that metal or coin is in all cases determined by precisely the same principles which determine the value of other commodities, and would be as little affected by being re-coined with a new denomination, as the burden of a ship by a change of her name. Inaccurate notions with respect to the influence of coinage seem to have given rise to the opinion so long entertained, that coins were merely the *signs* of values! But it is clear they have no more claim to this designation than bars of iron or copper, sacks of wheat, or any other commodity. They change for other things, because they are desirable articles, and are possessed of real intrinsic value. A draft, check, or bill may not improperly, perhaps, be regarded as the sign of the money to be given for it. But that money is nothing but a commodity; it is not a sign—it is a thing signified.

Money, however, is not merely the universal equivalent, or *merchandise banale*, used by society: it is also the *standard* used to compare the values of all sorts of products; and the stipulations in the great bulk of contracts and deeds, as to the delivery and disposal of property, have all reference to, and are commonly expressed in, quantities of money. It is plainly, therefore, of the utmost importance that its value should be preserved as invariable as possible. Owing, however, to improvements in the arts, the exhaustion of old mines, and the discovery of new ones, the value of the precious metals is necessarily inconstant; though, if we except the effects produced in the 16th century by the discovery of the American mines, it does not appear to have varied so much at other times as might have been anticipated. Great mischief has, however, been repeatedly occasioned by the changes that have been made in most countries in the weight, and sometimes also in the purity, of coins; and since the impolicy of these changes has been recognized, similar, and perhaps still more extensive, discords have sprung from the improper use of substitutes for coins. It is, indeed, quite obvious, that no change can take place in the value of money without proportionally affecting the pecuniary conditions in all contracts and agreements. Much, however, of the influence of a change depends on its direction. An increase in the value of money is uniformly more prejudicial, in a public point of view, than its diminution; the latter, though injurious to individuals, may sometimes be productive of national advantage; but such can never be the case with the former. See *Principles of Political Economy*, by McCULLOCH, 3d ed., pp. 510-515.

No certain estimate can ever be formed of the quantity of money required to conduct the business of any country; this quantity being, in all cases, determined by the value of money itself, the services it has to perform, and the devices used for economizing its employment. Generally, however, it is very considerable; and when it consists wholly of gold and silver, it occasions a very heavy expense. There can, indeed, be no doubt that the wish to lessen this expense has been one of the chief causes that have led all civilized and commercial nations to fabricate a portion of their

money of some less valuable material. Of the various substitutes resorted to for this purpose, paper is, in all respects, the most eligible. Its employment seems to have grown naturally out of the circumstances incident to an advancing society. When government becomes sufficiently powerful and intelligent to enforce the observance of contracts, individuals possessed of written promises from others that they will pay certain sums at certain specified periods, begin to assign them to those to whom they are indebted; and when the subscribers are persons of fortune, and of whose solvency no doubt can be entertained, their obligations are readily accepted in payment of debts. But when the circulation of promises or bills in this way has continued for a while, individuals begin to perceive that they may derive a profit by issuing them in such a form as to fit them for being readily used as a substitute for money in the ordinary transactions of life. Hence the origin of bank notes. An individual in whose wealth and discretion the public have confidence, being applied to for a loan, say \$5000, grants the applicant his bill or note, payable on demand, for that sum. Now, as this note passes, in consequence of the confidence placed in the issuer, currently from hand to hand as cash, it is quite as useful to the borrower as if it had been gold; and supposing that the rate of interest is 5 per cent., it will yield, so long as it continues to circulate, a revenue of \$250 dollars a year to the issuer. A banker who issues notes, coins, as it were, his credit. He derives the same revenue from the loan of his written promise to pay a certain sum, that he could derive from the loan of the sum itself, or of an equivalent amount of produce! And while he thus increases his own income, he, at the same time, contributes to increase the wealth of the public. The cheapest species of currency being substituted in the place of that which is most expensive, the superfluous coins are either used in the arts or are exported in exchange for raw materials or manufactured goods, by the use of which both wealth and enjoyments are increased. Ever since the introduction of bills, almost all great commercial transactions have been carried on by means of paper only. Notes are also used to a very great extent in the ordinary business of society; and while they are readily exchangeable, at the pleasure of the holder, for coins, or for the precise quantities of gold or silver they profess to represent, their value is maintained on a par with the value of these metals; and all injurious fluctuations in the value of money are as effectually avoided as if it consisted wholly of the precious metals.

In common mercantile language, the party who exchanges money for a commodity is said to buy; the party who exchanges a commodity for money being said to sell. Price, unless where the contrary is distinctly mentioned, always means the value of a commodity estimated or rated in money. For a further account of metallic money, see the article COIN.

See *Bankers' Mag.*, v., 309, 384, ii., 1, 641; HUNT'S *Mag.*, i., 50 (C. F. ADAMS); *Ed. Rev.*, x., 284, xiii., 35, xxiii., 568; *West. Rev.*, ix., 99; DE BOW'S *Rev.*, vi., 243, vii., 501.

Monopoly. By this term is usually meant a grant by competent authority, conveying to some one individual, or number of individuals, the sole right of buying, selling, making, importing, exporting, etc., some one commodity, or set of commodities. Such grants were very common previously to the accession of the house of Stuart, and were carried to a very oppressive and injurious extent during the reign of Queen Elizabeth. Commercial monopolies reached to such a height in England, that Parliament petitioned against them, and they were in consequence mostly abolished about the close of Elizabeth's reign, 1602. They were further suppressed, as being contrary to law, 19 James I., 1622; and were totally abolished, and it was decreed that none should be in future cre-

ated, as was previously the custom, by royal patent, 16 Charles I., 1640.—ANDERSON'S *History of Commerce*. The grievance became at length so insupportable, that, notwithstanding the opposition of government, which looked upon the power of granting monopolies as a very valuable part of the prerogative, they were abolished by the famous act of 1624. The act of James I. declared that all monopolies, grants, letters patent for the sole buying, selling, and making of goods and manufactures, shall be null and void. It excepts patents for 14 years for the sole working or making of any new manufactures within the realm, to the true and first inventors of such manufactures, provided they be not contrary to law, nor mischievous to the State. It also excepts grants by act of Parliament to any corporation, company, or society, for the enlargement of trade, and letters patent concerning the making of gunpowder, etc. This act effectually secured the freedom of industry in Great Britain; and has done more, perhaps, to excite the spirit of invention and industry, and to accelerate the progress of wealth, than any other in the statute book.

Monsoons (from the Malay *musin*, season), periodical trade winds, which blow six months in one direction, and the rest of the year in an opposite one. They prevail in the Indian Ocean north of the 10th degree of south latitude. From April to October a violent south-west wind blows, accompanied with rain, and from October to April, a gentle dry north-east breeze prevails. The change of the winds or the *breaking up* of the monsoons, as it is called, is accompanied by storms and hurricanes. These periodical currents of winds do not reach very high, as their progress is arrested by mountains of a moderate height.

Monsoons are, for the most part, formed of trade-winds. When at stated seasons of the year a trade-wind is deflected in its regular course from one quadrant to another, or drawn in by overheated districts, it is regarded as a monsoon. Thus the African monsoons of the Atlantic, the monsoons of the Gulf of Mexico, and the Central American monsoons of the Pacific, are, for the most part, formed of the trade-winds, which are turned back or deflected to restore the equilibrium which the over-heated plains of Africa, Utah, Texas, and New Mexico have disturbed. When the monsoons prevail for five months at a time, for it takes about a month for them to change and become settled, then both they and the trade-winds, which they replace, are called monsoons. The north-east and the south-west monsoons of the Indian Ocean afford an example of this kind. A force is exerted upon the north-east trade-winds of that sea by the disturbance which the heat of summer creates in the atmosphere over the interior plains of Asia, which is more than sufficient to neutralize the forces which cause those winds to blow as trade-winds; it arrests them; and were it not for the peculiar conditions of the land about that ocean, what are now called the north-east monsoons would blow the year round; there would be no south-west monsoons there; and the north-east winds, being perpetual, would become, all the year, what in reality for several months they are, viz., north-east trade-winds.

As long ago as 1831, Dove maintained that the south-west monsoon was the south-east trade-wind rushing forward to fill the vacant places over the northern deserts. Dove admits the proofs of this to be indirect, and acknowledges the difficulty of finding out and demonstrating the problem.—*Annalen der Physik*, No. 94. Translated by Dr. Rosengarten for the *American Journal of Science*, vol. xx., 60.

The north-east and south-east trade-winds meet, we know, near the equator, where they produce the belt of equatorial calms. All vessels that pass from one system of trade-winds to the other have to cross this calm belt. Sometimes they clear it in a few hours. Sometimes they are delayed in it for weeks; and the

calm is so still and the rain so copious that the fresh water is sometimes found standing in pools on the sea. If it be true, as Dove maintains, that the south-west monsoons of the Indian Ocean are the south-east trade-winds of that sea pressing up toward the desert regions of Asia, then a vessel bound hence to Calcutta, for instance, and entering the Indian Ocean at the time of the south-west monsoon, should find no belt of equatorial calms there at all, but, on the contrary, she should find the south-east trade-wind to haul more and more to the south, until finally, without having crossed any belt of equatorial calms, she would find her sails trimmed to the south-west monsoon. In like manner, Jansen maintains that the north-west monsoon is a similar deflection of the north-east trade-wind.

The Desert of Cobi and the arid wastes of Asia are the cause of the monsoons of the Indian Ocean. When the sun is north of the equator, the force of his rays, beating down upon these wide and thirsty plains, is such as to cause the vast superincumbent body of air to expand and ascend. Consequently, there is an indraught of air from the surrounding regions to supply the ascending column. The air that is going to feed the north-east trades is thus arrested, drawn in, heated, and caused to ascend; and so, the north-east trade-winds are first weakened, then "killed," and afterward drawn into the vortex of ascending air over the burning sands of the deserts; on the other hand, the south-east trade-wind, failing, when it arrives at the place where the equatorial Doldrums were wont to be, to meet with them or any opposing force from the north-east trades, are drawn over into the northern hemisphere. Going now from the equator toward the poles, their tendency is to obey the forces of diurnal rotation, as well as those of the indraught for the heated plains, and thus the south-east trades become south-west monsoons. In this view, the "equatorial Doldrums" of the Indian Ocean are transferred, as it were, during the south-west monsoons, to the deserts of central Asia. It may be asked by some, saying, Since we can not always tally the air, how do we know that these south-west monsoons are the south-east trades of the Indian Ocean? The reply is, We infer that they are, because in co-ordinating for the Pilot Chart of that sea we have found no belt of calms between the south-east trades and the south-west monsoons, but a gradual change, so to speak, of the one wind into the other. Thus, confining ourselves to August—one of the south-west-monsoon months—and to the strip of ocean between 85° and 90° east, the investigation gives as follows for calms and winds in the field between: 10° S. and 5° S. 133 observations, wind south-east. 5° S. and 102 observations, 3 calms, wind south. 5° N. 99 observations, 3 calms, wind south-west. 5° N. and 10° N. 77 observations, wind south-west. These monsoons do not, as we are generally taught to suppose, commence or end at the same time all over the Indian Ocean. In the first field below Calcutta, *i. e.*, between the land and 20° N., the north-east trade-winds, toward the latter part of January, begin their conflict with the south-west monsoons. The conflict rages in February, and by March the south-west monsoons in that "field" are considered to have regularly set in. They now remain the dominant wind for upward of six months, and until some time in the early part of September. The north-east monsoons or trades now renew the conflict, which is carried on with more and more vigor until the latter part of November, when they obtain the ascendancy, and prevail until the latter part of January, when, as before stated, the south-west monsoons commence their annual struggle for the mastery. In the next field below, *i. e.*, between 15° and 20° N. lat., the north-east monsoons begin to grow light and variable, and to have conflicts with the south-west in February. The period of this conflict, or change, as it is called, frequently lasts until some time in March,

when the force that is calling in and driving the monsoons from the south-west finally gains the ascendant. They then blow steadily until late in September, when the north-east trade-wind forces begin again to assert their ascendancy and to renew the conflict on this side through October, by which time the north-east trades or monsoons become the prevailing winds. Thus, by going 200 or 300 miles further from the supposed place of heat and rarefaction that give rise to this system of winds, the duration of the north-east monsoons is prolonged nearly a month; for in this "field" they prevail from November to January inclusive, three months, while the south-west last from about the middle of March to the middle of September, say six months. In the next field below, *i. e.*, between the parallels of 10° and 15° the south-west monsoons blow about five months, perhaps not quite so long; they do not commence as early, nor blow so late as in the "field" above. They begin the conflict with the north-east trade-wind forces in the latter part of March, and gain the ascendant in May. They then prevail till October, when the north-east trade-wind forces, escaping from the heated plains of the interior, begin to renew the annual combat which is to get them the victory. They soon achieve it, and maintain the mastery undisputed till the last of March or first of April.—MAURY, *Phys. Geog. of the Sea.*

Changing of the Monsoons.—Lieutenant Jansen thus describes this phenomenon: "We have seen that the calms which precede the sea-breeze generally continue longer, and are accompanied with an upward motion of the air; that, on the contrary, those which precede the land-breeze are, in the Java Sea, generally of shorter duration, accompanied by a heavy atmosphere, and that there is also an evident difference between the conversion of the land-breeze into the sea-breeze, and of the latter into the former. Even as the calms vary, so there appears to be a marked difference between the changing of the monsoons in the spring and in the autumn in the Java Sea. As soon as the sun has crossed the equator, and its vertical rays begin to play more and more perpendicularly upon the northern hemisphere, the inland plains of Asia, North Africa, and of North America are so heated as to give birth to the south-west monsoons in the China Sea, in the North Indian Ocean, in the North Atlantic, and upon the west coast of Central America; then the north-west monsoon disappears from the East Indian Archipelago, and gives place to the south-east trade-wind, which is known as the east monsoon, just as the north-west wind, which prevails during the southern summer, is called the west monsoon. This is the only monsoon which is found in the southern hemisphere, while in the northern hemisphere the north-east trade-wind blows in the China Sea and in the Indian Ocean; in the East Indian Archipelago the west monsoon prevails; and here, when the south-east trade blows as the east monsoon, we find the south-west monsoon in the adjacent seas of the northern hemisphere. Generally the westerly monsoons blow during the summer months of the hemisphere wherein they are found. As the land-breeze daily destroys in miniature the regular flow of the trade-wind, so does the latter the west monsoon in larger measure, and observations will be able to decide whether monthly disturbances do not also take place. In the Java Sea, during the month of February, the west monsoon blows strong almost continually; in March it blows intermittently, and with hard squalls; but in April the squalls become less frequent and less severe. Now the changing commences; all at once gusts begin to spring up from the east: they are often followed by calms. The clouds which crowd themselves upon the clear sky give warning of the combat in the upper air which the currents there are about to wage with each other."

Montevideo, a sea-port, and the capital of the Republic of Uruguay, on the north bank of the Rio de

la Plata, lat. $34^{\circ} 54' 11''$ S., long. $56^{\circ} 13' 18''$ W. The population, which is variously estimated, may probably be about 12,000. The town is built in the form of an amphitheatre, on a regular plan, and is well fortified. It has suffered much from the various revolutions to which it has been subject during the last 80 years. Montevideo is situated $2^{\circ} 3' 33''$ W. of Cape St. Mary, the northern limit of the embouchure of the La Plata. Vessels from the north bound to Montevideo generally make this cape, entering the river between it and the small island of Lobos, in from 14 to 17 fathoms. The course is thence nearly west to the Isle of Flores, on which is a light-house 112 feet above the level of the sea, with a revolving light. From Flores to Montevideo is 16 miles in a direct line, and the course west by south by compass. A light-house, 475 feet above the level of the sea, has been erected on the summit of the Montevideo, whence the town has its name. The latter is built on a projecting tongue of land, the port being on its south side. This, which is the best on the La Plata, is a large circular

basin, open to the south-west. Generally the water is shallow, not exceeding from 14 to 19 feet; but the bottom being soft mud, vessels are seldom damaged by grounding. It should, however, be observed that the depth of water in the harbor, as well as throughout the whole of the Rio de la Plata, depends very much on the direction and strength of the winds. The south-west wind, called *pamperos*, blows right into the Bay of Montevideo with much force, not unfrequently causing a rise of a fathom or more in the depth of water! But it rarely occasions much damage to vessels properly moored with anchors to the south-west, south-east, and one to the north. (BLUNT'S *American Pilot*, edit. 1857; *Coulier sur les Phares*, etc.) Montevideo has a considerable commerce. The great articles of export consist of animal products, or of hides, beef, tallow, hair, bones, grease, wool, etc. The imports principally consist of British cottons, woollens, and hardware, flour, wine and spirits, linens, sugar, tobacco, boots and shoes, salt, etc. The following shows the exports from these ports for five years:

ACCOUNT OF SUNDEY EXPORTS FROM BUENOS AYRES AND MONTEVIDEO IN THE FOLLOWING YEARS.

Years.	Dry and salted ox & cow hides.	Horse hides.	Horse hair.	Wool.	Sheep skins.	Nutria skins.	Tallow and soap.	Horns.
	No.	No.	Arrobas.	Arrobas.	Dozens.	Dozens.	Arrobas.	No.
1838.....	1,213,101	64,596	60,536	199,059	58,965	71,745	814,233	1,680,000
1839.....	1,262,463	49,798	49,882	72,062	16,804	21,839	407,392	1,199,000
1840.....	1,318,827	48,804	61,101	96,611	10,351	12,540	875,474	1,142,086
1841.....	3,552,938	177,508	177,095	959,068	211,694	97,904	1,222,086	2,637,972
1842.....	2,930,040	140,355	115,811	516,798	102,424	97,523	511,735	2,183,919

Duties on Imports, in National or Foreign Vessels, at Montevideo.—1. Machinery, agricultural implements, instruments used in the arts and sciences, books, prints, and maps, free. 2. Silk, raw and wrought, laces, blonde, gold and silver embroidery, watches, jewelry, saltpetre, plaster of Paris, coal, timber, cotton fringe, and wooden hoops, 5 per cent. 3. Powder, pitch, tar, rosin, and naval stores, 13 per cent. 4. All raw materials, and manufactured articles, not included in the preceding enumeration, 15 per cent. 5. Sugar, Paraguay and China teas, cocoa, cassia lignea, and cinnamon, spices, drugs, and provisions in general, 20 per cent. 6. Furniture, pictures, looking-glasses, musical instruments, all sorts of carriages, carts, etc., and harness, saddles, horses' furniture (excepting horse cloths of the manufacture of the adjacent provinces, which pay 15 per cent.), ready-made clothes, boots and shoes, liqueurs, brandy, wine, vinegar, ale and porter, cider, tobacco, and soap, 25 per cent. Salt, 2 reals the fanego, say 11d. per 290 pounds. 7. Hides of all classes, hair, horns, tallow, silver and gold, in bullion or coin, free. A small charge is made for warehousing and portorage on passing through the custom-house. Goods may be bonded for an indefinite period, during which time they are subject to a moderate warehouse rent. Foreign flour pays as follows: \$8 per barrel, when wheat is worth \$2 to \$3 per fanega, about 224 pounds; \$6 per barrel, when wheat is worth \$3 to \$5; \$4, when wheat is worth \$5 to \$7; \$2, when wheat is worth \$7 to \$9; \$1, when wheat exceeds \$9. Wheat: \$3 per fanega, when wheat is worth \$2 to \$3 per fanega; \$2, when wheat is worth \$3 to \$6; \$1, when wheat is worth \$6 to \$10; nothing, when wheat is worth above \$10 per fanega; goods transhipped, or shipped out of bond, pay 2 per cent. Foreign goods, shipped in vessels of less than 150 tons burden, for ports of the Uruguay and Paraguay, pay only 1 per cent. 8. All goods imported, paying duties, are subject to pay an additional 1 per cent. to the consulado; $\frac{1}{2}$ per cent. to the hospital; and for the extinction of copper money, 1 per cent additional on all goods that pay 5 per cent. (This has, much to the honor of the authorities and people, been already accomplished; but the duty is maintained for general purposes.) On all goods that pay 13, 15, and 20 per cent., 3 per cent. On all goods that pay 25 per cent., 5 per cent. On flour, 10 per cent. On wheat, 3 per cent.

Duties on Exports, in National or Foreign Vessels.—

Ox and cow hides, 2 reals, 25 centesimos, for reconnidor valuations of \$1, and 1 per cent. consulado. Horse hides, 1 real for reconnidor, on valuations of 5 reals for reconnidor each, and 1 per cent. consulado. All other produce of the country pays 4 per cent. on the market value, and 1 per cent. consulado. Jerked and salt beef, pork, etc.; also all foreign goods that have paid the import duty, free. Gold and silver, coined or in bullion, 1 per cent.

Port Charges.—Tonnage from beyond sea, foreign vessels, 3 reals; national vessels, 2 reals. During loading and unloading, both classes pay \$1 per day. Pratique, with pilot, foreign vessels, \$8; national vessels, \$4. Boat, with pilot, foreign vessels, \$2; national vessels, \$2. Without pilot, foreign vessels, \$4; national vessels, \$2. National and foreign vessels that neither discharge nor load cargo, and that do not remain more than six days, pay nothing; those that remain in the harbor more than six days pay one third of the above tonnage dues. National vessels, and vessels belonging to the provinces of Buenos Ayres, employed within the River Platte, called coasting, pay for a license for each voyage, if 3 to 7 tons, 4 reals; 8 to 15 tons, 10 reals, or \$1 02; 16 to 30 tons, 18 reals, or \$2 02; 31 to 45 tons, 26 reals, or \$3 02; 46 to 60 tons, 30 reals, or \$3 06; 61 to 80 tons, 38 reals, or \$4 06; 81 to 100 tons, 46 reals, or \$5 06; 101 and above, 54 reals, or \$6 06.

Hospital Dues.—National and foreign vessels, sailing for a foreign port beyond sea or in the River Platte, pay \$2 for the vessel, 4 reals for the captain, 2 reals for each seaman, \$1 for each passenger.

Pilotage from Montevideo to Buenos Ayres to be paid in Montevideo. If the draught of water do not exceed 9 feet, Burgos measure, \$50; 9 to 10 feet, \$60; 10 to 11 feet, \$70; 11 to 12 feet, \$80; 12 to 13 feet, \$100; 13 to 14 feet, \$120; 14 to 15 feet, \$140; 15 to 16 feet, \$160; 16 to 17 feet, \$190; 17 to 18 feet, \$220.

Monies, Weights, and Measures.—Paper money there is none. Current money, the Brazilian patacon and Spanish dollar; they pass for 960 centesimos. 100 cents make a real; 800 cents, or 8 reals, make a dollar; 960 cents, or 9 reals 60 cents, make $1\frac{1}{2}$ current dollar, or 1 hard dollar or patacon. Weights and measures same as those of Spain; for which, see CADIZ.

As regards the commerce of the United States with

Montevideo, we find it has much diminished of late years, which may be attributed to the late civil war of nine years' duration. The interior of the country, which formerly abounded in horned cattle, is now without a sufficiency to supply the "Estancias" for breeding those useful animals, millions of them having been destroyed for their hides alone in the course of the war before mentioned, by the troops of Generals Rozas and Oribe; and the consequence is, that little or no produce comes in from the country. Vessels from the United States with their outward cargoes proceed onward to Buenos Ayres, where they find return cargoes, which are easily obtained. Capitalists of late have turned their attention to agriculture, particularly to the cultivation of wheat and Indian corn, which flourish here in a high degree; and in the course of a few years this country will, probably, be enabled to supply Brazil with the article of flour in abundance, in exchange for coffee, sugar, tobacco, etc., articles of vast consumption. There is a fine opening here for a steam mill, for the grinding of wheat and corn, none as yet (September, 1854) having been introduced into this country, and it is worthy the attention of some of the enterprising citizens of the United States. Wind, and horse power for mills, are the only means used at present throughout the country; and although its streams of water are innumerable, that power has not been brought into action. The manufactures consist chiefly of soap, tallow candles, chocolate, and leather, the latter of very inferior quality, which may be attributed to the species of bark used in tanning. Steam navigation on the Rio de la Plata, and its tributaries, is gradually increasing. There are two steamers running regularly between this city and Buenos Ayres, and others to the Parana and Uruguay Rivers, carrying freight and passengers; however, it may be considered as yet in its infancy. The very high price of fuel is a serious obstacle to steam navigation in this quarter, as no coal mines are found here, and the coal used comes from England and the United States, at a very dear rate, and, in consequence, the steamers have not realized so profitable a business as was anticipated.

Port Charges on Foreign Vessels at the Rate of 800 Reis to the Montevidean Dollar.—Pilotage inward, \$10; mooring, \$4; tonnage duty, 300 reis per ton (say on 150, if not more), \$43 06; free of entry, if to discharge, \$8; stamps for ditto, \$12; custom-house officer \$1 per day while discharging and loading, say for 30 days, \$30; stamps, in case of loading, and on being dispatched, \$25 04; hospital fees, from \$4 to \$6, according to the number of hands on board the vessel, \$5; pilot to Franquia, \$4; bill of health, \$4 04; escribano's fees, if for balance of cargo, \$8, or if the vessel lade here, \$12. Spanish 127 to 1000 reis, or \$158 06 at 800 reis. Vessels are allowed to lay 12 days from arrival without entering at the custom-house, and may land samples, so as to dispose of a part or the whole of their cargoes.

Montreal, a city and river port of entry, Canada East, and the largest and most populous city and chief seat of commerce of British America. Situated on the left bank of the St. Lawrence, 142 miles in a direct line south-west of Quebec. Lat. 45° 30' north, long. 73° 25' west. Population, 1840, 27,297; in 1852, 57,716; 1854, 65,000. The site is not so commanding as that of Quebec, but it is in every other respect superior to that city. The position of Montreal, at the head of the ship navigation of the St. Lawrence, and near its confluence with the Ottawa, as well as its situation with respect to the city of New York, necessarily makes it one of the greatest emporiums of Canada. The harbor, though not large, is secure, and vessels drawing 15 feet water, may lie close to the shore. Its general depth is from 3 to 4½ fathoms. Its chief disadvantage consists in the rapid St. Mary, about one mile below the city wharves, which vessels often find it difficult to stem, without the aid of steam-tugs. To

obviate the obstructions in the navigation above Montreal, the Lachine Canal, 9 miles long, 20 feet wide, and 5 feet deep, was undertaken in 1821, and completed at an expense of £130,000. The communication with the opposite side of the river is carried on by several steam and other vessels; and during the summer a regular steamboat communication is kept up with Quebec. At this season vast rafts of timber come down and pass the city of Quebec; and scows, batteaux of about six tons, and Durham boats bring to Montreal the produce of Upper Canada. Neither is the trade of Montreal suspended in winter, like that of Quebec. Numerous sledges may be seen coming in from all directions with agricultural produce, frozen carcasses of beef and pork, firewood and other articles. Montreal is the centre of the commerce between Canada and the United States, carried on by Lake Champlain and the Hudson, and not only is it the dépôt of all the adjacent country, but most of the business done in Quebec is carried on by branches from the Montreal houses. See *Exports of Canada*, p. 853. The imports in 1853, amounted to £3,603,696, and the net amount of duties, £447,089. In the same year, 4885 vessels entered the port, of 491,928 tons burden. The wharves of this city are constructed in a manner unequaled upon this continent; the entire line of which is over two miles in length, and considerable additions (to meet the rapidly increasing trade of the city) will be speedily commenced. The Lachine Canal, with its locks and basins, is another of those public works of which the city may well be proud. The Champlain and St. Lawrence Railroad, commences at Brewsterville, opposite the city and connects with the lines to New York and Boston, at Rouse's Point, a distance of 43 miles. This road is now completed and the cars run daily. The Lachine Railroad connects the city, by a line of road 9 miles in length, with the village of that name. The continuation of this road from Caughnawaga till it connects with the Ogdensburg Road at Moers, is now complete, and the whole line is known as the Montreal and New York Railroad. The St. Lawrence and Atlantic Railroad, connecting Montreal with the city of Portland, a distance of 292 miles, is now complete. A line from Quebec to Melbourne, a distance of 100 miles, is also in course of construction, and will be completed in 1854. The Grand Trunk Railroad to connect Montreal with Kingston, Toronto, etc., is now in course of construction. The entire length of the road from Trois Pistoles to Sarnia, will be 1112 miles, and it will probably be completed in 1856. The Montreal and Bytown Railroad will pass through a fine district of country, and is in progress of construction. The length will be about 121 miles, and will be opened in 1856. *The Victoria Bridge.*—This splendid and useful structure is to cross the St. Lawrence from Point St. Charles to the south shore, a total length of 9437 feet, or somewhat over a mile and three quarters. It is to be built on the tubular principle, and will have a track for railroad cars in the centre, while on the outside of the tube there will be a balcony on each side, with a foot path for passengers. The bridge will rest on 24 piers and two abutments of limestone masonry, the centre span being 330 feet long, and 60 feet high from summer water level. The iron used in its construction will be the best boiler plate T iron, and the total cost of the work is to be £1,500,000 sterling, or \$7,500,000. Formerly this city was the head-quarters of the fur-trade, but its interest in it has greatly declined. It has establishments for the manufacture of cotton goods, India rubber, steam engines, railroad cars, axes, etc., cast iron foundries, distilleries, breweries, soap, candle, and tobacco manufactories, several ship-building establishments, etc.; various articles of hardware, linseed oil, floor-cloth, etc., are made in the city. The markets are abundantly supplied with flesh, fish, poultry, fruit, vegetables, etc. About three fourths of the population are

of French descent, the remainder consisting principally of emigrants from Great Britain.

A letter from the United States' Consul at Montreal, dated October 9, 1855, remarks:—"Since my last communication, the only material alteration between the trade of the two countries has been the ratification and adoption of the reciprocity treaty, which has proved, so far, at least, as has come under my observation, highly satisfactory to the provincial government, and to the people of Canada at large; and there is every appearance of its increasing in usefulness, to this country at least. It is, if I may be allowed to use the expression, commercially speaking, tantamount to annexation; while its beneficial effects have shown themselves in the increased value of farms and landed estates on this side of the line, and I am induced to believe, by careful observation, that there has been a corresponding advantage received by the

United States, particularly the larger sea-port towns. This treaty has been instrumental in doing much for the advantage of the carrying trade, by conveying the products of this province over the railroads and canals of the Union, thereby placing Canada and the lower provinces, so far as their trade is concerned, in the position of one of the States of the Union. There has been, since my last communication, hitherto alluded to, but one enactment on the part of the Canadian government in relation to the trade between the United States and Canada, which was to the effect that the governor in council had abolished the duty levied upon the original packages, containing products of the United States imported into this province, under the provisions of the reciprocity treaty."

The following figures will show the comparative importance of the trade of the principal cities of Canada :

CITIES.	IMPORTS.			EXPORTS.			DUTIES COLLECTED.		
	1853.	1854.	1855.	1853.	1854.	1855.	1853.	1854.	1855.
Quebec....	\$1,141,595	\$1,754,320	\$1,732,556	\$2,248,453	\$2,511,767	\$1,558,702	\$128,454	\$179,139	\$174,807
Montreal...	3,381,540	3,816,082	3,061,061	1,888,728	572,514	475,650	449,102	478,603	310,219
Toronto....	1,165,056	1,362,706	1,401,454	221,490	273,040	404,105	156,083	172,576	152,586

The St. Lawrence, however, with all its acknowledged capacity, is not without its drawbacks. Foremost was the long winter, which sealed its waters during six months of the year; and next may be classed the dangers of a navigation of 700 miles between Belle Isle and Quebec. There were other circumstances which threatened that commercial prosperity which once appeared to be the undoubted appanage of the most convenient port of this large river—using the term "most convenient" in reference to breadstuffs, the chief produce of the West, and to manufactured goods, the chief article in demand by the West. The principal of these was the discovery that the most fertile lands lay beyond the barrier formed by Niagara. Hence, the population which would otherwise, in the natural order, have filled up the nearest land first, was tempted to the shores of Lake Erie and the country lying between that lake and the head waters of the Mississippi. It has been in this region that the great emigrant population has chiefly established itself, leaving the less fruitful shores of the St. Lawrence and Lake Ontario comparatively bare of inhabitants.

Imports to the Port of Montreal.—In 1845, £2,614,911; 1846, £2,303,908; 1855, £3,093,145; 1856, £3,993,000. The export trade generally has received a great impetus during the past year, owing in part, no doubt, to the establishment of the ocean steam line. The exports from Montreal for the first three quarters of the year 1855 were but £333,610; for the year 1856 they have amounted to £716,475, or more than double.

The population of the city is steadily increasing, and it is believed that at no former period was its trade and general business on a more healthy footing. In 1800, the population was 9000; 1816, 16,000; 1825, 22,000; 1831, 27,297; 1851, 57,715; 1856, 75,000, at a very moderate estimate.

Regulations in Force.—Merchandise shall not be unlaiden in Canadian ports except after due entry, at places designated for that purpose, under penalty of forfeiture. Merchandise shall not be imported except into some port at which a custom-house is established, under penalty of forfeiture of vessel and goods, if under the value of \$1000; if above that sum, they shall be retained as security for the payment of that amount.

Banks connected with Montreal.—Montreal being a large commercial centre, the banking facilities afforded to the business community are on an extended scale. The banks of Canada have been, on the whole, prudently and judiciously managed, and have proved remunerative to the shareholders, while there has yet been no instance of the stoppage of a Canadian bank. The names and capital of the banks carrying on their business in Montreal are here given, selected from the official statement, with a statement of whether the office be a head office or agency. These banks all, with one exception, transact business under Canadian charters, and their stockholders are liable in double the amount of their shares. The bank of British North America holds a royal charter, the head office being in London, but the principal colonial office is in Montreal.

BANKS ACTING UNDER CHARTER.—1856.

Name of Bank.	Capital authorized by act.	Capital paid up.
City B'k of Montreal, principal office.	\$1,200,000	\$1,047,000
Bank of Montreal, principal office...	6,000,000	5,278,000
Commercial Bank of Canada, agency.	4,000,000	2,976,000
Bank of Upper Canada, agency.....	4,000,000	2,698,000
Banque du Peuple, principal office....	800,000	795,000
Molson's Bank, principal office.....	1,000,000	824,000
Bank of British North America.....	5,000,000	5,000,000

A COMPARATIVE STATEMENT OF THE PRINCIPAL ARTICLES IMPORTED INTO CANADA DURING THE ELEVEN MONTHS ENDED DECEMBER 15TH, 1855 AND 1856.

Goods paying specific duty.....	\$1,885,910
" " 20 per cent.....	67,451
" " 12½ and 15 per cent.....	5,225,638
" " 2½ to 5 per cent.....	719,159
Free goods.....	2,997,941

Total..... £10,896,096

The countries from which these imports came :

Great Britain.....	\$4,553,238
British North America.....	258,148
British West Indies.....	4,408
United States.....	5,676,127
Other foreign countries.....	404,138

The total amount of duty collected during the year 1856 was £1,127,220.

The following is a comparative statement of imports, exhibiting in contrast the value of, and amounts of duties collected on, goods entered for consumption in Canada during the years 1853, 1854, 1855, and 1856.

Whence imported.	Value.				Duty.			
	1853.	1854.	1855.	1856.	1853.	1854.	1855.	1856.
Great Britain.....	\$4,622,280	\$5,740,832	\$3,325,565	\$4,553,238	\$1,028,676	\$1,224,751	\$881,445	\$1,127,220
N. Amer. Colonies.	153,164	168,778	216,496	258,148				
West Indies.....	309	606	8,538	4,408				
United States.....	2,945,536	3,888,274	5,207,169	5,676,127				
Oth. for. countries.	268,507	883,777	268,477	404,138				
Total.....	\$7,995,359	\$10,182,381	\$9,021,542	\$10,896,096	\$1,028,676	\$1,224,751	\$881,445	\$1,127,220

The following is a comparative statement of exports from the province of Canada for three years:

	1854.	1855.	1856.
Produce of the mine.....	£74,780	£81,458	£41,411
“ “ sea.....	87,427	114,980	114,086
“ “ forest.....	2,495,841	1,986,980	2,504,970
Animals and their products.....	208,818	398,796	641,014
Agricultural products.....	1,829,040	3,257,599	8,748,068
Manufactures.....	54,160	119,019	98,407
Other articles.....	11,246	17,140	10,799
Total value of exports.....	£4,760,264	£5,925,975	£7,148,749
Value of ships built at Quebec.....	552,062	804,886	808,269
Estimated amount of exports, short returned at inland ports.....	442,470	816,259	528,725
Grand total of exports.....	£5,754,797	£7,047,115	£8,011,754

The following is a comparative statement of the value of imports and exports of Canada during the years 1855 and 1856:

	Exports.	Imports.	Total.
1855.....	£7,047,115	£9,021,542	£16,068,657
1856.....	8,011,754	10,896,096	18,907,851

Increase of the commerce of 1855 over 1856..... £2,889,198 or 17·67 per ct.

Years.	Totals.			Great Britain.		British colonies.		United States.		Other foreign countries.	
	Number.	Tons.	Men.	Number.	Tons.	Number.	Tons.	Number.	Tons.	Number.	Tons.
1856.....	1,582	578,648	19,880	1,004	596,308	450	28,628	87	8,575	41	5,147
1855.....	1,219	451,241	15,814	760	412,782	385	27,545	24	8,000	50	7,914
1854.....	2,018	781,755	26,286	1,537	737,768	437	37,778	15	1,401	20	4,808

The following is the statement of the same inward:

Years.	Total.			Great Britain.		British colonies.		United States.		Other foreign countries.	
	Number.	Tons.	Men.	Number.	Tons.	Number.	Tons.	Number.	Tons.	Number.	Tons.
1856.....	1,494	550,578	18,976	641	358,526	508	47,196	71	32,849	247	112,092
1855.....	1,168	419,553	14,252	523	279,986	424	50,730	80	35,706	141	50,131
1854.....	1,890	705,342	24,401	1,051	501,488	499	58,825	138	35,401	207	64,628

The number of steamers built in Canada in 1856 was 22; their tonnage 3755. Sail vessels 26; their tonnage 41,584. Total number of vessels built 148; their tonnage 45,339.

Summary of the Regulations in force at the different Ports in Canada.—Merchandise shall not be unladen, except after due entry, at places designated for that purpose, under penalty of forfeiture. Merchandise shall not be brought or imported into the province, whether by sea, land, coastwise, or by inland navigation, whether dutiable or not, except into some port or place at which a custom-house is or may be established, under penalty of forfeiture of vessel and goods, if under the value of \$1000; if above that sum, then

The nett comparative revenue from custom duties for the past five years, after deducting cost of collection, return duties, and balances, is as follows:

1852.....	£705,814	1855.....	£218,819
1853.....	986,597	1856.....	1,028,905
1854.....	1,168,018		

The following is a statement of the tonnage inward and outward, showing the amount of coasting and ferriage on Canadian inland waters, and the intercourse by inland navigation between Canada and the United States during the year 1856:

Total outward.....	Tons. 6,046,888
“ inward.....	6,199,829
Total.....	12,246,667

The following is a subdivision of this grand total:

Canadian steam....	6,287,397	American steam....	4,768,326
“ sail.....	890,726	“ sail.....	846,218

The following tables exhibit the number of vessels entered outward for sea, their tonnage, number of men employed, and the countries whence they came, during the year 1856, and the two preceding years:

the vessel and goods shall be retained as security for the payment of that amount. This applies, *mutatis mutandis*, to goods brought into the province, by land, in carriages or other vehicles. Other regulations have reference, principally, to frontier smuggling, and to the duties and powers of the officers charged with its prevention. They convey no general commercial information, and are, therefore, omitted. Most of the articles on which a discrimination in favor of importations from Great Britain exists, are embraced in the third article (“schedule”) of the Reciprocity Treaty. The foregoing regulations, etc., apply, with some slight modifications, to all the other colonial possessions of Great Britain in North America.

COMMERCE OF THE UNITED STATES WITH CANADA, FROM JULY 1, 1848, TO JULY 1, 1856.

Years ending	Exports.			Imports.		Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.		American.	Foreign.
June 30, 1849.....	\$2,320,327	\$1,914,401	\$4,234,728	\$1,481,082	\$181,500	\$417,380		890,204	568,910
1850.....	4,641,451	1,289,370	5,930,821	4,255,470	....	426,369		919,515	456,527
Total.....	\$6,961,778	\$3,203,771	\$10,165,549	\$5,766,552	\$181,500	\$843,749		1,809,719	1,020,437
1851.....	\$5,885,894	\$2,098,806	\$7,994,140	\$4,956,471	\$284,801	\$1,368,727		927,018	516,888
June 30, 1852.....	4,004,968	2,712,097	6,717,064	4,589,969	166,850	568,959		765,945	589,845
1853.....	4,005,512	3,528,557	7,534,069	5,278,116	517,009	984,219		1,062,086	784,029
1854.....	10,510,873	6,790,398	17,300,706	6,721,539	444,477	75,000		880,941	648,289
1855.....	9,960,764	8,769,580	18,730,344	12,182,814	....	....		890,017	908,502
1856.....	15,194,788	5,688,458	20,883,241	17,498,197	....	....		1,118,784	1,212,698

Moor, in navigation, signifies generally to fix a vessel by two anchors in nearly opposite directions, so that she *rides* by either in certain winds, or partly by both in other winds. Also, to secure a vessel to weights or chains sunk in harbors for the purpose. These weights are called *mooring blocks*, and the whole apparatus, *moorings*.

Morocco, or **Maroquin** (Ger. *Saffian*; Fr. *Marroquin*; It. *Marrocchino*; Sp. *Marroqui*; Rus. *Safian*), a fine kind of leather prepared of the skins of goats, imported from the Levant, Barbary, Spain, Flanders, etc. It is red, black, green, yellow, etc. It is extensively used in the binding of books. See LEATHER.

Morocco. In Africa generally, barbarism, with all its attendant evils—ignorance, superstition, and cruelty—still characterize not only the several governments, but most of the countries of Africa, if we except Egypt, the European settlements, and the republic of Liberia. Balbi, the distinguished Venetian geographer, in his great work, *Balance Politique du Globe*, remarks: “The title of African statistics may be rejected as absurd,” and, hence, he persisted for a long time in his determination of excluding Africa, Oceania, and the greater part of Asia, from consideration. Since Balbi composed his work, however, civilization has made encouraging progress in some

portions of western Africa. Point Gallenas has been brought within the limits, and under the humanizing influences, of a young, vigorous, and Christian republic. Where the slave factories once stood, pulpits are now erected; and savage tribes, and barbarous chiefs, instead of warring with each other for human plunder, have cast away the implements of carnage, and now seek a common protection in the plow and the gospel. Geographically, Macgregor divides Africa into seven great regions:

1st. The region of the Nile, under which may be comprised Egypt, Nubia, and Kordofan. 2d. The region of the north, situated between the Mediterranean and the great desert of Sahara, and extending from Egypt west to the Atlantic, generally known as the States of Barbary—namely, Morocco, Tunis, and Tripoli. The soil and climate of this region are eminently favorable to the culture and growth of the choicest productions. 3d. The third region comprehends the vast desert of Sahara, west from Fezzan and Darfour to the Atlantic, and south from the Barbary States to Senegambia, Soudan, and Bornou. 4th. The fourth region comprehends Nigritia, or western Africa, extending from the south boundary of the western desert to the south boundary of Benguela, in about latitude 16° south, including the republic of Liberia. 5th. The fifth region comprehends the Cape of Good Hope colony; the country of the Caffres and Hottentots; and the extensive dry desert coast north of the Hottentot country, to Benguela, and the great unknown southern desert. 6th. The sixth region, or eastern Africa, extending along the sea-coast, and to an unknown inland limit, from Delagoa Bay, in latitude 26° south, to the frontiers of Abyssinia. 7th. The seventh region comprehends the States of Abyssinia and Somaalia, extending from Cape Ras-asser, or Guardafui, to Zeylah, and along the Red Sea to the territories of the Pacha of Egypt.

Of the seven divisions thus given by Macgregor, the 1st, 4th, 5th, and 6th, only, possess any commercial importance: the first, comprising the Barbary States; the fourth, the republic of Liberia; the fifth, the colony of Good Hope (some account of which will be found in the Digest of British Colonial Possessions); and the sixth, the African possessions of the Sultan of Muscat, including the Island of Zanzibar.

Barbary States.—Under the collective denomination of Barbary States, are grouped together the countries which form the northern coast of Africa, viz.: Morocco, Tunis, and Tripoli. Prior to the submission of Algeria to the French arms, this division was also comprehended under the same general name. Being now a French colony, it is included in the Digest of French Colonial Possessions.

Empire of Morocco.—Morocco is one of the most powerful of the Barbary States, and comprises an area of 220,000 square miles, with a population estimated at 8,500,000. Although agriculture is in the most backward state, the soil yields, in great abundance and of the finest quality, wheat, barley, maize, olives, hemp, and cotton; and lemons, grapes, figs, oranges, almonds, and various fruits are grown in the greatest profusion. The sugar-cane, the tobacco-plant, and the date-tree thrive wherever they are cultivated. Under a liberal government, and with ordinary industry, Morocco could be made one of the most productive countries in the world. Islamism, however, wherever it extends, spreads its withering blight over every branch of industrial improvement. Among the varied physical resources are mines of iron, tin, copper, antimony, and salt; the last of which only appear to be worked. Two treaties of peace, friendship, etc., and for the security of persons and property, have been concluded by the United States with Morocco; the former bearing date January, 1787, and the latter, September, 1836. The principal stipulations

relating to trade and commerce, in the treaty of 1836, are embodied in the following summary:

Article 8. If any vessel of the United States shall meet with a disaster at sea, and put into one of our ports to repair, she shall be at liberty to land and reload her cargo without paying any duty whatever. 14. The commerce with the United States shall be on the same footing as is the commerce with Spain, or as that with the most favored nation for the time being; and their citizens shall be respected and esteemed, and have full liberty to pass and repass our country and sea-ports whenever they please, without interruption. 15. Merchants of both countries shall employ only such interpreters and such other persons to assist them in their business as they shall think proper. No commander of a vessel shall transport his cargo on board another vessel; he shall not be detained in port longer than he may think proper; and all persons employed in loading or unloading goods, or in any other labor whatever, shall be paid at the customary rates, not more and not less. 17. Merchants shall not be compelled to buy or sell any kind of goods but such as they shall think proper, and may buy and sell all sorts of merchandise but such as are prohibited to the other Christian nations. 18. All goods shall be weighed and examined before they are sent on board; and, to avoid all detention of vessels, no examination shall afterward be made, unless it shall first be proved that contraband goods have been sent on board; in which case the persons who took the contraband goods on board shall be punished according to the usage and custom of the country, and no other person whatever shall be injured, nor shall the ship or cargo incur any penalty or damage whatever. 19. No vessel shall be detained in port on any pretense whatever, nor be obliged to take on board any article without the consent of the commander, who shall be at full liberty to agree for the freight of any goods he takes on board. The treaty to continue in force 50 years, with the usual 12 months' notice after the expiration of that period.

The principal ports of Morocco are Mogadore, on the Atlantic, with a safe harbor for vessels of 150 tons; Tangier, Tetuan, Dar al Baida, Mazagan, Safi, Rabat, and Laroche. The import duties are often arbitrarily raised, and frequently corruptly levied. With the exception of cochineal, coffee, cotton, iron, raw silk, sugars, and tea, on which articles there are specified duties, and tobacco, which can be sold only to the temporary assignees of the emperor's monopoly, a general duty of 10 per cent. is levied on all imports. When thus sold, it is admitted free; the price of the monopoly varying according to the number of bidders, but usually reaching as high as \$100,000. The assignee realizes from nett sales about \$180,000. Besides tobacco, the sultan reserves the monopoly of brimstone, gunpowder, and lead. Every article entering into the export trade of Morocco is subject to arbitrary, and frequently oppressive duties. On leeches and cork-bark the sultan retains the monopoly, which is annually sold to the highest bidder, and sometimes adds to the sultan's revenue as much as \$100,000 per annum. If we compare this large amount with the total value of these articles annually exported, viz.: leeches \$120,000, cork-bark \$110,000 (about 50 per cent. of which is paid for the monopoly), it can be seen at once how much the trade in these articles is affected by these burdensome internal taxes. Morocco maintains an extensive trade with the interior of Africa by caravans, the principal of which usually accompanies the pilgrims across the whole continent of Africa to the Red Sea, and the tomb of Mohammed, and Mecca. The value of the investments in this caravan has been usually estimated at \$2,000,000. The caravans trading with the interior depart from Tetuan, Morocco, and Fez, and meet at Taflet, in order to cross together the great desert of Sahara. The trade between the United States and the empire of

Morocco is principally indirect, through the ports of Marseilles and Gibraltar, and is conducted for the most part in French and British bottoms. It is suggested to the Department of State, by the United States' consul at Tangier, that this carrying trade could be secured to American vessels if our import duties on produce in general of Morocco, especially on coarse wool, were reduced to the same standard that rules in England. In 1853 the carrying export trade of the United States to Morocco, amounting to \$84,000, was entirely effected in foreign vessels. In 1852, of the 474 vessels of all sizes, measuring an aggregate of 30,426 tons, engaged in the foreign trade of the empire, there were but four American vessels, measuring in all 1,100 tons. The imports into the United States from Morocco consist of coarse wool, gums, skins, ostrich feathers, etc. The exports from the United States to Morocco are raw cotton, coarse domestics, brown sugar, rice, and tobacco. The latter article is supplied almost exclusively from the United States.

In 1848 the maritime commerce of Morocco reached 15,046,979 francs (\$2,798,738), viz.:

	Imports. Francs.	Exports. Francs.
Merchandise.....	8,747,504	5,689,275
Specie.....	253,800	356,400
Total.....	9,001,304	6,045,675

In this general movement the returns assign to the port of Mogadore amounts as follows: Imports, 2,281,088 francs; exports, 2,584,804 francs; total, 4,865,842 francs. See *MOGADORE*, ante, p. 1368.

This leaves 10,181,137 francs for the other ports—Mazagan, Tangier, Tetuan, Dar al Baida, Laroche, and Rabat.

For the purpose of comparison, the general movements for 1847 are given as follows: Imports, 7,077,208 francs; exports, 6,910,946 francs; total, 13,988,154 francs.

Compared with 1846, these figures show a diminution of 390,547 francs; but when compared with the returns for 1848, they exhibit an increase of 1,058,825 francs, exclusively on imports. The diminution principally affects the trade with France; thus, in 1847, the trade of this country with Morocco amounted to 2,814,154 francs—(imports 520,965, exports 1,793,189)—while in 1848 it fell to 1,656,886 francs—(imports 404,906, and exports 1,251,480)—showing a decrease of 657,768 francs. With every other country engaged in this trade there was an augmentation in 1848, both in imports and exports. In one article, rather suspiciously called "Americanos," England largely augmented her export trade to Morocco—the whole increase in 1848 being upward of \$1,500,000. This description of merchandise is thus explained in an official dispatch transmitted to the Department of State from Tangier: "Throughout the whole empire, from the sultan down to the lowest subject, the article which we call 'coarse domestics' is used under the appellation of *Americanos*. It is the principal article of import, and is an imitation, by the manufacturers of Manchester, England, of the coarse domestics of Massachusetts. * * * * It took with the Moors, who were so enthusiastic in their praise of it, that the English manufacturers dispatched an agent to this country to examine and report on the fabric, and the probable demand. They then set to work to

manufacture an article in every respect similar; and, stealing the name, they managed to undersell our countrymen and monopolize the market." The tabular statements that follow, giving a condensed view of the trade and navigation of Morocco, are brought down to the latest period for which authentic data are accessible. They are compiled from French official publications:

TABULAR STATEMENT EXHIBITING THE TRADE OF MOROCCO FOR 1848, COMPARED WITH 1847.

Ports.	Imports.		Exports.	
	1847.	1848.	1847.	1848.
	Francs.	Francs.	Francs.	Francs.
Tangier.....	1,695,000	2,904,000	1,102,000	1,090,000
Tetuan.....	1,086,000	1,829,000	586,000	459,000
Laroche.....	561,000	1,187,000	320,000	251,000
Rabat.....	935,000	229,000	648,000	898,000
Dar al Baida..	875,000	428,000	1,157,000	929,000
Mazagan.....	340,000	143,000	817,000	886,000
Mogadore.....	2,085,000	2,281,000	2,830,000	2,585,000
Total.....	7,077,000	9,001,000	6,910,000	6,045,000

Official returns give to England the principal share of this trade—an advantage which she enjoys, partly because of the proximity of Gibraltar, but mainly because she monopolizes the large bulk of the carrying trade between the United States and Morocco.

The imports, these years, consisted of cottons (*Americanos*) and woolen cloths, raw silk, iron, steel, copper and lead, sugar, coffee, grains, drugs, hardwares, tea, and specie; the exports were wool, hides and skins, leeches, gum, olive-oil, Morocco leather, and ostrich feathers. The general commerce of the Mediterranean in 1854 increased materially over that of 1853; the increase was chiefly with Spain, Morocco, Sardinia, the United States, and Tuscany.

Navigation.—The following table exhibits the navigation of the ports of Morocco in 1850:

Nationality.	No. of vessels.	Tonnage.
England.....	612	38,655
France.....	157	18,089
Spain.....	49	1,889
Portugal.....	32	2,129
Turkey.....	14	1,840
Other countries.....	18	1,523
Total.....	877	59,135

The principal imports are cotton goods of all kinds, cloth, silk stuffs, velvets, copper, iron, steel, hardware, cochineal, indigo, and other dyes, tea, coffee, sulphur, paper, glass, beads, rum, etc. The exports consist in hides, wax, wool, leeches, dates, almonds, oranges, and other fruit, bark, fax, durra, woolen sashes, haicks, Moorish slippers, etc.

The following table exhibits the values of this trade during a period of five years ending with 1856:

Years.	Imports.	Exports.	Total.
1852.....	\$395,260	\$359,280	\$754,490
1853.....	416,965	382,150	799,115
1854.....	696,245	222,080	858,825
1855.....	662,120	255,750	917,870
1856.....	677,830	386,320	1,064,150
Total...	\$2,788,420	\$1,605,580	\$4,398,950
Average	\$557,684	\$321,106	\$878,790

That our commercial readers may see the share which Great Britain holds in the trade of Tangier, we subjoin a tabular statement showing the navigation of this port during the same period, distinguishing the number and tonnage of British vessels:

Years.	Entered.				Total.		Cleared.				Total.	
	British ships.		Foreign ships.				British ships.		Foreign ships.			
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
1852...	159	4,599	102	2,896	261	7,495	159	4,599	100	2,844	259	7,443
1853...	176	7,261	174	8,853	350	15,614	176	7,261	172	8,191	348	15,452
1854...	187	12,846	128	5,924	265	18,730	186	12,826	128	5,934	264	18,760
1855...	153	12,397	90	3,213	243	15,610	153	12,397	87	3,198	240	15,595
1856...	203	10,833	110	4,780	313	15,668	207	10,984	110	4,790	317	15,714
Total.	828	47,986	604	25,176	1,432	73,162	881	48,017	597	24,857	1,428	72,904
Average	165	9,597	121	5,035	286	14,632	166	9,603	119	4,977	285	14,590

In 1853 the commercial movements at the port of Mogadore reached, imports and exports united, 10,592,245 francs; of which imports covered 4,984,220 francs, and exports 5,608,025 francs. In 1852 the total was only 6,920,525 francs; of which, for imports, there were 3,267,175 francs, and for exports 3,653,350 francs. There was, therefore, an increase in 1853 of, imports 1,717,045 francs, exports 1,954,675, making a total of 3,671,720 francs.

Navigation returns show that 57 vessels entered, measuring, in all, 7488 tons, viz.: England, 37; France, 9; Portugal, 2; Belgium, 1; Spain, 1; other nations, 7.

The trade of this port (Mogadore) in 1854 exhibits a total value of 5,946,095 francs; of which there was for imports 2,810,045 francs, and for exports 3,136,050 francs.

NAVIGATION OF MOROCCO IN 1848, COMPARED WITH THAT OF 1847.

Years.	Vessels		Total Tonnage.
	Entered.	Cleared.	
1848.....	297	225	28,346
1847.....	316	297	32,484
Decrease in 1848.	19	72	9,088

The general foreign commerce of the empire in 1849 and 1850 is shown by the following statement:

Years.	Imports.	Exports.	Total.
1849.....	\$2,106,200	\$1,683,200	\$3,789,400
1850.....	1,522,800	1,638,200	3,506,000

The commerce for these years was thus distributed between the ports of Morocco:

Ports.	Imports.		Exports.	
	1849.	1850.	1849.	1850.
	Francs.	Francs.	Francs.	Francs.
Tangier.....	2,136,000	1,614,000	1,549,000	1,048,000
Tetuan.....	2,497,000	523,000	1,115,000	517,000
Laroche.....	933,000	515,000	332,000	356,000
Rabat.....	1,387,000	1,804,000	477,000	1,145,000
Dar al Baida.....	716,000	840,000	1,625,000	1,116,000
Mazagan.....	63,000	495,000	348,000	410,000
Mogadore.....	2,756,000	8,323,000	2,970,000	3,792,000
Total.....	10,583,000	9,114,000	8,416,000	8,884,000

The following tabular statement shows the countries which participated in the trade of 1850:

Countries.	Imports.	Exports.	Total.
England.....	\$1,808,800	\$976,400	\$2,285,200
France.....	895,600	621,800	1,017,400
Spain.....	48,200	37,400	85,600
Portugal.....	47,400	7,800	55,200
Sardinia.....	.....	28,000	28,000
Belgium.....	14,000	11,800	25,800
Austria.....	8,800	.....	8,800
Total.....	\$1,822,800	\$1,638,200	\$3,506,000

The principal ports of Morocco are Tangier, Tetuan, Laroche, Rabat, Dar al Baida, Mazagan, and Mogadore. The town of Tangier occupies an eminence at the western extremity of a capacious bay, within the limits of the Straits of Gibraltar, and nearly opposite to the Spanish town of Tarifa. The peculiar advantages of its situation render it the most frequented port of Morocco. The town contains 900 houses, and about 8500 inhabitants—consisting of 6000 Moors, 2200 Jews, and 840 Christians. The inhabitants are, comparatively speaking, civilized and tolerant. Christians are treated with greater respect, and Jews with less severity, than in any other part of the empire—privileges for which they are indebted partly to the presence of the chief representatives of foreign powers and partly to the liberality of the present able and energetic Pasha, Sid Mohamed Ben Abd-el-Maleck.

Port Charges.—The port charges and dues are simply for anchorage, and vary from \$2 to \$25, with a gratuity to the port captain of from \$2 to \$4. This gratuity secures the services of this officer in obtaining abundant provisions and other supplies for the vessel, free of duty. The anchorage dues, as above,

range between the two extremes, according to the friendly or unfriendly terms which may subsist between the local authorities and the consul of the nation the flag of which the vessel may bear.—*Com. Rel. U. S.*

Consular Regulations with the United States.—It is stipulated by the 19th and the three following articles of the treaty concluded between the United States and Morocco, October 1, 1837, that if any of the citizens of the United States, or any persons under their protection, shall have any dispute with each other, the consul shall decide between the parties; and whenever the consul shall require any aid or assistance from the government of Morocco to enforce his decisions, it shall be immediately rendered to him. If a citizen of the United States should kill or wound a Moor, or, on the contrary, if a Moor shall kill or wound a citizen of the United States, the law of the country shall take place, and equal justice shall be rendered, the consul assisting at the trial; and if any delinquent shall make his escape, the consul shall not be answerable for him in any manner whatever. If an American citizen shall die in Morocco, and no will shall appear, the consul shall take possession of his effects; and if there shall be no consul, the effects shall be deposited in the hands of some person worthy of trust, until the party shall appear who has a right to demand them; but if the heir to the person deceased be present, the property shall be delivered to him without interruption; and if a will shall appear, the property shall descend agreeably to that will, as soon as the consul shall declare the validity thereof. The consul of the United States is permitted to reside in any seaport of the dominions of the emperor of Morocco that he shall think proper; and he shall be respected, and enjoy all the privileges which the consuls of any other nation enjoy; and if any of the citizens of the United States shall contract any debts or engagements, the consul shall not be in any manner answerable for them, unless he shall have given a promise in writing for the payment or fulfillment thereof; without which promise in writing no application to him for any redress shall be made.

Mortgage. A mortgage is a conveyance or transfer of real or personal estate to secure the grantee or assignee the payment of some debt or the performance of some agreement, with a condition or understanding that, in case of the debt being paid, or the agreement being performed, within a certain time, and in the specified manner, the conveyance or assignment shall be void, and the land or personal property revert to, or rather, still belong to the mortgager. The English, and so the American mortgage of land, is mostly borrowed from the civil law (see *KENT'S Commentaries*, vol. iv., part iv., lect. lvii.; *BROWN'S Civil Law*, vol. i., p. 200), or, at least, many of the rules and incidents of the Roman *hypotheca*, coincide with ours relating to mortgages. The essential characteristic of a mortgage, however, according to the import and definition of the term, must be the same in all countries, namely, that the property conveyed or transferred, whether real or personal, shall not absolutely go, and belong to the grantee or assignee, in case the debt intended to be secured shall be paid, or the contract, whatever it may be, intended to be guaranteed, shall be performed within the time and terms agreed upon. The rules and incidents of such a hypothecation will, therefore, have some resemblance under all codes of laws. There is no limitation of the kind of debts or contracts, the payment or performance of which may be secured by mortgage, for all legal ones may be so guaranteed. What will be a sufficient conveyance of the property, whether real or personal, will again depend on the laws of the place. A conveyance of land, for instance, must, in most countries, be made in writing, and with certain formalities. So, in England, the right of property in a ship must appear by a bill of

sale. Whatever these rules are by which the absolute transfer of property is regulated, they will equally apply to a conveyance or assignment by way of hypothecation. As real estate is usually required by the laws to be conveyed by written documents, and, according to the laws of most places, these conveyances are evidenced by public records of the instruments by which they are made, there is no necessity of an open, visible possession of the estate by the grantee, that the public may take notice of the grant, for they may find the evidence of it at the office of public record. The case is not the same with personal property, the title to which is usually confirmed and established to the purchaser by a delivery of the article into his possession. In respect to all chattels, of which manual possession and transfer from place to place is practicable, the delivery by the vender, and actual possession by the purchaser, are very material circumstances in establishing the right of property in the latter. It is, indeed, laid down as a maxim of the English, and also of the American law, that movables can not be validly sold or mortgaged without a delivery actual, or constructive, to the purchaser or mortgagee, and a possession by him. But this rule is very much modified and relaxed; not that a delivery to and a possession by the vendee and mortgagee are not considered requisite to establish his title, but a very liberal interpretation has been put upon circumstances showing a constructive delivery and possession. The object and policy of the law is to leave the movable, just as it does land, to be used either by the mortgager or mortgagee, without affecting their mutual rights and obligations as to the property in the thing, as far as this indulgence can be carried without leading other persons into a misapprehension, and exposing them to fraud and imposition in giving credit to the mortgager, upon the supposition of his being the absolute owner of the property hypothecated. The various rules and distinctions by which the mortgage of chattels is regulated in this respect, constitute an essential part of the law upon this subject. But, after all, we may lay it down as an essential doctrine, that a mortgaged chattel must be in possession of the mortgagee, in order to render his title secure; and when the mortgager has, by the law, been permitted still to use the thing, it is only in cases where his possession is, in legal construction, that of the mortgagee.

The most material consideration relating to mortgages, whether of lands or chattels, is the effect of the non-performance of the condition by the mortgager. This will depend, it is true, in part, upon the terms of the contract of hypothecation or mortgage. If it be agreed between the parties, that in case of non-performance of the condition of the hypothecation, the mortgagee shall sell the thing hypothecated, whether land or goods, and account to the mortgager for the proceeds in satisfaction of the debt, or discharge of the obligation, intended to be secured, and pay over the surplus, if any, this is all that justice or the law can demand, and this is, in effect, what the law aims at where the parties do not make any such stipulation; but, on the contrary, agree, either expressly or impliedly, that, in case of a non-performance of the condition, the thing mortgaged shall be absolutely and immediately forfeited to the mortgagee, without any right on the part of the mortgager to redeem it, or to call upon the mortgagee to sell it and account with him for the proceeds. Thus, in the common form of mortgaging land, it is conveyed to the mortgagee with a provision that unless he shall pay a certain debt, or do a certain thing within a time specified, the conveyance shall be void. According to the literal construction, therefore, if this condition is not complied with, the thing henceforth belongs absolutely to the mortgagee. But here the law steps in and controls the agreement, and attempts to prevent it from operating as a penalty or forfeiture, at the same time giving it all its force as a

security or guaranty. For this purpose, different modes are adopted in different codes of laws, all of which agree in applying the value of the thing mortgaged, in satisfaction and discharge of the debt or obligation intended to be secured; so that by all the codes justice is done, if there is no surplus value. But if there be a surplus value, some of the codes will reach it, and others not, and the same code will reach it in regard to one kind of pledge, mortgage, or hypothecation, and not another. For example, by the English and American law, if a debtor pledges bills of exchange, or any personal property for a debt, to an amount exceeding its value, the creditor must account for the proceeds, and pay over the surplus to the debtor; but in England, and so in some of the United States, if the debtor mortgages lands, of which the creditor takes possession for breach of condition, the debtor has three years to redeem it, after which time the land is absolutely gone, though twice the amount of the debt in value. The law, in this case, supposes three years to be time enough to allow the debtor to redeem it, in case of an excess of value of the land; and this supposition is not wholly unreasonable, since the debtor has all that time to sell the land if he can get more than the amount of the debt for it. The civil law, as more generally administered, where it has been made the basis of modern codes, and so the laws of many of the United States adopt a different mode, prescribing an appraisement of the mortgaged land, and providing that it may be sold by auction, if two thirds of the appraised value is bid for it, and the proceeds of the sale are applied in satisfaction of the debtor obligation guaranteed by the mortgage, and the surplus, if any, paid over to the debtor.—E. A.

Moss. *Iceland Moss* (*Cetraria Islandica*), a species of lichen, a native of the mountainous heaths and woods in the Alpine parts of Scotland, and of the Asturias, in Spain, as well as in Iceland and the north of Germany. It grows to a height of only two or three inches, and has rather a rugged, bushy appearance, and doubtless would thrive, and perhaps with profit, in the northern parts of the United States, particularly in Minnesota, Wisconsin, Michigan, northern New York, Vermont, New Hampshire, and Maine. In Iceland and Lapland, this plant is used as an article of diet, being boiled in broth or milk, after being freed from its bitterness by repeated maceration in water; or dried and made into bread. The dried plant differs but little from its appearance in a recent state. Medicinally, it is tonic and demulcent. The decoction, as ordered in the pharmacopœias, is so bitter as to prevent many persons from taking it; and when deprived of its disagreeable taste, it can only be viewed as a demulcent, and is hardly equal in its effects to linseed, quince-seed, and marsh-mallows. It certainly does not cure phthisis pulmonalis; but in the last stage of that disease, when solid food is oppressive, and the diarrhoea appears to be kept up by the acrid contents of the stomach and bowels, it has appeared to check the latter, and to impart both vigor and nourishment to the digestive organs.—*Patent Office Rep.* See ICELAND.

Mosaic Gold. For the composition of this peculiar alloy of copper and zinc, called also *Or-molu*, Messrs. Parker and Hamilton obtained a patent in November, 1825. Equal quantities of copper and zinc are to be "melted at the lowest temperature that copper will fuse," which being stirred together so as to produce a perfect admixture of the metals, a further quantity of zinc is added in small portions, until the alloy in the melting-pot becomes of the color required. If the temperature of the copper be too high, a portion of the zinc will fly off in vapor, and the result will be merely spelter or hard solder; but if the operation be carried on at as low a heat as possible, the alloy will assume first a brassy yellow color; then, by the introduction of small portions of zinc, it will take a purple or violet hue, and will ultimately become perfectly white; which is the appearance of the proper compound

in its fused state. This alloy may be poured into ingots; but as it is difficult to preserve its character when re-melted, it should be cast directly into the figured molds. The patentees claim the exclusive right of compounding a metal consisting of from 52 to 55 parts of zinc out of 100. Mosaic gold, the *aurum musivum* of the old chemists, is a sulphuret of tin.

Mosaic (*Mosaïque*, Fr.; *Mosaisch*, Germ). There are several kinds of mosaic, but all of them consist in imbedding fragments of different colored substances, usually glass or stones, in a cement, so as to produce the effect of a picture. The beautiful chapel of Saint Lawrence, in Florence, which contains the tombs of the Medici, has been greatly admired by artists, on account of the vast multitude of precious marbles, jaspers, agates, aventurines, malachites, etc., applied in mosaic, upon its walls. The detailed discussion of this subject belongs to a treatise upon the fine arts.

Mosquito Coast, Mosquitia. The limits of this pseudo Central American State, Mosquitia or the Mosquito Coast, are so indefinite, and its extent inland so imperfectly ascertained, that scarcely more of a reliable character can be said respecting it physically, than politically or commercially. It is supposed to extend from Cape Honduras to the mouth of the River San Juan, having west the States of Honduras and Nicaragua, and north and east the Caribbean Sea, and to embrace about 26,000 square miles. The Mosquito Indians, its native and almost only inhabitants, are represented as an active and daring race, never brought under submission by the Spaniards. The San Juan River is claimed as its south boundary. Its capital is Blewfields, and it contains several other small villages, inhabited chiefly by native Indians and some few British colonists. The country is fertile, and, under proper cultivation, would produce cocoa, cotton, sugar, indigo, vanilla, and logwood; but, until some change takes place either in the mode of cultivation, or the form of government, its resources have but small chance for development. See HONDURAS.

Mother of Pearl (*Nacre de Perles*, Fr.; *Perlen mutter*, Germ.) is the hard, silvery, brilliant internal layer of several kinds of shells, particularly oysters, which is often variegated with changing purple and azure colors. The large oysters of the Indian seas alone secrete this coat of sufficient thickness to render their shells available to the purposes of manufacturers. The genus of shell fish called *pentadina* furnishes the finest pearls, as well as mother of pearl; it is found in greatest perfection round the coasts of Ceylon, near Ormus in the Persian Gulf, at Cape Comorin, and among some of the Australian seas. The brilliant hues of mother of pearl do not depend upon the nature of the substance, but upon its structure. The microscopic wrinkles or furrows which run across the surface of every slice, act upon the reflected light in such a way as to produce the chromatic effect; for Sir David Brewster has shown, that if we take, with very fine black wax, or with the fusible alloy of D'Arcet, an impression of mother of pearl, it will possess the iridescent appearance. Mother of pearl is very delicate to work, but it may be fashioned by saws, files, and drills, with the aid sometimes of a corrosive acid, such as the dilute sulphuric or muriatic; and it is polished by colcothar of vitriol.

Mozambique, a fortified maritime city, and the capital of the Portuguese possessions in eastern Africa, on an island at the entrance of Mesaril Bay, an inlet of the Mozambique Channel, $5\frac{1}{2}$ miles broad, and 6 miles in length, and receiving 8 small rivers, its entrance being sheltered also by the islands St. George and St. Jago, which help to bound its harbor. Mozambique Island, in lat. $15^{\circ} 2' S.$, long. $40^{\circ} 48' E.$, is about $1\frac{1}{2}$ miles in length, low, and of coral formation.

Mulberry. *Soil, Situation, Propagation, etc.*—The *morus nigra*, or black mulberry-tree, will grow in almost any soil or situation that is tolerably dry, and

in any climate not much colder than most parts of Britain and the United States. It is very easily propagated by truncheons or pieces of the branches, eight or nine feet in length, and of any thickness, being planted half their depth in tolerably good soil; when they will bear fruit the following year. As it is extremely tenacious of life, every part of the root, trunk, boughs, and branches may be converted into plants by separation; the rootlets, and small shoots or sprays, being made into cuttings, the larger boughs into stakes, the arms into truncheons, and the trunk, stool, and roots, being cut into fragments, leaving a portion of the bark on each, and planting them after the Italian mode of propagating the olive-tree. The mulberry may also be increased from seeds, by layers, or by grafting and budding. This tree, from its slowness of putting out its leaves, being rarely injured by spring frosts, and its leaves being seldom or never devoured by any insect, except the silkworm, and never touched with mildew, very seldom fails to produce a good crop of fruit. This fruit, however, though excellent, and exceedingly wholesome, does not keep, and is so far troublesome, that it is only good when it is quite ripe, and is best when it is suffered to fall from the tree itself. For this reason, mulberry-trees are generally planted on a lawn or grass-plot, to prevent the fruit that falls from being injured by the gravel or dirt. This practice, however, is objectionable, as no tree, perhaps, receives more benefit from the spade and the dunghill than the mulberry, and it ought, therefore, to be frequently dug about the roots, and occasionally assisted with manure. The ground under the tree should be kept free from weeds throughout the summer, particularly when the fruit is ripening, as the reflected light and heat from the bare surface of the soil is thus increased. In a cool, moist climate, like that of Britain, the fruit is also very fine if the tree be trained as an espalier, with the reflection of the south side of a building or wall. As a standard tree, whether for ornament or fruit, the mulberry requires very little pruning or attention of any kind, other than that which is given above. As it increases in age, it increases in productiveness, and in full-grown trees the fruit is much larger and better flavored than in those which are young.

Properties and Uses.—The wood of the *morus nigra* is less compact than even that of the white mulberry, and when perfectly dry, weighs only about 40 pounds to a cubic foot. It is said to be durable, and has been employed in England for various purposes of carpentry, for hoops, bows, wheels, and even ribs for small vessels, instead of oak. In France, this wood is considered of but little value, except for fuel. In some parts of Spain, in Sicily, and in Persia, the leaves of this species are said to be preferred to those of the white mulberry for the food of silkworms. The leaves are also eaten by cattle, sheep, and goats. The roots have an acrid, bitter taste, and are considered as an excellent vermifuge, when taken, in powder, in doses of half a drachm. The tree, in every part, contains a milky juice, which, being coagulated, is found to form a coarse kind of elastic gum. The fruit of this tree is of an agreeable acid and aromatic flavor, and is eaten raw, as a dessert, or may be formed into an agreeable preserve; and Evelyn says that, mixed with the juice of cider apples, it makes a very strong and agreeable wine. Dr. Clarke observes, that he saw some Greeks, in the Crimea, employed in distilling brandy from mulberries; which he describes as "a weak but palatable spirit, as clear as water." A wine is also made from it in France; but it requires to be drunk immediately, as it very soon becomes acid. The fruit, when ripe, is regarded as cooling and laxative, allaying thirst, and being grateful in cases of fever. When made into a syrup, it is considered excellent for a sore throat. Like the strawberry and raspberry, it is said to undergo the acetous fermenta-

tion in the stomach, and therefore may be safely eaten by persons afflicted with the rheumatism or gout. All kinds of poultry are excessively fond of this fruit, and devour it with avidity, whenever within their reach.

Insects and Diseases.—The leaves of the *morus alba*, or white mulberry-tree, are believed to be eaten by no other insect but the silkworm (*bombyx mori*). M. Pulein, however, made experiments with various kinds of insects, but they all rejected the mulberry leaf for food, except "a green worm, about an inch long, and as thick as an oat straw." Although he found it upon a mulberry, it was his belief that it was not peculiar to that tree alone, but found its way there by accident. The white mulberry, however, is attacked by numerous diseases, occasioned partly, no doubt, by the unnatural manner in which it is treated, by being stripped of its foliage. One of these diseases is brought on by any sudden check given to the transpiration of the leaves, which turn yellow, and fall off, shortly after causing the tree to die. Another is the death of the roots, which is accompanied by the formation on them of parasitic fungi. The leaves are also apt to be attacked with honey-dew, mildew, rust, and other diseases, which render them unfit for the food of the silkworm. Those leaves covered with honey-dew may be washed, and, when thoroughly dry, may be given to the insects without injury; but the other diseased leaves should be thrown away. If leaves covered with honey-dew are employed without washing, they cause dysentery and death to the worms. As it is not our intention to treat of the whole art of the rearing and management of the silkworm, we are compelled to refer the reader to a "*Treatise on the origin and Progressive Improvement of the Silk Manufacture*," being the 22d volume of the London Cabinet Cyclopaedia; also to the work of Count Dandolo, entitled "*Dell'Arte di governare i Bacchi da Seta*," KENRICK'S "*American Silk-Grower's Guide*," and to most of the agricultural journals of the day.

Properties and Uses.—The wood of the *morus alba*, when dry, weighs 44 pounds to a cubic foot. In France, the principal uses of that of the trunk, is for various purposes of turnery, and carpentry, and for the making of wine-casks, for which it is highly valued, as it is said to impart an agreeable violet-like flavor to white wines. The branches are used for vine-props, posts and rails to rural fences, and for fuel. The bark may be converted into linen of the fineness of silk. For this purpose the young wood is gathered in August, during the second ascent of the sap, and immersed for three or four days in still water. It is then taken out, at sunset, spread on the grass, and returned to the water at sunrise. After repeating this process daily for some time, it is finally taken out, dried, and prepared like flax. The bark is also used like that of the European lime-tree, for making bast for mats, etc. The bark, and more especially the leaves of the white mulberry, abound in a milky juice, which is found to possess more or less of the properties of caoutchouc, according to the climate in which the tree is grown. It is doubtless owing to this property in the leaves of the mulberry, that the cocoons of the silkworm have so much more tenacity of fibre than those of any other insect that feeds on the leaves of trees. Hence, also, the silk, like the tobacco and wine of warm climates, and of poor, dry soils, is always superior to that produced in colder climates, and from rich and moist soils. To verify this opinion, we quote the following very judicious observations from the "*Journal d'Agriculture de Pays-Bas*," which will not only show the impracticability of profitably raising silk in the higher latitudes, but will serve as an infallible guide in the choice of a soil and climate for this species of agriculture: "The mulberry-tree is found in different climates; but the juice of the leaves grown in the north is much less suitable for the production of good silk, than that of the leaves of the south. In this respect,

mulberry leaves and silk differ as much as wines, according to the climate and soil in which they are produced. In general, every climate and soil that will grow good wheat will produce large, succulent mulberry leaves; but these leaves will, in many cases, be too nutritive; that is, they will have too much sap, and too much substance and succulency. The wild mulberry, with small leaves, answers better, for such a soil, than the grafted mulberry, with large leaves. A general rule, and one to be depended on, is, that the mulberry, to produce the best silk, requires the same soil and exposure that the vine does to produce the best wine. Experience has proved that silkworms nourished by leaves gathered from a dry soil, succeed much better, produce more cocoons, and are less subject to those diseases, which destroy them, than those which have been nourished by leaves produced by an extremely rich soil." The fruit of the white mulberry is less acid than that of the black species, and that of some of the varieties, particularly of the *morus a. multicaulis*, is used for making robs and syrups, and is said to be remarkably good to eat, in warm climates.

The perfect wood of the *morus rubra*, or red mulberry-tree, which is fine-grained and compact, though light, is of a yellowish hue, approaching to lemon-color. It possesses strength and solidity; and, when properly seasoned, it is almost as durable as that of locust, to which, by many persons, it is esteemed equal. In the dockyards at Philadelphia, Baltimore, and the more southern ports, it is employed in the construction of both the upper and lower frames of vessels, for knees, floor-timbers, etc.; and is preferred to every other kind of wood for trenails, except that of the locust. In Charleston, South Carolina, it is sometimes selected for the ribs of large boats. It is also used in the parts of the country where it abounds, for the posts of rural fences, which, from their durability, are as much esteemed as those of the locust. As the leaves of this species are thick, rough, and hairy, while young, they are improper for the food of silkworms, which feed with advantage, in a cold climate, only on the *morus alba*, or some of its varieties. The red mulberry is well deserving of cultivation, both from its thick and shady foliage, and the agreeable flavor of its dark-red fruit.

The wood of the paper mulberry, which is soft, spongy, and brittle, is of little value except for fuel. The leaves are too rough and coarse, in their texture, for the food of silkworms; but they are found to be excellent fodder for cattle; and as the tree will grow rapidly in almost every soil, and throws out numerous tufts of leaves, it has been suggested that it might be valuable to cultivate, in some situations and climates, for that purpose. The juice of this tree is sufficiently tenacious to be used in China as a glue, either in gilding leather or paper. The finest and whitest cloth worn by the inhabitants of Otaheite, and of the Sandwich Islands, is made of its bark. But the principal use, however, to which this tree appears to be applied, is for the manufacture of paper. The following is an abridgment of Kämpfer's account of the process of making this article in Japan, as quoted from the fifth volume of the London "*Penny Cyclopaedia*:" "The branches of the current year, being cut into pieces about a yard long, are boiled until the bark shrinks from the wood, which is taken out, and thrown away; and the bark, being dried, is preserved till wanted. In order to make paper, it is soaked for three or four hours in water; after which, the external skin (*epidermis*), and the green internal coat, are scraped off, and the strongest and finest pieces are selected; the produce of the younger shoots being of an inferior quality. If any very old portions present themselves, they are, on the other hand, rejected as too coarse. All knotty parts, and every thing which might impair the beauty of the paper, are also removed. The chosen bark is boiled in a lixivium till its downy fibres can be separated by a touch of the finger. The pulp, so produced,

is then agitated in water till it resembles tufts of tow. If not sufficiently boiled, the paper will be coarse, though spongy; if too much, it will be white, indeed, but deficient in strength and solidity. Upon the various degrees and modes of washing the pulp, much also depends as to the quality and beauty of the paper. Mucilage obtained from boiling rice, or from a root called oreni, one of the mallow tribe, is afterward added to the pulp. The paper is finished much after the European mode, except that stalks of rushes are used, instead of brass wires." The article thus made, constitutes the India or China paper used by engravers for taking proofs, and by chemists for filters.—BROWNE'S *Trees of America*.

Munjeet, a species of *Rubia tinctorum*, or madder, produced in Nepal, and in various districts of India. That which is brought to England is imported from Calcutta, and is cultivated in the high lands about Natpore in Purnea. The roots are long and slender, and when broken appear of a red color. It is used in dyeing; the red which it produces being, though somewhat peculiar, nearly the same as that produced by European madder. Dr. Bancroft says that the color which it imparts to cotton and linen is not so durable as that of madder; but that upon wool or woollen cloth its color is brighter and livelier; and, when proper mordants are used, nearly, perhaps quite, as permanent.—*Permanent Colors*, vol. ii., p. 279. The best munjeet is in pieces about the bigness of a small quill, clean and firm, breaking short, and not pipy or chaffy. Its smell somewhat resembles liquorice root.

Muriatic or Hydrochloric Acid; anciently *marine acid*, and *spirit of salt*. (*Acide hydrochlorique*, and *Chlorhydrique*, Fr.; *Salzsäure*, Germ.) This acid is now extracted from sea-salt, by the action of sulphuric acid and a moderate heat; but it was originally obtained from the salt by exposing a mixture of it and of common clay to ignition in an earthen retort. The acid gas which exhales, is rapidly condensed by water. 100 cubic inches of water are capable of absorbing no less than 48,000 cubic inches of the acid gas, whereby the liquid acquires a specific gravity of 1.2109; and a volume of 142 cubic inches. The muriatic acid of commerce has usually a yellowish tinge, but when chemically pure it is colorless. It fumes strongly in the air, emitting a corrosive vapor of a peculiar smell. The characteristic test of muriatic acid in the most dilute state, is nitrate of silver, which causes a curdy precipitate of chlorid of silver.

Muscat, a city and seaport situated on the east coast of Arabia, about 96 miles N. W. of Cape Rass-el-gate (Ras-el-had), in lat. 23° 38' N., long. 58° 37½' E. Population uncertain; but estimated by Lieutenant Wellsted at 40,000, which we incline to think beyond the mark. There are more Banians here than in any other city in Arabia. There are among them some very extensive merchants, who engross almost the whole pearl trade of the Persian Gulf, and the supply of corn from India. The negro slaves are numerous, and are generally stout, well made, and active. The harbor, which is the best on this part of the Arabic coast, opens to the north, and is shaped like a horse-shoe. It is bounded on the west and south by the lofty projecting shores of the mainland, and on the east by Muscat Island, a ridge of rocks from 200 to 300 feet high. The town stands on a sandy beach at the south end or bottom of the cove or harbor, about 1½ miles from its mouth. The depth of water near the town varies from three to four and five fathoms. Ships at anchor are exposed to the north and north-west winds; but as the anchorage is everywhere good, accidents are of very rare occurrence. The harbor is protected by some pretty strong forts. Vessels are not allowed to enter after dusk, nor to leave before sunrise. If the usual signal be made for a pilot, one will come off, but not otherwise. It is best to make them attend till the vessel be secured, as they

have excellent boats for carrying out warp anchors. Muscat is a place of considerable importance, being at once the key to, and commanding the trade of, the Persian Gulf. The dominions of the imaum, or prince, are extensive, and his government is more liberal and intelligent than any other in Arabia or Persia. The town, situated at the bottom of a high hill, is ill-built and filthy; and, during the months of July and August, is one of the hottest inhabited places in the world. The country in the immediate vicinity of the town is extremely barren; but it improves as it recedes from the shore. Dates and wheat, particularly the first, are the principal articles of produce. The dates of this part of Arabia are held in high estimation, and are largely exported, those of Bushire and Bussorah being imported in their stead. A date tree is valued at from \$7 to \$10, and its annual produce at from \$1 to \$1½. An estate is said to be worth 2,000, 3,000, 4,000 date trees, according to the number it possesses.

But the place derives its whole importance from the commerce and navigation of which it is the centre. The imaum has some large ships of war, and his subjects possess some of the finest trading vessels to be met with in the Indian seas. The part of Arabia adjoining to Muscat is too poor to have any very considerable direct trade; but, owing to its favorable situation, the backward state of the country round the Persian Gulf, and the superiority of its ships and seamen, Muscat has become an important *entrepôt*, and has an extensive transit and carrying trade. Most European ships bound for Bussorah and Bushire touch at it; and more than half the trade of the Persian Gulf is carried on in ships belonging to its merchants. (See BUSHIRE.) But, exclusive of the ports on the gulf, and the south and west coasts of Arabia, ships under the flag of the imaum trade to all the ports of British India, to Singapore, Java, the Mauritius, the east coast of Africa, &c. The pearl trade of the Persian Gulf is now, also, wholly centered at Muscat. All merchandize passing up the gulf on Arab bottoms pays a duty of one half per cent. to the imaum. He also rents the islands of Ormuz and Kishmee, the port of Gombroon, and some sulphur mines, from the Persian government. In the magazines of Muscat may be found every species of produce imported into or exported from the Persian Gulf. Various articles are also imported for the use of the surrounding country, and for the internal consumption of Arabia. Among these, the principal are rice, sugar, coffee from Mocha, cotton and cotton cloth, cocoanuts, wood for building, slaves from Zanguebar, dates from Bushire and Bussorah, &c. Payment for these is chiefly made in specie and pearls; but they also export drugs of various descriptions, ivory, gums, hides, ostrich feathers, horses, sharks' fins, a sort of earthen jars, called martuban, to Tranquebar, dried fish, an esteemed sweetmeat called *hulwah*, and a few other articles. The markets of Muscat are abundantly supplied with all sorts of provision. Beef, mutton, and vegetables of good quality may be had at all times, and reasonably cheap. The bay literally swarms with the greatest variety of most excellent fish. Water is excellent, and is conveyed to the beach in such a manner that the casks of a vessel may be filled in her boats while afloat. Firewood is also abundant, and is cheaper than at Bombay. A duty of five per cent. is laid on imports, all exports being duty free. The entire value of the imports has been estimated at £900,000.

Money, Weights, and Measures.—Accounts here are kept in goz and mamoodies: 20 goz = 1 mamoodi and 20 mamoodies = 1 dollar. All Persian, Turkish, and Indian coins, as well as French and German crowns, and Spanish dollars, are met with; their value fluctuating with the demand; and they are generally sold by weight. The weights are, the *cucha* and *maund*; 24 *cuchas* = 1 *maund* = 8 lbs. 12 oz. avoirdupois. Niebuhr thinks that Muscat occupies the site

of the Mosca of Arrian and other Greek writers (*Voyage en Arabie*, vol. ii., p. 71, ed. Amst. 1780); a conjecture which seems to be confirmed, not merely by the resemblance of the name, but also by the terms applied by Arrian to Mosca being sufficiently descriptive of Muscat; and as the port is bounded on all sides by rocks, it must now present almost the same appearance as in antiquity. Dr. Vincent, however, though he speaks doubtfully on the subject, is inclined to place Mosca to the west of Cape Rasselgate.—*Commerce and Navigation of the Ancients*, vol. ii., pp. 344–347. For further particulars, besides the authorities above referred to, see HAMILTON'S *New Account of the East Indies*, vol. i., p. 63; FRAZER'S *Journey to Khorasan*, pp. 5–19; WELLSTED'S *Travels in Arabia*, i., pp. 14–25. The longitude given above is that of ARROWSMITH'S *Chart of the Persian Gulf*.

Commerce with the United States.—The Sultan of Muscat concluded a treaty with the United States, September 21, 1833, and it took effect June 24, 1837, the day on which the President of the United States made his proclamation. Its stipulations establish perpetual peace between the two countries, and open the ports of each to the vessels and citizens of the other, with unrestricted liberty of trade, reserving in the island of Zanzibar the sale of muskets, powder, and ball to the government only, but leaving the trade in these articles in all other ports of the sultan's dominions free from every restriction. The treaty further stipulates that vessels of the United States entering any port within the sultan's dominions shall pay no more than five per cent. duties on the cargoes landed, which shall be in full of all import and export duties, tonnage, license to trade, pilotage, anchorage, or any other charge whatsoever; that no charge shall be made on that part of the cargo which may remain on board and be re-exported; that no charge shall be made on any vessel of the United States which may enter any of the sultan's ports for the purpose of refitting, or for refreshments, or to inquire the state of the market. It is further stipulated that the American citizen shall pay no other duties on export or import, tonnage, license to trade, or other charge whatsoever, than the citizens of the most favored nation shall pay; and similar equality in the ports of the United States is extended to the vessels and citizens of the sultan.

In the report to the Department of State, of the agent by whom this treaty was negotiated, the following paragraphs occur: "The Sultan of Muscat is a very powerful prince. He possesses a more efficient naval force than all the native princes combined, from the Cape of Good Hope to Japan. His resources are more than adequate to his wants. They are derived from commerce, running himself a great number of merchant vessels; from duties on foreign merchandise; and from tribute-money and presents received from various princes; all of which produce a large sum. His possessions in Africa stretch from Cape Delgado to Cape Guardafui, and from Cape Aden, in Arabia, to Ras el Haud; they extend along the northern coast of Aman to the entrance of the Persian Gulf; and he claims also the sea-coast and islands within the Persian Gulf, including the Bahrein Islands, and the pearl-fishery contiguous to them, with the northern coast of the gulf, as low down as Scindy. * * * In Africa he owns the ports of Monghow, or Mongallow, Lyndy, Quiloah (Keelwah), Melinda, Larmo, Patta, Brava, Magadosha (alias Mogadore), and the valuable islands of Monfeca, Zanzibar, Pemba, Socotra (Socotera)," etc.

The exports from the African part of his dominions are gum-copal, aloes, gum-arabic, columbo-root, and a great variety of other drugs, ivory, tortoise-shell, rhinoceros' horns, hides, beeswax, coconut-oil, rice, millet, etc. From Muscat the exports are wheat, raisins, drugs, dates, salt, dried fish, etc. It is estimated that seven-eighths of all the ivory imported in-

to the United States, and all the copal of the finest quality, are from the island of Zanzibar. To this place all the goods collected for this large trade are imported, and sold to the Banians and Hindoos at six months' credit. The United States supply by far the most important goods for all the coast trade, viz.: Lowell manufactured sheetings and shirtings. Other goods in demand for the coast trade are powder, muskets, brass-wire, glass-beads, and India rubber goods. The currency of Muscat differs materially from that of the Persian Gulf or Africa, and, with its weights and measures, is peculiar to the country. The Spanish dollar is current, and the Spanish doubloon varies in value from \$14 to \$16. See ZANZIBAR.

Muscat, Imamot of, an extensive and powerful State of Arabia, comprising the eastern portion of that peninsula, its authority also extending over its south-east coast nearly as far as Aden, and over parts of the coast of Persia on the Persian Gulf, and that of east Africa from the equator south to Cape Delgado. Area and population not ascertained. Besides Muscat, the capital, this dominion comprises the towns of Rostak, Muttra in Arabia, and Juba, Melinda, Mombas, Magadoxo, Bravah, Quiloa and Lyndy in Africa, with the islands Zanzibar, Socotra, etc., and it has an active trade with all the adjacent countries, and with British India. The imaum has a patriarchal and despotic sway, and the most efficient naval force of any native prince from the Cape of Good Hope to Japan.—*Muscat* or *Mascua* (probably the *Mosca* of Arrian), a fortified maritime city of east Arabia, capital above dominion, on a peninsula in the Arabian Sea, lat. 23° 37' N., long. 58° 35' E. Population estimated at 40,000 to 50,000. It is surrounded by heights all strongly fortified. The harbor of the city is well sheltered, and has deep water. Muscat is the grand emporium of east Arabia, and the key to the entrance of the Persian Gulf. Imports estimated \$4,500,000 in value annually, and consist chiefly of almonds, aloes, assa-fœtida, gum ammoniac, sulphur, nitre, gum copal, frankincense, coffee, pearls, ivory, horns, hides, wax from Persia and Africa, most of which are re-exported to India and the East; the returns thence being made in British and India cotton goods, shawls, China manufactures. Large quantities of dates, as also wheat, horses, salt, and dried fish, are among the principal exports. The port is usually touched at by vessels going up the Persian Gulf. Though the country around it is sterile, a plentiful supply of provisions may generally be obtained at Muscat.

Commercial Relations with the United States.—The treaty made by the United States in 1837, with the Sultan of Muscat has been duly observed, and a very friendly disposition shown by the authorities to all Americans. The present existing commercial regulations are fixed and permanent. There are no privileges permitted to other nations which are denied to our own. There are no port charges or other dues levied on vessels of the United States. There is no drawback of duties; merchandise from one vessel to another, or landed for re-shipment, must pay a duty of 5 per cent. The German crown, and pice, and pic, from the East India Company's possessions, are the only currency. The number of pice for a German crown (better known in these countries as the black dollar) varies, according to the supply, from 116 to 128. At this present time, 120 pice are given for one black dollar, and 3 pic make one pice. Spanish and Mexican dollars are worth no more, and do not circulate freely. They are purchased for the Bombay market, usually at a premium of 2 to 3 per cent. at the commencement of the south-west monsoon, in April, and also near its close, in September, and find their way from thence to China. American half eagles are worth \$5; English sovereigns, \$4.75; Spanish and Portuguese doubloons, \$16; Spanish quarters and eighths pass freely at 25 and 12½ cents, and American

dimes and half dimes at 10 and 5 cents. Merchandise is bought and sold for dollars and cents.

Ivory.—This article varies greatly in price, according to quality and size. The superior kinds, and largest and best, are sent to the United States. In lots, average weight 70 lbs. and upward, \$40 to \$44 per frasila of 85 lbs. Ivory, 50 to 60 lbs. average weight, \$37 to \$40 per frasila. Tortoise shell per pound, of 3 lbs. English, \$2 to \$5. Gum copal, per frasila of 85 lbs. English, \$5 to \$7. Hides, per conge of 20 lbs., \$10 to \$15 per conge. Cloves, per frasila of 35 lbs., \$1.75 to \$2.50.

Commissions usually charged, 2½ per cent. As for freights and insurance, there are no rates to the United States. Cargoes imported from the United States are invariably sold at 6 months' credit. If cash is wanted for a sale, a discount is made of 4½ per cent. for 6 months. As for exchange, the captains of whale ships draw upon their owners for the cash they require, and the usual charge is 20 per cent. Duties, 5 per cent. on all cargo landed. No duties on exports to the United States. There are no internal taxes of any kind paid by the people of this island directly. The sultan's revenue is derived from duties on all articles of commerce brought from the neighboring coast, Red Sea, Aden, Persian Gulf, Bombay, and the Malabar coast. The negro slaves are almost the only common laborers, and receive per day about 12½ cents, or \$2.50 to \$3 per month. The higher order of servants to oversee the work in preparing and shipping cargoes are paid from \$7.50 to \$10 per month. Native workmen in the various branches of mechanic industry receive about \$5 to \$7 per month.

No steamers are owned or built here, and there are no facilities for ship-building, or even repairing, to any extent. The sultan has a few ships-of-war built either at Bombay or at places on the coast of Malabar. They are manned by slaves and officered by Arabs. The only vessels owned here by natives are called *dows*, and seem to answer the purpose very well, but are the rudest kind of ship possible to conceive of, and never undertake to get to any place against the monsoon. They sail fast, and are of very peculiar construction. Zanzibar is a large, fertile, and populous island, and the favorite residence of the sultan, who is far superior to his brother princes in intelligence, and has a disposition to introduce improvements into his dominions. But his subjects, like all Arabs, are far behind other nations, and despise all improvement. Cloves are produced upon this island in large quantities, and the annual increase is considerable. All other articles of export are brought from other places. See *Com. Rel., U. S.*, vol. iii., 1866-57, pp. 367-368.

Musk (Fr. *Musc*; Ger. *Bisam*; Du. *Muskus*; It. *Muschio*; Sp. *Almizelo*; Rus. *Muscus*; Arab. and Pers. *Mishk*) is obtained from a species of deer (*Moschus moschiferus*) inhabiting the Alpine mountains of the east of Asia. The musk is found in a small bag under the belly. Musk is in grains concreted together, dry, yet slightly unctuous, and free from grittiness when rubbed between the fingers or chewed. It has a peculiar, aromatic, and extremely powerful and durable odor; the taste is bitterish and heavy; and the color deep brown, with a shade of red. It is imported into England from China in caddies containing from 60 to 100 oz. each; but an inferior kind is brought from Bengal, and a still baser sort from Russia. The best is that which is in the natural follicle or pod. Being a very high-priced article, it is often adulterated. That which is mixed with the animal's blood may be discovered by the largeness of the lumps or clots. It is sometimes mixed with a dark, highly colored, friable earth; but this appears to the touch to be of a more crumbling texture, and is harder as well as heavier

than genuine musk. 20 cwt. of musk are allowed to a ton. It was not permitted to be brought home in the China ships belonging to the East India Company.—*THOMSON'S Dispensatory*; *MILBURN'S Orient. Com.*

Muslin (Ger. *Musselin*, *Nesseluck*; Du. *Neteldoek*; Fr. *Mousseline*; It. *Moussolina*; Sp. *Moselina*; Rus. *Kissea*) is derived from the word *moussale* or *mousseln*, a name given to it in India, where large quantities are made. It is a fine thin sort of cotton cloth, with a downy nap on the surface. Formerly all muslins were imported from the East; but now they are manufactured in immense quantities at Manchester, Glasgow, etc., of a fineness and durability which rival those of India, at the same time that they are very considerably cheaper. See *COTTON*.

Mustard (Ger. *Mustert*, *Senf*; Fr. *Moutarde*; It. *Mostarda*; Sp. *Mostaza*; Rus. *Gortschiza*; Lat. *Sinapis*; Arab. *Khirdal*; Hind. *Rai*), a plant (*Sinapis*) of which there are several species. It is a native of Europe, and is now naturalized, and a common weed in some parts of the United States. It is besides very commonly cultivated for the sake of the seeds, which, when powdered and mixed with vinegar, form a well known pungent condiment in daily use. The root is annual; the stem three or four feet high; the lower leaves are lyrate, and the upper ones landolate and entire. The flowers are small and yellow. It belongs to the natural family *cruciferae*, and is known by the smooth four-cornered pods which are pressed close to the stem. Table mustard, mixed with warm water, and taken in considerable quantities, acts as an emetic, and as such is so much the more valuable from its being always at hand. The white mustard (*S. alba*) is milder than the preceding, and on this account is more agreeable to some palates.—*E. A.*

Mutiny of the Bounty. Memorable mutiny on board the *Bounty* armed ship returning from Otaheite with bread fruit. The mutineers put their captain, Bligh, and 19 men, into an open boat near Annamooka, one of the Friendly Islands, April 28, 1789, and they reached the island of Timor, south of the Moluccas, in June, after a perilous voyage of nearly 4000 miles, in which their preservation was next to miraculous. The mutineers were tried September 15, 1792, when six were condemned, of whom three were executed.

Myrobalans are the dried fruits of different varieties of *terminalia*. The fruit, varying from the size of an olive to that of a gall-nut, consists of a white pentangular nut, covered by a substance about two lines in thickness. The latter, which is the only valuable part, is mucilaginous and highly astringent; and being separated from the nut is employed, with the best effect, both by dyers and tanners, especially by the latter. It produces with iron a strong, durable, black dye and ink; and with alum, a very full, though dark, brownish yellow. The imports vary considerably.—*BANCROFT ON Permanent Colors*, i., 351, etc.

Myrrh (Ger. *Myrrhen*; Du. *Mirrh*; Fr. *Myrrhe*; It. and Sp. *Mirra*; Lat. *Myrrha*; Arab. *Murr*), a resinous substance, the produce of an unknown tree growing in Arabia and Abyssinia. It is imported in chests, each containing from one to two cwt. Abyssinian myrrh comes to us through the East Indies, while that produced in Arabia is brought by the way of Turkey. It has a peculiar, rather fragrant, odor, and a bitter aromatic taste. It is in small irregularly shaped pieces, which can hardly be called tears. Good myrrh is translucent, of a reddish yellow color, brittle, breaking with a resinous fracture, and easily pulverized. Its specific gravity is 1.86. When it is opaque, mixed with impurities, and either white, or of a dark color approaching nearly to black, with a disagreeable odor, it should be rejected.—*THOMSON'S Dispensatory*.

N.

Nails (Ger. *Nägel*, *Spiker*; Du. *Spykers*; Fr. *Clous*; It. *Chiodi*, *Chiovi*, *Aguti*; Sp. *Clavos*; Rus. *Gvozdí*) are small spikes of iron, brass, etc., which, being driven into wood, serve to bind several pieces together, or to fasten something upon them. The consumption of nails is immense; and the aggregate value of those annually produced is very large.

STATEMENT SHOWING THE DOMESTIC EXPORTS OF IRON NAILS FROM THE UNITED STATES, FOR THE YEAR ENDING JUNE 30TH, 1856.

Districts.	Pounds.	Value.
Passamaquoddy.....	188,900	\$8,839
Portland and Falmouth.....	20,094	804
Bangor.....	12,000	600
Portsmouth.....	100	5
Vermont.....	7,000	280
Newburyport.....	8,000	380
Gloucester.....	1,200	48
Salem.....	36,900	1,663
Boston and Charlestown.....	2,778,100	102,897
Fall River.....	2,500	100
New Bedford.....	23,600	960
Providence.....	40,000	1,550
Bristol and Warren.....	67,700	2,938
Newport.....	10,000	400
New London.....	7,581	791
Genesee.....	14,214	743
Oswego.....	387,841	21,424
Niagara.....	60,740	1,240
Buffalo Creek.....	55,700	2,529
Oswegatchie.....	43,822	2,152
New York.....	1,380,172	60,360
Philadelphia.....	382,950	14,446
Baltimore.....	109,650	4,518
Richmond.....	15,600	650
Wilmington.....	5,000	200
Charleston.....	1,000	43
Savannah.....	2,500	110
New Orleans.....	9,926	707
Cuyahoga.....	10,800	471
Detroit.....	16,700	907
San Francisco.....	91,290	5,638
Total.....	5,736,580	\$238,838

STATEMENT SHOWING THE IMPORTS OF IRON NAILS, SPIKES, AND TACKS, INTO THE UNITED STATES, FOR THE YEAR ENDING JUNE 30TH, 1856.

Districts.	Pounds.	Value.
Passamaquoddy.....	5,200	\$153
Vermont.....	10,100	1,071
Boston and Charlestown.....	88,212	11,624
Oswego.....	220	18
Oswegatchie.....	10	1
New York.....	1,881,029	73,508
Cape Vincent.....	1,200	61
Philadelphia.....	92,416	12,015
Baltimore.....	54,475	6,486
Charleston.....	17,578	1,577
Savannah.....	3,644	875
Mobile.....	4,700	694
New Orleans.....	115,837	18,598
Detroit.....	10	2
Chicago.....	3,370	77
San Francisco.....	19,700	1,619
Total.....	2,292,696	\$127,879

See IRON and HARDWARE.

Nangasacki, a sea-port town on the south-west coast of the island of Ximo, one of the Japanese islands, being, according to Krusenstern, in lat. $32^{\circ} 43' 40''$ N., long. $130^{\circ} 11' 47''$ E. The harbor extends N. E. and S. W. about $2\frac{1}{2}$ leagues, being, in most places, less than a mile in width. Ships lie in 5 or 6 fathoms water, within a gunshot of the town, near the middle of the bay where they are protected from all winds.

Nankeen or Nankin (Ger. *Nanking*; Du. *Nankings linnen*; Fr. *Toile Nankin*; It. *Nanquino*; Span. *Nanquina*), a species of cotton cloth in extensive use in this country. It takes its name from Nanking, in China, a European corruption of Kyang-ning, the capital of the extensive province of Kyang-nan, where it is principally produced, and which also furnishes the greater part of the green teas. In the East, the man-

ufacture is wholly confined to China. The cloth is usually of a yellowish, though occasionally it is of a blue color, and of different degrees of fineness; the broad pieces called "the Company's nankeens," are generally of a better quality than the narrow ones, and are most esteemed. The color, whether yellow or blue, is given to the cloth by dyeing; for though yellow cotton wool be raised in the East, the cloth made from it is too glaring. The nankeens brought to England come under the general denomination of piece goods. They are mostly made into trowsers and waistcoats for gentlemen's wear during summer, ladies' pelisses, etc. In some of the more southern parts of Europe, the warmer parts of Asia and America, and the British settlements in Africa, nankeen is worn by both sexes all the year round, and constitutes the principal article of attire. Latterly, however, they have become unfashionable in this country, and their importation has, in consequence, all but ceased. See article CANTON.

Nankin, or Nanking ("court of the South"), a city, and the ancient capital of China, capital of the province of Kiangsu, near the Yang-tze-Kiang, about 90 miles from its mouth. Lat. $32^{\circ} 2' N.$, long. $118^{\circ} 49' E.$ Population estimated at 400,000. Its ancient walls can be traced over hill and dale for 35 miles, but Nankin has so greatly declined since the transference of the seat of empire to Pekin by Kublai-khan in the 13th century, that the modern walls are of much less extent, and the city scarcely occupies one eighth part of the surface inclosed by them, and it is commanded by hills especially on the east, and otherwise ill-calculated for defense. Principal objects of interest are the famous porcelain tower of 9 stories and 200 feet in height, completed in 1432 at a cost, as stated, of about \$3,500,000; and the "tomb of kings" (supposed to be of the Ming dynasty, A.D. 1328 to 1621), leading to which is a fine-paved road with an avenue of gigantic armed figures. The governor's palace, and an observatory, are worthy of notice. Here are important manufactures of crape, satin of the finest quality, paper, artificial flowers, China or Indian ink, and nankeen, which hence derives its name, but is also made throughout the whole province. It is the centre of a very extensive trade, and by the great canal which crosses the Yang-tze-kiang, about 50 miles eastward, it communicates directly with Pekin, to which city a good deal of fish is sent hence, among other articles. It is also the place of a grand viceroy, with authority over the Kiang provinces, of a great military dépôt, and the chief seat of literature in the empire.

Nantes, a large commercial city and sea-port of France, on the Loire, about 34 miles from its mouth, in lat. $47^{\circ} 18' 6'' N.$, long. $1^{\circ} 32' 44'' W.$ Population, in 1851, 96,362. Vessels drawing 18 and 19 feet water come up to Paimboeuf, about 24 miles lower down the river; but no vessel, drawing more than 11 or 12 feet can come up to the city, unless at high water a day or two before *full* and *change*. There are three entrances to the Loire. The first and most generally frequented is between the bank called *Le Four* and *Point Croisic*; there is a second between *Le Four* and the bank called *La Banche*; and the third, which in southerly winds is much resorted to, between the latter and the rocks called *La Couronne*. The navigation, which is naturally rather difficult, has been much facilitated by the erection of light-houses and beacons. Of the former, one has been recently constructed on the north part of *Le Four*, about a league from *Croisic*, in lat. $47^{\circ} 17' 53'' N.$, long. $2^{\circ} 38' 8'' W.$ It is 56 feet high. The light is a revolving one; the flash, which continues for 7 seconds, being succeeded by a dark interval of 53 sec-

onds. Two light-houses, called the Aiguillon lights, stand on the north side of the river, near its mouth; the lower light, adjoining *Point de Levi*, being in lat. $47^{\circ} 14' 33''$ N., long. $2^{\circ} 15' 46''$ W. The light is fixed, and is 111 feet above the level of the sea. The upper Aiguillon light, situated about a mile N. 81° E. from the lower, is 127 feet high; it also is a fixed light, varied, however, by a flash every 3 minutes. A beacon tower, called the Turk, is erected on the southernmost extremity of La Blanche; the course for vessels entering between it and La Couronne, is to bring the Aiguillon lights in one. The depth of water on the bar at the mouth of the river varies from 2 to $2\frac{1}{2}$ fathoms. At springs the rise is 14, and at neaps 7 or 8 feet. High water at full and change $3\frac{1}{2}$ hours.

Her situation renders Nantes the emporium of all the rich and extensive country traversed by the Loire, so that she has a pretty considerable import and export trade, particularly with the West Indies. The exports consist of all sorts of French produce, but principally of brandy, wine and vinegar, silk, woolen and linen goods, refined sugar, wheat, rye, biscuits, etc. The principal imports are sugar, coffee, and other colonial products, cotton, indigo, timber, hemp, etc. Nantes is a considerable entrepôt for the commerce of salt, large quantities being made in the Department, principally at Noirmutiers and Croisic. During the time that the slave trade was carried on, Nantes was more extensively engaged in it than any other French port. The custom duties of Nantes, exclusive of those on salt, produced, in 1851, 10,817,000 francs; she being in this respect inferior only to Marseilles, Havre, and Bordeaux. There belonged to the port, except river craft, coasters, and steamers, on the 31st December, 1851, 569 ships, of the burden of 68,121 tons.

The port charges levied on vessels of the United States are the same, and no more than the port charges levied on French vessels, except the tonnage duty, which is 94 cents per ton register, the same as the French vessels pay in the United States. The transshipment in vessels of the United States of goods is permitted to any port, except from a French port to another French port, which would be considered as a coasting trade; and no vessels of any nation whatsoever are allowed to do that trade, except the Spanish vessels, Spain having an ancient treaty with France to that effect.

AMOUNT AND CHARACTER OF THE PORT CHARGES LEVIED ON AMERICAN VESSELS AND FRENCH VESSELS AT THE PORT OF NANTES, THE VESSEL BEING SUPPOSED TO BE OF A BURDEN OF 299 TONS PER REGISTER, AND DRAWING 11 FEET AMERICAN.

Port charges.	Port charges.	
	French vessels.	American vessels.
	Francs.	Dollars.
Sanitary board at St. Nazaire.....	64 85	8 54
Entry of the vessel.....	12 00	2 28
Pilotage from Belle Ile to Paimbœuf.....	118 62	21 66
Pilotage from Paimbœuf to Nantes.....	60 55	11 53
Tonnage duty.....	...	287 00
River dues.....	47 10	8 97
Consular fees.....	...	4 00
Sixty tons of stone ballast, at 1.25 fr.....	75 00	14 28
Pilotage from Nantes to Paimbœuf.....	49 55	9 44
Pilotage from Paimbœuf to sea.....	35 10	6 63
Clearances out.....	12 00	2 28
Brokerage on 861 tons delivered, at } 50 centimes.....	180 50	84 88

Pilotage.—Vessels under 80 tons (if French or assimilated by treaty) are not obliged to take a pilot at sea, but must have one for the river. The rates, which are fixed by law, are paid by the *foot* from the sea to Paimbœuf, and from thence to Nantes for all vessels under 80 tons. Above 80 tons, they are per ton. The master of a vessel bound to Paimbœuf or Nantes has merely to give a note to the pilot stating where the pilot boarded him, where he left him, the name and draught of water of his vessel in *English* feet. The note will be deposited at the pilot's office, and the pilotage be received from the ship's broker. No foreign vessel, however small, can be removed from one anchorage to another, or to or from a quay,

but by a pilot. Every vessel is boarded at St. Nazaire, and if she has a foul bill of health, or disease on board, is instructed where to go. *River Dues* on vessels ascending from Paimbœuf to Nantes are about 1½ d. per ton. At Paimbœuf, and below it, none are levied. If a vessel under sail causes damage to another that is properly moored, she must pay all the expenses of repairs; if to a vessel at single anchor (unless intentionally done) or under sail, the expense of the repairs of both are added together, and each pays a moiety. The same rule is enforced if damage be caused by one vessel properly moored driving on board another in the same situation; but if either were riding at single anchor, the one properly moored is indemnified; if both were at single anchor, both bear the loss alike.

Naples, a large city and sea-port in the south of Italy, the capital of the kingdom of the same name, the light-house being in lat. $40^{\circ} 50' 12''$ N., long: $14^{\circ} 14' 15''$ E. Population, in 1851, 416,475. Naples is well situated for commerce; but the policy of the government has hitherto been most unfavorable to its growth, and has confined it within comparatively narrow limits. The Bay of Naples is spacious, and is celebrated for its picturesque views. The harbor is formed by a mole, built nearly in the form of the letter L, having a light-house on its elbow. Within the mole there is from 3 to 4 fathoms water, the ground being soft. The water in the bay is deep, and there is no bar; it is, however, a good deal exposed to the south-westerly winds; and to guard against their effects, vessels lying in the bay moor with open hawse in that direction. There is no obligation to take a pilot on board, but it is usual to take one the first time that a ship anchors within the mole. The light-house has a revolving light. The period of revolution is 2 minutes, during the first of which the full strength of the light is continued, and during the second minute its brilliancy rapidly decreases. The height of the light is 161 feet above the sea, and it is visible at the distance of 18 or 20 miles. At the extremity of the mole is a low fixed light to guide vessels round its head.

EXPORTS FROM THE CONTINENTAL STATES OF THE TWO SICILIES, BY LAND AND BY SEA, IN NATIONAL AND FOREIGN VESSELS, IN EACH YEAR FROM 1840 TO 1850, BOTH INCLUSIVE.

Years.	By land.	By sea.		Total values.	
		In national vessels.	In foreign vessels.		
		Ducats.	Ducats.	Ducats.	Sterling.
1840	461,595	7,229,239	4,037,278	11,266,517	1,954,685
1841	726,377	7,352,093	5,528,616	12,880,709	2,267,441
1842	862,168	9,524,804	3,989,852	13,514,656	2,312,720
1843	285,679	7,325,160	2,444,298	10,055,187	1,725,856
1844	298,890	6,844,370	2,223,156	9,971,416	1,661,908
1845	275,961	9,984,751	2,441,927	12,702,639	2,238,773
1846	276,606	11,176,154	2,597,294	14,350,054	2,891,631
1847	887,900	8,571,810	3,148,556	12,102,766	2,017,128
1848	262,700	6,508,595	3,164,383	9,930,678	1,655,113
1849	251,545	8,561,960	4,962,591	13,776,096	2,296,016
1850	420,823	9,489,943	4,840,629	14,760,420	2,460,070

The exports principally consist of the products of the adjacent country. Of these, silk is the most important. Olive oil is also a most important article; but it is principally supplied by Gallipoli, a town in the Terra d'Otranto, whence it is commonly called Gallipoli oil. The entire exports of oil from the kingdom of Naples have been estimated at about 200,000 salme, or 36,333 tons, a year, which, taking its mean value when exported at \$100 per ton, is equivalent to the annual sum of \$3,633,300. See OLIVE OIL. The other articles of export are wool, wine, brandy, dried fruits, red and white argol, tallow, liquorice, gloves, madder, hemp, linseed, cream of tartar, bones, lamb and kid skins, oak and chestnut staves, rags, saffron, etc. There is a great variety in the Neapolitan wines. The most esteemed is the *lacrima Christi*, a red luscious wine, better known in England by name than in reality, the first growths being confined to a small quantity only, which is chiefly reserved for the royal

cellars. There are, however, large quantities of second-rate wines produced in the vicinity of Naples, such as those of Pozzuoli, Ischia, Nola, etc., which are sold under the name of *lacrima Christi*, and are largely exported. Several parts of Calabria produce sweet wines of superior quality.—HENDERSON'S *Ancient and Modern Wines*, p. 239. The price of wine at Naples depends entirely on the abundance of the vintage. The imports consist principally of cottons and cotton twist, hardware, iron and tin, woollens, sugar, coffee, indigo, spices, etc. Naples is a good market for pilchards, and it requires a large supply of dried and barreled cod.

"The existing regulations as to commercial intercourse with the United States appear fixed. When our treaty, however, shall expire, if not renewed, a change may follow, as well for tonnage dues as for the additional 10 per cent. on the duties of merchandise. I know of no privileges permitted to the commerce of other nations which are denied to the United States, nor are there any restrictions on the commerce of other nations and not on the United States. The amount and character of the port charges and other dues levied on vessels of the United States are as follows: *On entry*.—Tonnage, 4 grains, or 3 and one fifth cents per ton, when there is a treaty; without treaty and indirect voyage, 40 grains, or 32 cents per ton. Light money, \$1; presentation of manifest, \$1; custom-house visit, 30 cents; liquidation of manifest and boletta, 35 cents; customary present, 60 cents. Total amount on entry, except tonnage, \$3.75. *On clearance*.—Biglietto of departure, \$1; bill of health, \$1; roll of police, 25 cents; roll of port, 25 cents; usual present, 60 cents; "spedizionieri," or broker's compensation, \$2. Making a total amount on clearance of \$5.10. National vessels pay the same, but the presents are greater by them. The health officer has for granting pratique on arrival \$5. Should the vessel be subject to quarantine, the charges increase according to circumstances, and still more so when sent to Visita to perform it. Transhipment in vessels of the United States of goods, either to another port in the kingdom or to a foreign port is prohibited, as well as in other vessels, except the Neapolitan steamboats. It is allowed by favor when the manifest, on arrival, specifies the goods and the port to which they are intended to be transhipped.

"Exports from this port have been put on board free of any duty, at prices as follows: Refined argols, at 20 cents per pound; refined yellow pink, at 23 cents per pound; cream tartar, at 25 cents per pound; licorice paste (Corigliano) at 16 cents per pound; licorice, Baracco and other, at 15 to 15½ cents per pound; olive oil, in casks, at 78 cents per gallon; oranges, per box, \$2.20 to \$2.25; lemons, \$3 to \$3.20; filberts, 4½ cents per pound; walnuts, 5 cents per pound. There have been exported during the year, from the first of July last, about 60,000 lbs. of sewing silks—first, second, and third qualities—at \$4.20, \$3.80, and \$3.60 per lb. of 16 oz.; also about 25,000 lbs. of such silks, raw or undyed, at \$3 per lb. of 16 oz. These are shipped by steamers for Marseilles or Liverpool for the most part. In like indirect way are also sent clay pipes with reed tubes, of little value, musical strings, coral and lava ornaments, but no prices can be quoted, as their value depends on the beauty of the article, and the execution of the work. Between wholesale and retail prices there may be a difference of about 10 per cent. Five or six foreign vessels (Neapolitan and English) have loaded in part with oranges and lemons for the United States, and gone to Sicily to fill up, or first take a part cargo in Sicily and fill up here. About 20,000 boxes are shipped in the year from this port, but the prices vary continually; they are now double what they were in the beginning of the season."—*Com. Rel. U. S.*, 1856-7.

Commercial Policy.—The policy of the Neapolitan

government with respect to commerce was for a lengthened period the most objectionable that can well be imagined. Articles, whether of import or of export, were burdened, alike, with oppressive duties and restrictions; and even the warehousing of foreign goods could hardly be said to be permitted. Of late, however, we are glad to observe, the administration appears to have become alive to the injurious influence of this *felo de se* system, and has given its sanction to several measures of a comparatively liberal character.

The duties on imports have also undergone various modifications. Those on fish, sugar, and other colonial products, have been reduced fully a half. But we submit in illustration of these changes the following statement of the old and new rates of duty on certain articles:

	Old duty.		New duty.	
	duc.	c.	duc.	c.
Herrings.....cantar gross	5	51	3	0
Codfish....." "	5	7	3	20
Cocoa....." "	16	50	8	0
Coffee....." "	24	75	13	0
Camphor, raw....." "	35	0	24	0
" refined.....rottolo	1	12	0	70
Cinnamon, in sorts....." "	1	54	0	60
Cassia lignea, of any sort.....cantar	50	0	30	0
Cloves....." "	77	0	30	0
Nutmegs....." rottolo	1	54	0	80
Pepper....." "	8	25	7	0
Pilchards, etc.....cantar gross	2	47	1	20
Stockfish....." "	4	63	3	0
Sugar, any kind, in powder....." "	22	0	10	0
" " in loaves....." "	33	0	15	0
Vanilla....." "	2	73	1	80

We have no doubt that the beneficial influence of these wise and liberal measures will lead to further changes. The duties on iron, with those on cottons, woollens, and other descriptions of manufactured goods, are a great deal too high. These duties were imposed partly for the sake of revenue, and partly in the view of encouraging domestic manufactures; but they have not accomplished either object. See TWO SICILIES and ITALY.

Naphtha. A limpid bitumen, which exudes from the earth upon the shores of the Caspian and some other eastern countries. Near the village of Amiano, in the State of Parma, there exists a spring which yields this substance in sufficient quantity to illuminate the city of Genoa, for which purpose it is employed. It has a peculiar odor, and generally a yellow color, but may be rendered colorless by distillation. Its specific gravity is about 0.75. It boils at about 160°. It is highly inflammable, burning with a white smoky flame. It appears to be a compound of 36 of carbon with 5 of hydrogen, and is therefore a pure hydro-carbon. A liquid very similar to mineral naphtha is obtained by the distillation of coal tar. It has sometimes been used in lamps, but is apt to smoke. This variety of naphtha is in great request as a solvent for caoutchouc.

Napier, John, Baron of Merchiston. Celebrated as the inventor of Logarithms. Born 1550, and educated at the university of St. Andrews. On returning from his travels, in 1574, his learning and accomplishments attracted great attention, and would have raised him to the highest offices of State; but, declining all civil employment, he devoted himself to scientific researches and to theology. In 1614 he published his *Logarithmorum Canonis Descriptio*. To Napier science is indebted for considerable improvements in spherical trigonometry, etc. He is principally celebrated, however, by his *Rabdology and Promptuary of Multiplication*, or instruments and tables for the more easy performance of great arithmetical operations, connected with which were the rods of ivory, etc., known as *Napier's bones*. In addition to his scientific treatises, he wrote several works on theological subjects. He died in 1617, in his 68th year, and was buried in the cathedral of St. Giles, at Edinburgh.

Narrows, The, a channel between Long Island and Staten Island, connecting New York Bay with the Atlantic, nine miles south of New York. The channel is 1905 yards wide, and is well defended by forts and batteries.

Natal, a colonial possession of Great Britain, on the south-east coast of Africa, between lat. $27^{\circ} 40'$ and $80^{\circ} 40' S.$, and long. 29° and $31^{\circ} 10' E.$, having south-east the Indian Ocean, west, the Drakenberg, or Kahlamba Mountains, separating it from the territory between the Orange and Vaal Rivers, recently annexed to the Cape Colony; and north-east the Buffalo and Tugela Rivers, dividing it from the Zooloo country. Estimated area, 18,000 square miles. Population uncertain. Surface undulating, well watered, and mostly covered with tall grass. Timber in the interior grows only in clumps, but the sea-coast is bordered by a belt of mangroves. Climate most healthy, and the soil is reported to be far more fertile than in the Cape Colony. Cotton and indigo grow wild, and the former has been produced for exportation, of the finest quality. Sugar, coffee, wheat, oats, beans, and tobacco, are important crops. Superior coal has been found in the interior; building stone is found all over its surface, and iron ore is abundant. Butter, corn, hides, ivory, tallow, tobacco, cotton, and wool, were lately among the chief exports. Value of exports in 1851, \$15,000. Imports same year, valued at \$280,000. The territory, which is a dependency of the Cape of Good Hope, is administered by a lieutenant-governor, assisted by an executive and a legislative council.

It is subdivided into the districts D'Urban, Pietermaritzburg, Umvoti, Impafane, Upper Tugela, and Umzimzate, exclusive of a tract in the south, hitherto without an established magistracy. Pietermaritzburg, the capital, is 50 miles inland from *Port Natal*, which is near the centre of the coast line. This colony derives its name from the fact of its having been discovered on Christmas day (1498), by the Portuguese. It was revisited in 1575 by order of King Sebastian.

National Debt. The first mention of parliamentary security for a debt of the English nation, occurs in the reign of Henry VI. The present national debt commenced in the reign of William III. It had amounted, in the year 1697, to about five millions sterling, and the debt was then thought to be of alarming magnitude.

1702, On the accession of Queen Anne, the debt amounted to.....	£14,000,000
1714, On the accession of Geo. I.....	54,000,000
1749, Geo. II.; after the Spanish war.....	78,000,000
1769, Geo. III.; end of the 7 years' war.....	189,000,000
1786, Three years after the American war.....	268,000,000
1793, The civil and foreign war.....	462,000,000
1802, Close of the French revolutionary war.....	571,000,000
1814, Close of the war against Bonaparte.....	865,000,000
1817, When the Irish and English exchequers were consolidated.....	848,282,477
1830, Total amt of the funded and unfunded debt.....	840,184,022
1840, Total amount of ditto.....	759,575,000
1845, Funded debt.....	765,789,000
1857, ".....	750,000,000

The national debt of the United States originated in consequence of the expenses incurred during the revolutionary war, and amounted in the year 1791 to about \$75,000,000. The revenue of the government enabled it to curtail the debt until the year 1812, when it was only \$45,000,000. The war with England in 1812-15, added largely to this debt, the loans necessary for war expenditures being raised at a considerable loss. At the end of the war the debt was over \$103,000,000. This was rapidly curtailed, and by the year 1835 was fully liquidated, besides an appropriation of several millions of surplus revenue to the individual States. In 1839, the revenue was less than the expenditure, and another debt was created which had been nearly liquidated up to the year 1845, when the war with Mexico rendered further loans necessary. The

progress of the national debt from 1791 to 1857 was as follows:

Years.	Debt—U. S.	Years.	Debt—U. S.
1791.....	\$75,468,476	1824.....	\$90,269,778
1792.....	77,227,924	1825.....	83,788,458
1793.....	80,352,634	1826.....	81,054,060
1794.....	78,427,405	1827.....	78,987,337
1795.....	80,747,587	1828.....	67,475,044
1796.....	83,762,172	1829.....	58,421,414
1797.....	82,064,479	1830.....	48,565,406
1798.....	79,228,529	1831.....	39,125,192
1799.....	78,408,670	1832.....	24,322,235
1800.....	82,976,294	1833.....	7,001,699
1801.....	83,088,051	1834.....	4,760,082
1802.....	80,712,632	1835.....	37,733
1803.....	77,054,636	1836.....	87,513
1804.....	86,427,121	1837.....	1,573,224
1805.....	82,812,150	1838.....	4,557,660
1806.....	75,728,271	1839.....	11,993,733
1807.....	69,218,999	1840.....	5,125,075
1808.....	65,196,318	1841.....	6,737,398
1809.....	57,028,192	1842.....	15,028,456
1810.....	53,173,217	1843.....	26,598,353
1811.....	48,005,583	1844.....	26,143,996
1812.....	45,209,788	1845.....	16,501,647
1813.....	55,362,598	1846.....	24,256,465
1814.....	81,487,846	1847.....	45,659,659
1815.....	99,338,060	1848.....	65,804,450
1816.....	127,394,994	1849.....	64,704,693
1817.....	103,461,965	1850.....	64,228,235
1818.....	103,466,634	1851.....	62,560,395
1819.....	95,529,643	1852.....	47,560,395
1820.....	91,015,566	1853.....	56,896,157
1821.....	90,987,423	1854.....	44,975,456
1822.....	93,546,677	1855.....	39,969,731
1823.....	90,375,577	1856(Nov. 15)	30,963,909

For funded debts of various European nations, see *ARTICLE EUROPE*, p. 622.

Naval Architecture. In the small space we can assign to this subject we shall merely endeavor to convey a general notion of the principles and process of construction. Ships are built in different forms, according to the service they are intended for, and the burdens they have to carry. It is in men-of-war, which, besides possessing in an eminent degree the general qualities of a ship, have to support a heavy armament of cannon, and which are destined to severe and long-continued service, that the principles of construction have been carried to the greatest perfection. The form of the ship, her strength, or the scantling necessary for the services required of her, are, from our imperfect knowledge of hydrodynamics, the results of experience alone. When a ship is to be built, her form is projected in three different planes perpendicular to each other.

1st. *The sheer draught*, which is the side view, or projection on the plane of the keel. On this are laid off the length, the heights of all the parts from the keel, the position and rake of the stem and sternpost, the principal frames or timbers of the sides, the ports, decks, channels, place of the greatest breadth or midship frame, stations of the masts, etc. The frames before the midship frame are distinguished by letters; abaft it, by numbers. The midship frame is not exactly in the middle of the length, but rather before it.

2d. *The body plan*, or end view. This shows the contour of the sides of the ship at certain points of her length, and since the two sides are exactly alike, the left half represents the vertical sections in the after part of the body, and the right-hand half those in the fore part. The base of the projection is the midship, or largest section, called also the *dead flat*, within which the other sections are delineated. On this are exhibited also the beams of the decks.

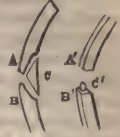
3. The horizontal or floor plane, called also the *half breadth plan*. The base of this is the section made by the horizontal surface of the water and the outside surface of the ship, and is called the *upper water line*, or *load water line*. If the ship now be supposed to be lightened uniformly, she will exhibit another water line, and thus any number of like parallel sections at equal distances down to the keel. On this projection the water lines appear as curves, on the sheer draught as straight lines parallel to the keel. These three sec-

tions correspond to each other upon the same scale, and any point in one is immediately referable to the other two projections. The several parts are drawn from these plans in their full size on the floor of the mold-loft, and worked from the molds or model so taken.

The place in which the ship is built is called a *slip*. In the middle, and leading to the water, is a row of piles of stout pieces of wood called the *blocks*, having a declivity towards the water of about one inch in one foot. On these the keel, which is of elm, is laid, and its component lengths scarfed together. Under the keel is placed the false keel for defense. At the end farthest from the water is raised the *stem*, which is, in fact, the keel continued upwards. Inside the stem, and just above the keel, is the *apron*, a curved timber connecting both. On each side of the upper part of the stem is fixed an upright timber; these are called the *knight heads*, and the bowsprit lies between them. At the other end of the keel is the sternpost, at which the planking finishes abaft, and on which the rudder is hung. Inside (or before this) are the *inner post* and other pieces for strength. Upon the keel is fixed a layer of timber of the same breadth, and rising forward and aft, called the *dead wood*; on this are placed the *floor timbers*; these consist of one which crosses the keel to which it is coaked, and the two parts of a like timber firmly joining it, and projecting beyond its ends. The several pieces are got into their places by shifting shears.

The *frames* consist of pairs of timbers composed of pieces of different lengths, joining the floor timbers, and carried upwards. The length joining the floors is called the first futtock, the next the second futtock, and so on, ending in the *top timbers*. The pairs are bolted by iron bolts, and of late adjacent pairs have been thus connected. The frames are supported temporarily by being fixed to the *cross spalls*, long fir planks laid horizontally about the height of the gun deck. Those frames whose planes are perpendicular to the keel are called *square frames*; at the head and stern these planes incline toward the extremities, and are called *cant frames*. These divisions of the ship are called, accordingly, *square* and *cant bodies*. When the framing has assumed its form the *ribbands* are fixed; these are thick, narrow planks at wide intervals, extending the length of the vessel, marking the direction of the planks; they are firmly shored, and removed when the planking comes on. The *riband lines* appear on the half breadth plan as diagonal lines. Upon the keel, and over the floor timbers, to which it is scored, is laid the *kelson*, which is, in fact, a second keel over the first. The stern of square-sterned ships is formed upon the *wing transom*, the uppermost of the horizontal pieces of timber, called *transoms*, crossing the sternpost inside. The wing transom is secured to the timbers of the side by a strong horizontal knee. When the framing is complete, the outside planking is laid on. The *wales*, thick planks above the water, are first secured to the ribs. The *clamps* are thick planks inside, to support the ends of the beams of the decks. The *beams* support the decks, rest on the clamps, and are secured to the side by *knees*. The *breast hooks* are strong curved pieces of timber crossing the stem, and joining the bows. The *deck hooks* are the same, being at the decks. The *crutches* answer a like purpose below in the after part. The *port sills* are the upper and lower edges of the ports. The *spirketting* is the plank of the side between the water way and the port sill. The *chain wales* are thick planks of the outside to receive the chains and preventer-bolts for the support of the rigging. The *foot waling*, or *ceiling*, is the plank lining the inside of the ship below. The *limber boards* are short, thick pieces of wood resting against the kelson for the convenience of keeping a clear passage to the well. The *knee of the head*, also called the *cut-water*, is the projecting part of the head; it is secured to the bows by knees called *cheeks*.

In order to bend wood into the necessary curvature, it is steamed in places for the purpose. When the planking is all complete, the ship is caulked and painted. The fastenings of timber are effected by bolts, treenails, or coaks. The present method of framing ships-of-war is chiefly due to Sir Robert Seppings. We shall describe it here generally; for particulars, see the *Phil. Trans.*, 1814, and the published reports on the subject. As the timbers or ribs can not be procured entire, or of the proper curvature, various methods have been used for joining the several pieces together. A method used till lately consisted of an angular chock C, fastened by treenails to the ends A B of the timbers. By this plan all stress upon the joint, in whatever direction, falls on the treenails; and when the chock decays, no support is afforded in any sense whatever. At present the square ends, A' B', are brought together, while a *coak* C', or small oak cylinder, is let into each.



By this plan the two faces resist any effort by pressure from without to close the timbers, and the coak itself resists the effort (perpendicular to this last) to make one timber slide past the other by the whole force necessary to cut it off flush with the section. In the single case of lifting one face exactly perpendicularly off the other, the coak offers no resistance; this effort, which is that produced by the strain of the rigging on the sides, is opposed by other numerous connections. The method is very ancient, being used in the construction of the pillars in the temple at Balbec; the advantages of its application to ship-building is seen in the frames, which undergo no change of form while hoisting into their places. The efficiency of the plan, however, does not appear in a single length, but in the system of frames, each joining of which is placed near the middle of the next piece.

A *shelf piece*, coaked and bolted to the timbers or ribs, and resting on short vertical pieces of timber called *chocks*, and sometimes scored to the ribs, is carried like a hoop entirely round the ship. On this the beam ends are coaked; and over these again is laid a strong water way scored to the beams, and coaked. Besides these the beam end is clasped by two arms of an iron knee, of which the third, which is vertical, is bolted to the chock. The shelf binds firmly the ends and sides of the ship together, and resists like an arch all external pressure. The spaces between the timbers below are filled up by dry wood driven in tight, and caulked, thus rendering the bottom solid and water-tight, independently of the planking. One of the most important improvements is the diagonal framework below. Instead of the former planking in the hold are placed *braces*, crossing the ribs, to which they are coaked, at an angle of 45° ; those in the fore body incline (or rake) aft, and those in the after body forward. They butt against the kelson, and extend nearly to the water; they are in general placed under every other beam, but closer at the extremities.



Longitudinal pieces of timber are laid nearly parallel to the keel over the heads or joinings of the timbers, and bolted through; these, crossing the diagonals, form a series of rhomboidal figures, across which, inside, are firmly driven *trusses*, lying the opposite way from the diagonals; these are bolted through, and, when necessary, are further tightened by driving in thin iron plates at the ends. The diagonals act by the *tension* of the fibres, the trusses by the *thrust*, and the whole thus resists every effort to change the figure of the ship. The system was first put into complete practice in the *Tremendous*, 74, in 1810; which ship evinced, in several severe trials, a firmness and dryness not known before. M. C. Dupin has shown (*Phil. Trans.*, 1817) that the principle of diagonal framing had sug-

gested itself, and been tried by several French engineers, but as often abandoned. The merit, therefore, of Sir R. Seppings, in reducing to practice a system which to others had been attended with insuperable difficulties, more than compensates the want of novelty in the idea itself. The ancient square, massive, but weak sterns, have been replaced by Sir R. Seppings by round sterns, corresponding in construction, and therefore in strength, to the bow. These have again undergone various alterations, tending to combine the strength of the new with the imposing appearance of the former stern. It is only now by contrasting the solid and immovable frame with the former weak and unconnected structure, that we can fully perceive the inefficiency of the ancient construction. The timbers, instead of forming an independent system, were often supported in part by the planking itself, as is the case in boats. The masts, resting only upon their steps, instead of strong platforms which diffuse the pressure on all sides, and pressed downwards by their weight, and by the enormous strain of the rigging, arising from the wind on the sails, forced the keel down, and made the ship leaky. The timbers and framework, being at right angles, without mutual support, the whole stress of the ship came on the fastenings; and, lastly, the safety of the ship depended entirely upon that of the outside plank, the part most exposed to injury.

The planks of the decks have also sometimes been placed diagonally; and lately iron diagonal straps have been added to the upper works inside. The extremities being unsupported below by the water droop, or the ship *hogs*, a three-decker formerly drooped at once, on being launched, nine inches at each end, which increased with her length of service; at present, such a ship droops only $3\frac{1}{2}$ inches, which, when the materials are set, suffers little or no increase. Exposure to moisture being a cause of the decay of timber, building under cover has long been practiced. This also protects the men from the weather. The wood usually employed in ship-building is oak. Elm, which does not split readily, is employed for the keel, and for the caps. East India teak, a very heavy durable wood, which does not shrink, nor is liable to splinter from shot, is now very much used. African teak is also much used. Fir is used for light works, masts, etc. The bottoms of ships are liable to become covered with weeds and shells, and to be eaten through by worms. To prevent these evils, the bottoms were formerly covered with a thin sheathing of wood, which was replaced when worn. Lead has also been used. Ships are now sheathed almost universally with thin sheets of copper.

For further information on this subject, reference may be made to the following works: BOUGUER, *Traité du Navire*; CLAIRBOIS, *Traité Elementaire, etc.*; CHAPMAN's *Naval Archit.*, with Notes by Dr. INMAN; STEEL's *Elements*, with an Appendix, by J. KNOWLES, F.R.S.; FINCHAM's *Outlines of Ship-building*; the article "Ship-building" in the new edition of the *Ency. Britannica*.

Naval Courts are tribunals established as occasion may require, either on the high seas or in foreign parts, or at home, for inquiring into and dealing with various matters pertaining to maritime affairs.

Naval Stores. The principal of these are tar, pitch, rosin and turpentine, though other articles used in building and equipping vessels are sometimes included. The United States are so abundantly supplied with naval stores, that notwithstanding she is more extensively employed in ship-building than any other nation, she exports naval stores in large quantities.

NAVAL STORES EXPORTED FROM THE UNITED STATES TO GREAT BRITAIN.

Year 1848.....	\$586,739	Year 1852.....	\$945,224
" 1849.....	724,680	" 1853.....	1,099,532
" 1850.....	911,281	" 1854.....	1,565,638
" 1851.....	761,405	" 1855.....	1,188,366

STATEMENT SHOWING THE EXPORTS OF NAVAL STORES FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whither exported.	Tar and pitch.		Rosin & turpentine.	
	Barrels.	Dollars.	Barrels.	Dollars.
Prussia.....	.....	.....	4,227	8,096
Sweden and Norway.....	.....	.....	1,075	1,715
Danish West Indies.....	516	1,694	158	390
Hamburg.....	.....	.....	16,853	28,513
Bremen.....	.....	.....	16,394	27,962
Other German ports.....	.....	.....	102	172
Holland.....	80	164	37,979	70,098
Dutch West Indies.....	52	144	.....	.....
Dutch Guiana.....	394	657	10	14
Dutch East Indies.....	581	1,668	757	1,596
Belgium.....	.....	.....	68,867	128,368
England.....	25,518	72,372	257,248	702,372
Scotland.....	9,717	29,283	25,576	50,309
Ireland.....	.....	.....	2,026	4,173
Gibraltar.....	724	1,782	786	1,331
Malta.....	1,919	4,896	2,580	4,911
Canada.....	3,957	13,398	6,875	26,665
Other British N. Amer. pos.	12,658	27,083	3,290	7,174
British West Indies.....	2,476	5,949	820	557
British Honduras.....	288	589	.....	.....
British Guiana.....	740	1,887	.....	.....
British Possess. in Africa.....	557	1,380	990	1,984
British Australia.....	1,740	2,866	5,119	10,467
British East Indies.....	8,963	21,697	4,945	9,548
France on the Atlantic.....	.....	.....	5,860	10,275
France on the Medit.....	160	370	17,113	32,418
French North Amer. poss.....	216	550	.....	.....
French West Indies.....	808	1,674	222	802
French Guiana.....	102	313	.....	.....
Spain on the Atlantic.....	600	1,729	1,000	2,010
Spain on the Mediterranean.....	516	2,530	876	1,416
Cuba.....	8,912	10,759	615	2,388
Porto Rico.....	292	735	22	55
Portugal.....	1,051	2,387	1,643	3,082
Madeira.....	85	96	100	231
Cape de Verd Islands.....	55	172	.....	.....
Azores.....	300	495	.....	.....
Sardinia.....	.....	.....	2,937	5,430
Tuscany.....	.....	.....	2,737	4,583
Two Sicilies.....	.....	.....	1,240	1,994
Austria.....	.....	.....	1,739	3,237
Austrian possess. in Italy.....	268	575	2,204	3,692
Turkey in Europe.....	50	125	2,923	5,456
Turkey in Asia.....	450	1,087	824	1,526
Other ports in Africa.....	898	2,141	959	1,971
Hayti.....	653	1,631	252	715
San Domingo.....	132	495	.....	.....
Mexico.....	626	2,043	260	750
Central Republic.....	38	123	.....	.....
New Granada.....	941	2,539	226	641
Venezuela.....	380	1,005	1,608	3,713
Brazil.....	673	1,851	17,151	31,230
Uruguay.....	100	212	2,675	4,487
Buenos Ayres.....	400	950	1,455	2,459
Chili.....	1,165	2,784	2,259	4,542
Peru.....	1,041	2,634	2,030	4,631
Ecuador.....	49	147	.....	.....
Sandwich Islands.....	232	887	80	257
China.....	1,860	4,308	874	990
Whale Fisheries.....	81	142	.....	.....
Total.....	57,765	235,437	524,799	1,222,066

Navigation (Lat. *navis*, a ship), is that branch of science by which the mariner is taught to conduct his ship from one part or place to another. To understand the principles of navigation, and their practical application, it is necessary that the mariner should be acquainted with the form and magnitude of the earth, the relative situations of the lines conceived to be drawn on its surface, and have charts of the coasts and maps of the harbors which he may have occasion to visit. He must also understand the use of the instruments by which the direction in which a ship is steered, and the distance which she sails, are ascertained; and be able to deduce from the data supplied by such instruments the situation of his ship at any time, and to find the direction and distance of any place to which it may be required that the ship should be taken. A curve passing through any two places on the earth, and cutting every intervening meridian at the same angle, is called a *rumb line*; the angle which such a curve makes with each meridian is called the *course* between any two places through which the curve passes; and the arc of that curve intercepted between any two places is called their *nautical distance*. This distance is more than that measured on the arc of a great circle passing through the two places, un-

less both places are on the same meridian, or both on the equator, when the rhumb line and great circle coincide. The *difference of latitude* between any two places is an arc of a meridian intercepted between the parallels of latitude on which the places are situated; and the *difference of longitude* is the arc of the equator, or the angle at the pole included between the meridians of the places. Hence, when the latitudes or the longitudes of two places are of the same denomination with respect to *north or south, east or west*, the difference is found by subtracting the less from the greater; but when of different denominations, what is called their difference is found by taking their sum. See LATITUDE, LONGITUDE.

Navigation owes its origin to the Phenicians, about 1500 B.C. The first laws of navigation originated with the Rhodians, 916 B.C. The first account we have of any considerable voyage is that of the Phenicians sailing round Africa, 604 B.C.—BLAIR. On the destruction of Thebes by Alexander the Great, 335 B.C. its commerce passed to Alexandria, and subsequently the Romans became the chief masters of commerce. It passed successively from the Venetians, Genoese, and Hanse Towns, to the Portuguese and Spaniards; and from these to the English and Dutch.—HAYDN.

Plane charts and mariners' compass used about.	A. D. 1420
Variation of the compass discovered by Columbus.	1492
That the oblique rhumb lines are spirals, discovered by Nonius.	1537
First treatise on navigation.	1545
The log first mentioned by Bourne.	1577
Mercator's chart.	1599
Davis's quadrant, or backstaff, for measuring angles, abt.	1600
Logarithmic tables applied to navigation by Gunter.	1620
Middle latitude sailing introduced.	1623
Mensuration of a degree, Norwood.	1631
Hadley's quadrant.	1781
Harrison's time-keeper used.	1764
Nautical almanac first published.	1767
Barlow's theory of the deviation of the compass.	1820

See COMPASS, LATITUDE, LONGITUDE, etc.

Navigation Laws. These laws form an important branch of maritime law. In this country they are understood to comprise the various acts that have been passed, defining the way in which ships are to be manned, the peculiar privileges enjoyed by them, and the conditions under which foreign ships shall be allowed to engage in the trade of the country, either as importers or exporters of commodities, or as carriers of commodities from one part of the country to another.

Sketch of the History and Principles of the Navigation Laws.—The origin of the navigation laws of England, which are the foundation of ours, may be traced to the reign of Richard II., or perhaps to a still more remote period. But, as no intelligible account of the varying and contradictory enactments framed at so distant an epoch could be compressed within any reasonable space, it is sufficient to observe, that in the reign of Henry VII., two of the leading principles of the navigation law were distinctly recognized, in the prohibition of the importation of certain commodities, unless imported in ships belonging to, English owners, and manned by English seamen. In the early part of the reign of Elizabeth (5 Eliz. c. 5), foreign ships were excluded from the fisheries and coasting trade. The republican Parliament gave a great extension to the navigation laws, by the act of 1650, which prohibited all ships, of all foreign nations whatever, from trading with the plantations in America, without having previously obtained a license. These acts were, however, rather intended to regulate the trade between the different ports and dependencies of the empire, than to regulate intercourse with foreigners. But in the following year (9th of October, 1651), the republican Parliament passed the famous *Act of Navigation*. This act had a double object. It was intended not only to promote British navigation, but also to strike a decisive blow at the naval power of the Dutch, who then engrossed almost the whole *carrying trade* of the world, and against whom various circumstances had conspired

to incense the English. The act in question declared, that no goods or commodities whatever, of the growth, production or manufacture of Asia, Africa or America, should be imported either into England or Ireland, or any of the plantations, except in ships belonging to English subjects, and of which the master and the greater number of the crew were also English. Having thus secured the import trade of Asia, Africa and America, to the English ship-owners, the act went on to secure to them, as far as that was possible, the import trade of Europe. For this purpose, it further enacted, that no goods of the growth, production, or manufacture of any country in Europe, should be imported into Great Britain, except in British ships, or in such ships as were the real property of the people of the country or place in which the goods were produced, or from which they could only be, or most usually were, exported. The latter part of the clause was entirely leveled against the Dutch, who had but little native produce to export, and whose ships were principally employed in carrying the produce of other countries to foreign markets. Such were the leading provisions of this famous act. They were adopted by the regal government which succeeded Cromwell, and form the basis of the act of the 12th Car. 2, which continued, to a very recent period, to be the rule by which naval intercourse with other countries was mainly regulated; and has been pompously designated the *Charta Maritima* of England!

American View of the Rights of Navigation.—The liberty of passage to be enjoyed by one nation through the dominions of another, was treated by the most eminent writers on public law, as a qualified, occasional exception to the paramount rights of property. They made no distinction between the right of passage by a river, flowing from the possessions of one nation through those of another, to the ocean, and the same right to be enjoyed by means of any highway, whether of land or water, generally accessible to the inhabitants of the earth. The right of passage, then, must hold good for other purposes, besides those of trade; for objects of war as well as for those of peace; for all nations, no less than for any nation in particular, and be attached to artificial as well as to natural highways. The principle could not, therefore, be insisted on by the American government, unless it was prepared to apply the same principle by reciprocity, in favor of British subjects, to the navigation of the Mississippi and the Hudson, access to which from Canada might be obtained by a few miles of land carriage, or by the artificial communication created by the canals of New York and Ohio. Hence the necessity which has been felt by the writers on public law, of controlling the operation of a principle so extensive and dangerous, by restricting the right of transit to purposes of innocent utility, to be exclusively determined by the local sovereign. Hence the right in question is termed by them an imperfect right. But there was nothing in these writers, or in the stipulations of the treaties of Vienna, respecting the navigation of the great rivers of Germany, to countenance the American doctrine of an absolute natural right. These stipulations were the result of mutual consent, founded on considerations of mutual interest growing out of the relative situation of the different States concerned in this navigation. The same observation would apply to the various conventional regulations which had been at different periods applied to the navigation of the River Mississippi. As to any supposed right derived from the simultaneous acquisition of the St. Lawrence by the British and American people, it could not be allowed to have survived the treaty of 1783, by which the independence of the United States was acknowledged, and a partition of the British dominions in North America was made between the new government and that of the mother country.

This argument, it was replied, on the part of th

United States, that, if the St. Lawrence were regarded as a strait connecting navigable seas, as it ought probably to be, there would be less controversy. The principle on which the right to navigate straits depends, is, that they are accessorial to those seas which they unite, and the right of navigating which is not exclusive, but common to all nations; the right to navigate the seas drawing after it that of passing the straits. The United States and Great Britain have between them the exclusive right of navigating the lakes. The St. Lawrence connects them with the ocean. The right to navigate both (the lakes and the ocean), includes that of passing from one to the other through the natural link. Was it then reasonable or just that one of the two co-proprietors of the lakes should altogether exclude his associate from the use of a common bounty of nature, necessary to the full enjoyment of them? The distinction between the right of passage, claimed by one nation through the territories of another, on land, and that on navigable water, though not always clearly marked by the writers on public law, has a manifest existence in the nature of things. In the former case, the passage can hardly ever take place, especially if it be of numerous bodies, without some detriment or inconvenience to the State whose territory is traversed. But in the case of a passage on water no such injury is sustained. The American government did not mean to contend for any principle, the benefit of which, in analogous circumstances, it would deny to Great Britain. If, therefore, in the further progress of discovery, a connection should be developed between the Mississippi and Upper Canada, similar to that which exists between the United States and the St. Lawrence, the American government would be always ready to apply, in respect to the Mississippi, the same principles it contended for in respect to the St. Lawrence. But the case of rivers, which rise and debouch altogether within the limits of the same nation, ought not to be confounded with those which, having their sources and navigable portions of their streams in States above, finally discharge themselves within the limits of other States below. In the former case, the question as to opening the navigation to other nations, depended upon the same considerations which might influence the regulation of other commercial intercourse with foreign States, and was to be exclusively determined by the local sovereign. But in respect to the latter the free navigation of the river was a natural right in the upper inhabitants, of which they could not be entirely deprived by the arbitrary caprice of the lower State. Nor was the fact of subjecting the use of this right to treaty regulations, as was proposed at Vienna to be done in respect to the navigation of the European rivers, sufficient to prove that the origin of the right was conventional, and not natural. It often happened to be highly convenient, if not sometimes indispensable, to avoid controversies, by prescribing certain rules for the enjoyment of a natural right. The law of nature, though sufficiently intelligible in its great outlines and general purposes, does not always reach every minute detail which is called for by the complicated wants and varieties of modern navigation and commerce. Hence the right of navigating the ocean itself, in many instances, principally incident to a state of war, is subjected, by innumerable treaties, to various regulations. These regulations—the transactions of Vienna, and other analogous stipulations—should be regarded only as the spontaneous homage of man to the permanent Lawgiver of the universe, by delivering his great works from the artificial shackles and selfish contrivances to which they have been arbitrarily and unjustly subjected.—WHEATON'S *International Law*, pp. 263-266.—[This chapter in MR. WHEATON'S work furnishes the best view, in brief, of the rights of navigation of the St. Lawrence, the Mississippi, the Rhine, and of the rights of Territory.—EDS. C. OF C.]

Laws of trade and navigation can not affect foreigners, beyond the territorial limits of the State, but they are binding upon its citizens, wherever they may be. Thus, offenses against the laws of a State, prohibiting or regulating any particular traffic, may be punished by its tribunals, when committed by its citizens, in whatever place; but if committed by foreigners, such offenses can only be thus punished when committed within the territory of the State, or on board of its vessels, in some place not within the jurisdiction of any other State.—WHEATON, *Int. Law*, p. 175.

Claims to Portions of the Sea upon the Ground of Prescription.—Besides those bays, gulfs, straits, mouths of rivers, and estuaries which are inclosed by capes and headlands belonging to the territory of the State, a jurisdiction and right of property over certain other portions of the sea have been claimed by different nations, on the ground of immemorial use. Such, for example, was the sovereignty formerly claimed by the republic of Venice over the Adriatic. The maritime supremacy claimed by Great Britain over what are called the Narrow Seas, has generally been asserted merely by requiring certain honors to the British flag in those seas, which have been rendered or refused by other nations, according to circumstances, but the claim itself has never been sanctioned by general acquiescence. Straits are passages communicating from one sea to another. If the navigation of the two seas thus connected, is free, the navigation of the channel by which they are connected ought also to be free. Even if such strait be bounded on both sides by the territory of the same sovereign, and is at the same time so narrow as to be commanded by cannon shot from both shores, the exclusive territorial jurisdiction of that sovereign over such strait is controlled by the right of other nations to communicate with the seas thus connected.

Such right may, however, be modified by special compact, adopting those regulations which are indispensably necessary to the security of the State whose interior waters thus form the channel of communication between different seas, the navigation of which is free to other nations. Thus the passage of the strait may remain free to the private merchant vessels of those nations having a right to navigate the seas it connects, while it is shut to all foreign armed ships in time of peace.—WHEATON'S *Int. Law*, pp. 288-240.

Navigation of the Mississippi.—By the treaty of peace concluded at Paris in 1763, between France, Spain, and Great Britain, the province of Canada was ceded to Great Britain by France, and that of Florida to the same power by Spain, and the boundary between the French and British possessions in North America was ascertained by a line drawn through the middle of the River Mississippi, from its source to the Iberville, and from thence through the latter river and the lakes of Maurepas and Pontchartrain to the sea. The right of navigating the Mississippi was at the same time secured to the subjects of Great Britain from its source to the sea, and the passages in and out of its mouth, without being stopped or visited, or subjected to the payment of any duty whatsoever. The province of Louisiana was soon afterward ceded by France to Spain; and by the treaty of Paris, 1763, Florida was retroceded to Spain by Great Britain. The independence of the United States was acknowledged, and the right of navigating the Mississippi was secured to the citizens of the United States and the subjects of Great Britain by the separate treaty between these powers. But Spain, having thus become possessed of both banks of the Mississippi at its mouth, and a considerable distance above its mouth, claimed its exclusive navigation below the point where the southern boundary of the United States struck the river.

This claim was resisted, and the right to participate

in the navigation of the river from its source to the sea was insisted on by the United States, under the treaties of 1763 and 1783, as well as by the law of nature and nations. The dispute was terminated by the treaty of San Lorenzo el Real, in 1795, by the 4th article of which his Catholic majesty agreed that the navigation of the Mississippi, in its whole breadth, from its source to the ocean, should be free to the citizens of the United States; and by the 22d article they were permitted to deposit their goods at the port of New Orleans, and to export them from thence, without paying any other duty than the hire of the warehouses. The subsequent acquisition of Louisiana and Florida by the United States having included within their territory the whole river from its source to the Gulf of Mexico, and the stipulation in the treaty of 1783, securing to British subjects a right to participate in its navigation, not having been renewed by the treaty of Ghent in 1814, the right of navigating the Mississippi is now vested exclusively in the United States.—WHEATON'S *Int. Law*, pp. 257, 258. The navigation of the continuous waters of the United States and Canada is provided for in the following articles of the treaty of June 5, 1854. The third article, whose operation may be affected at the will of the American government, by a suspension of this privilege, as stipulated in the fourth article, on the part of Great Britain, provides for a reciprocal trade, free of duty, between the United States and the British colonies, in the articles of their respective growth and produce, as enumerated in the schedule thereto annexed.

"It is agreed that the citizens and inhabitants of the United States shall have the right to navigate the River St. Lawrence and the canals in Canada, used as the means of communicating between the Great Lakes and the Atlantic Ocean, with their vessels, boats, and crafts, as fully and freely as the subjects of her Britannic majesty, subject only to the same tolls and other assessments as now are, or may hereafter be, exacted of her majesty's said subjects; it being understood, however, that the British government retains the right of suspending this privilege on giving due notice thereof to the government of the United States. It is further agreed, that if at any time the British government should exercise the said reserved right, the government of the United States shall have the right of suspending, if it think fit, the operation of article 3, of the present treaty, in so far as the province of Canada is affected thereby, for so long as the suspension of the free navigation of the River St. Lawrence or the canals may continue. It is further agreed that British subjects shall have the right freely to navigate Lake Michigan with their vessels, boats, and crafts, so long as the privilege of navigating the River St. Lawrence, secured to Americans by the above clause of the present article, shall continue; and the government of the United States further engages to urge upon the State governments to secure to the subjects of her Britannic majesty the use of the several State canals, on terms of equality with the inhabitants of the United States."—WHEATON'S *Int. Law*, pp. 266, 267. [A full understanding of this subject, and of the able views of Mr. WHEATON, can be had only by a careful reading of his elaborate and highly-prized work on *International Law*.—EDS. C. of C.]

Navigators' Islands, a group of islands in the southern Pacific Ocean, remarkable for their extent, fertility, and population. They are about 10 in number, and are situated between 169° and $172^{\circ} 30'$ W. long., and from lat. $13^{\circ} 25'$ to an uncertain boundary southward. When seen from the ocean, they present a lofty appearance, and are mountainous, but neither surrounded with a low border nor inclosed by reefs, like the Society Islands. The first discovery of these islands was made in 1722, by Roggewin and Banman, who fell in with the easternmost of the number; while Bougainville, in 1768, added another; and Perouse, in

1787, discovered the two westernmost, which are the largest, being more than 40 miles in length. The last navigator was informed of three more to the southward. The whole group was visited in 1791 by Captain Edwards. The inhabitants are a stout and well-made race, of the ordinary height of 5 feet 9 or 11 inches. They are altogether savage in their manners, which are said to be remarkably indecent. They are also of the most ferocious disposition. The least dispute between them is followed by blows from clubs, sticks, or paddles, and is often attended with the loss of life. They are very ingenious, and fashion their work dexterously with hatchets shaped like adzes, and made of very fine and compact basalt. With these they finish works in wood, and give them so high a polish that they appear to be coated with the finest varnish. They also manufacture a species of cloth which possesses great strength and pliability, and is well calculated for the sails of canoes. The name of Navigators' Islands was bestowed by Bougainville, from the practice which prevails among the inhabitants of continually traveling in canoes. We have no data upon which we can calculate the amount of the population, but it must be considerable, considering that these islands are among the most fertile in the South Seas.

Navy Department. The Navy Department was created by an act of Congress, 30th April, 1798, and is under the direction of the Secretary of the Navy. The Department conducts its business in several bureaux, namely, the Bureau of Docks and Navy Yards; the Bureau of Ordnance and Hydrography; the Bureau of Construction, Equipments, and Repairs; the Bureau of Provisions and Clothing; the Bureau of Medicine and Surgical Instruments, etc.; and the National Observatory at Washington is under the charge of this Department. The ministerial duties of these several bureaux were formerly exercised by a Board of Navy Commissioners.

Secretaries of the Navy.—George Cabot, Mass., May 3, 1798; Benjamin Stoddard, Md., May 21, 1798; Robert Smith, Md., January 26, 1802; Jacob Crowninshield, Mass., March 2, 1805; Paul Hamilton, S. C., March 7, 1809; William Jones, Penn., January 12, 1813; Benjamin W. Crowninshield, Mass., December 17, 1814; Smith Thompson, N. Y., November 30, 1818; Samuel L. Southard, N. J., December 9, 1823; John Branch, N. C., March 9, 1829; Levi Woodbury, N. H., August, 1831; Mahlon Dickerson, N. J., June 30, 1834; James K. Paulding, N. Y., June 30, 1838; George E. Badger, N. C., March 5, 1841; Abel P. Upshur, Va., September 13, 1841; David Henshaw, Mass., July 24, 1843; Thomas W. Gilmer, Va., February 15, 1844; John Y. Mason, Va., March 14, 1844; George Baneroff, Mass., March 10, 1845; John Y. Mason, Va., 1846; William B. Preston, Va., March 7, 1849; William A. Graham, N. C., July 20, 1850; James C. Dobbin, N. C., March 5, 1853; Isaac Toucey, Conn., March, 1857.

Navy Yards of the United States.—Portsmouth, Charlestown, Brooklyn, Philadelphia, Washington, Gosport, Pensacola.

Navy Dry Docks.—Charlestown, Brooklyn, N. Y., Pensacola, Gosport.

United States' Navy Squadrons.—East Indian, Pacific, African, Brazilian, Mediterranean, Home (West Indies).

Navy Hospitals.—Chelsea, Mass., New York, Portsmouth, Va., Pensacola.

Naval Magazines.—Charlestown, Mass., New York, Washington, Norfolk, Pensacola.

National Observatory, Washington; Naval Academy, Annapolis; Naval Asylum, Philadelphia.

Navy. The first fleet of galleys, like those of the Danes, was built by Alfred, A.D. 897. In the time of Henry VIII. the British navy consisted of 1 ship of 1200 tons, 2 of 800 tons, and 6 or 7 smaller; the largest was called the *Great Harry*. Elizabeth's fleet at

the time of the Spanish Armada, in 1588, consisted of only 28 vessels, none larger than frigates. James I. added 10 ships of 1400 tons each, and 64 guns, the largest then ever built.—GIBSON'S *Camden*.

ACCOUNT OF THE PROGRESSIVE INCREASE OF THE ROYAL NAVY OF ENGLAND FROM HENRY VIII'S REIGN TO THE CLOSE OF THE WAR, 1814.

Year.	Ships.	Tons.	Men voted.	Navy estimate.
1521	16	7,260	...	no account.
1578	24	10,506	6,700	"
1608	42	17,055	8,346	"
1658	157	57,000	21,910	"
1688	178	101,892	42,000	"
1702	272	159,020	40,000	£1,056,915
1760	412	321,184	70,000	8,227,143
1793	498	433,326	45,000	5,525,381
1800	767	668,744	135,000	12,422,337
1808	869	892,500	143,500	17,496,047
1814	901	966,000	146,000	18,786,509

Neap, or Neep Tides, are the lowest tides, being those which are produced when the attractions of the sun and moon on the waters of the ocean are exerted in directions perpendicular to each other. When the two forces act in the same or exactly opposite directions, the *spring* or highest tides are produced. The neap tides take place about four or five days before the new and full moons. See **TIDES**.

Needles. They make a considerable article of commerce, as well as of home trade in England. German and Hungarian steel is of most repute for needles. The first that were made in England were fabricated in Cheapside, London, in the time of the sanguinary Mary, by a negro from Spain; but, as he would not impart the secret, it was lost at his death, and not recovered again till 1566, in the reign of Elizabeth, when Elias Growse, a German, taught the art to the English, who have since brought it to the highest degree of perfection.—*Stow*. The family of the Greenings, ancestors of Lord Dorchester, established a needle manufactory in Bucks about this time.—*ANDERSON*.

Needles are made from the best steel, reduced by a wire-drawing machine to the suitable diameter. The manufacture is supposed to have originated in Spain, and to have been introduced into England about the year 1565, by Elias Krause, or Growse, who then settled in London. Dr. Ure, in his *Dictionary of Arts*, states that "the construction of a needle requires about 120 operations; but they are rapidly and uninterruptedly successive. A child can trim the eyes of 4000 needles per hour. When we survey a manufactory of this kind, we can not fail to observe that the diversity of operations which the needles undergo bears the impress of great mechanical refinement. In the arts, to divide labor is to abridge it; to multiply operations is to simplify them; and to attach an operative exclusively to one process, is to render him much more economical and productive."—*E. A.*

STATEMENT SHOWING THE IMPORTS OF NEEDLES INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Portland and Falmouth.....	\$276
Boston and Charlestown.....	86,089
New York.....	202,264
Philadelphia.....	5,596
Baltimore.....	829
Charleston.....	126
New Orleans.....	983
San Francisco.....	397
Total.....	\$248,060

Nests, Esulent. A species of nests built by swallows peculiar to the Indian Islands, and very much esteemed in China and other parts of the world. These nests resemble in form those of other swallows; they are formed of a viscid substance, and in external appearance as well as consistence are not unlike fibrate il-concocted isinglass. Esulent nests are principally found in Java, in caverns usually situated on the sea-coast. Nothing satisfactory is known as to the substance of which these nests are composed.

Net (*Fr. Filet, reseau; Ger. Netz*), is a textile fabric of knotted meshes for catching fish and other purposes. Each mesh should be so secured as to be incapable of enlargement or diminution. The French government offered in 1802 a prize of 10,000 francs to the person who should invent a machine for making nets upon automatic principles, and adjudged it to M. Buron, who presented his mechanical invention to the *Conservatoire des Arts Mètièrs*. It does not appear, however, that this machine has accomplished the object in view; for no establishment was ever mounted to carry it into execution. Nets are usually made by the fishermen and their families during the periods of leisure. The formation of a mesh is too simple a matter to require description in this dictionary.

Nett (*It. netto, pure*), that which remains of a weight, quantity, etc., after making certain deductions. Thus, in mercantile language, the *nett weight* is the weight of any article after deducting tare and tret; *nett profits, incomè, etc.*, is the absolute profit or income, after deducting expenses, interest, etc. It is opposed to *gross* (*brutto*).

Nettings, in a ship, a sort of grates made of small ropes seized together with rope-yarn, or twine, and fixed upon the quarters and in the tops. They are sometimes stretched upon the ledges from the waist-trees to the roof-trees, from the top of the fore-castle to the poop, and sometimes are laid in the waist of a ship to serve instead of gratings.

Netherlands (Kingdom of the), or Holland (*Du. Koninkrijk der Nederlanden; Fr. Royaume des Pays Bas*), a State of western Europe, on the German Ocean (capital Amsterdam), composed of the Netherlands proper, or the ancient republic of the Seven United Provinces, and part of the Duchy of Limburg, situated between lat. 50° 48' and 59° 21' N., and long. 3° 24' and 7° 12' E., bounded east by Hanover and Prussia, south by Belgium and the Grand Duchy of Luxemburg (the south-east portion of which is held by the King of the Netherlands), and west and north by the German Ocean. Extent and population as follows:

Provinces.	Area in geogr. miles.	Population in 1852.	Schools, 1851.
Brabant (North).....	98,395	403,657	403
Gelderland.....	92,720	383,394	400
Holland (South).....	55,275	534,693	460
Holland (North).....	45,133	506,006	530
Zeeland.....	31,633	163,318	155
Utrecht.....	25,244	158,946	163
Friesland.....	59,550	255,915	355
Overijssel.....	60,530	224,773	233
Groningen.....	41,707	195,264	246
Drentho.....	45,529	86,735	140
Limburg—Duchy.....	40,100	210,275	210
	593,905	3,168,006	3,295
Grand Duchy of Luxemburg, Dec. 31st. 1851...	46,600	194,619	Attendance, 861,015
Total.....	639,915	3,362,625	

The leading features of the new navigation laws of the Netherlands may be gathered from the following summary: 1. Unconditional repeal of discriminating favors granted to the Dutch flag, by suppression of the rules allowing to this flag preference above foreign flags. 2. Conditional similarity of flag in the navigation to and from the Netherlands' colonies. 3. Stipulations by law concerning the trade and navigation in the colonies of the realm carried on by other nations. 4. Repeal of interdiction to grant Netherlands registers to foreign-built vessels, by their admittance for registry (naturalization) at a duty of 4 per cent. of their value. 5. Diminishing of import duties on principal materials for ship-building. 6. Suspension of the shipping duties on the Rhine and Yssel. 7. Total abolition of transit duties.

Public revenue, in 1853, 71,685,772 florins, of which amount nearly half is raised by direct taxation and excise duties. Expenditure, 70,985,078 florins. National debt, 1,206,493,330 florins. The marine force in

actual service on 1st July, 1852, comprised 6087 men, exclusive of those in the colonies. The merchant marine is comprised of 2000 vessels, aggregate burden 20,000 lasts. The following table shows the extent and population of the colonial possessions of the kingdom of the Netherlands in 1849 :

Colonies.	Area in geog. miles.	Population in 1849.
ASIA.		
Java, and adjacent islands.....	2,444.6	9,560,380
Sumatra, West coast.....	2,200.6	988,585
" Benkulen.....	455.6	98,875
" Lampong.....	475.0	82,900
" Palembang.....	2,558.4	272,000
" Indragiri.....	676.8	50,000
Assahan, Batoe, Bara, Sirda, Dell, etc.	852.8	100,000
Banca.....	356.0	48,000
Rhio.....	148.6	80,000
Borneo, Sambas.....	244.3	45,819
" West coast.....	2,561.6	304,076
" South and east coast.....	6,567.8	811,100
Macassar, Celebes.....	2,149.9	1,569,000
Amboyna.....	475.9	277,508
Menado.....	1,267.2	185,000
Ternate.....	1,129.7	97,329
Banda.....	411.3	155,765
Timor.....	1,042.6	1,057,800
Lombok.....	191.5	1,105,000
New Guinea.....	3,210.0	200,000
Total.....	28,923.2	16,478,187
AMERICA.		
Guiana.....	2,812.5	64,270
Curacao and St. Eustache.....	17.4	26,311
AFRICA.		
Coast of Guinea.....	500.0	100,000
Grand total.....	82,253.1	16,668,718

The Netherlands is a name, which, for several centuries, was applied to the countries now forming the kingdoms of Belgium, and the Netherlands, and part of the north of France (Departments Nord and Pas-de-Calais). This country belonged almost entirely to Charles V. United to Franche-Comté, it formed the circle of Burgundy. From this seven of the north provinces separated themselves in 1579, and formed the republic of Holland, or the Seven United Provinces. Part of the low country was conquered by Louis XIV., and called the French Netherlands; the rest, first under the dominion of Spain, passed in 1714 to that of Austria, and was called Spanish Netherlands, Austrian Netherlands, or Belgium.

The fisheries formed the origin of prosperity in the Netherlands, and the herrings prepared by the Dutch still maintain their superiority. In 1842, 1603 boats, manned by 8280 men, were employed in this fishery. The whale fishery in the Sea of Spitzbergen has been profitably carried on since the 16th century. The manufacturing industry of the country is very active, Holland having long been celebrated for its linens, velvets, and paper; and during the 17th and 18th centuries, its typography enjoyed a well-merited reputation. The absence of cold, and the prevalence of strong winds, have led to the adoption of the wind-mill as a motive power, and it is universally employed in all kinds of work. The chief manufactures are linen of the finest quality, woollens, silks, and velvets, paper, leather, cordage, hats, ribbons, saltpetre, and tobacco. The manufacture of cotton has been recently introduced. There are numerous distilleries of "Geneva" (rather jenever, from the juniper berry, with which the gin is flavored), or "Hollands," and extensive bleach fields, brick and tile works. Holland presents the appearance of an immense net-work of canals, which form the usual access not only to towns and villages, but even to private mansions. The most important is that of North Holland, between Amsterdam and the Helder, the finest work of the kind in Europe, 50 miles in length, 125 feet broad at the surface, and 21 feet in depth. By means of this important work, ships bound for Amsterdam avoid the danger and delay of navigating the Zuyder Zee; it is spacious enough to admit 2 frigates abreast. Since not only

the surface but the bed of many of the canals is above the level of the land, the drainage of the *polders* or meadows, through which they pass, is an object of great solicitude; it is effected by means of pumps worked by wind-mills. In a country where human industry is engaged in a continual struggle with the sea, from the domains of which it has been conquered, the management of dykes, canals, and roads, is a special object of attention on the part of the government. The roads, which are always formed on the dykes and bordered by canals, are excellent. In 1849 lines of railroad were completed from Amsterdam west to Harlem, and south to Leyden, the Hague, and Rotterdam, and south and east by Utrecht to Arnhem. The principal imports consist of colonial products and manufactured goods, corn, wines, cotton, wool, and leather, valued in 1851 at 303,993,224 florins. Chief exports are butter, cheese, dried fish, gin, the manufactures of the country, and colonial produce; valued at 242,744,806 florins.

A letter from the United States' consul at the Hague gives the annexed information, under date of July 20, 1855: "The second Chamber has, by a vote of 43 to 7, passed the bill abolishing the tonnage dues. The deficit in the revenues, caused by this bill, is calculated at 500,000 francs a year, and is to be covered by an additional excise duty on refined sugar, which has also been passed by the Chamber. The abolition of the tonnage dues, and of the still more vexatious malt tax, has been hailed throughout the country with joy as an indication of a progressive policy, to which the present ministry has appeared but little inclined till now."

COMMERCE OF THE NETHERLANDS IN 1854.

Countries.	Imports.	Exports.
	Florins.	Florins.
Australia.....	479,511	479,511
Belgium.....	41,446,556	80,469,426
Brazil.....	1,240,883	221,585
Bremen.....	1,162,682	773,580
California.....	58,094	61,904
China.....	561,900	58,094
Cuba.....	2,461,486	244,861
Curacao.....	135,614	267,319
Denmark.....	3,968,715	1,190,010
France.....	12,171,902	13,074,685
Greenland, etc.....	9,526	.....
Great Britain.....	93,761,865	75,194,278
Hamburg.....	6,739,502	9,824,588
Hanover and Oldenburg.....	5,488,925	2,587,567
Java, etc.....	74,838,223	29,402,129
Canary Islands.....	2,772,244	242,623
Papal States.....	.....	854,834
Coast of Guinea.....	422,155	517,116
Lubeck.....	88,559	16,523
Mecklenburg.....	69,846	77,665
Naples and Sicily.....	2,002,061	3,805,510
United States.....	7,545,043	5,136,923
Norway.....	4,924,728	844,943
Austria.....	974,310	3,802,120
Philippine Islands.....	179,816	.....
Portugal.....	743,639	508,587
Russia (on Baltic & White Seas).....	7,510,808	87,443
Russia (on the Black Sea).....	1,743,529	.....
Sardinia.....	264,157	2,925,746
Spain.....	1,127,687	785,530
America, except U. S.....	429,458	822,965
Surinam.....	4,364,095	1,501,994
German Customs' Union.....	63,819,497	116,435,236
Tuscany.....	576,222	2,769,146
Turkey, Greece, etc.....	778,998	3,772,565
Sweden.....	1,125,047	579,305
Other ports.....	115,011	.....
Total.....	356,484,519	308,780,801
Year preceding.....	821,051,729	272,801,666
Difference.....	35,432,790	38,979,135

SHIPPING IN 1854 AND 1855.

Vessels.	Entered.		Cleared.	
	No.	Tons.	No.	Tons.
Loaded (1854).....	7,128	1,154,450	4,538	822,785
In ballast.....	474	89,682	3,291	461,896
Total in 1854.....	7,602	1,244,132	7,824	1,284,681
Loaded (1855).....	7,788	1,303,450	4,242	810,126
In ballast.....	469	81,098	4,208	683,544
Total in 1855.....	8,257	1,384,548	8,445	1,493,670

Neutrals. *Of the General Rights and Duties of Neutral Nations.*—The rights and duties which belong to a state of neutrality form a very interesting title in the code of international law. They ought to be objects of particular study in this country, inasmuch as it is our true policy to cherish a spirit of peace, and to keep ourselves free from those political connections which would tend to draw us into the vortex of European contests. A nation that maintains a firm and scrupulously impartial neutrality, and commands the respect of all other nations by its prudence, justice, and good faith, has the best chance to preserve unimpaired the blessings of its commerce, the freedom of its institutions, and the prosperity of its resources. Belligerent nations are interested in the support of the just rights of neutrals, for the intercourse which is kept up by means of their commerce contributes greatly to mitigate the evils of war. The public law of Europe has established the principle, that, in time of war, countries not parties to the war, nor interposing in it, shall not be materially affected by its action; but they shall be permitted to carry on their accustomed trade, under the few necessary restrictions which we shall hereafter consider.

A neutral has a right to pursue his ordinary commerce, and he may become the carrier of the enemy's goods, without being subject to any confiscation of the ship, or of the neutral articles on board; though not without the risk of having the voyage interrupted by the seizure of the hostile property. As the neutral has a right to carry the property of enemies in his own vessel, so, on the other hand, his own property is inviolable, though it be found in the vessels of enemies. But the general inviolability of the neutral character goes further than merely the protection of neutral property. It protects the property of the belligerents when within the neutral jurisdiction. It is not lawful to make neutral territory the scene of hostility, or to attack an enemy while within it; and if the enemy be attacked, or any capture made, under neutral protection, the neutral is bound to redress the injury, and effect restitution. The books are full of cases recognizing this principle of neutrality.—*KENT's Com.*

Prizes brought into Neutral Ports.—A neutral has no right to inquire into the validity of a capture, except in cases in which the rights of neutral jurisdiction were violated; and, in such cases, the neutral power will restore the property, if found in the hands of the offender, and within its jurisdiction, regardless of any sentence of condemnation by a court of a belligerous captor. It belongs solely to the neutral government to raise the objection to a capture and title, founded on the violation of neutral rights. The adverse belligerent has no right to complain when the prize is duly libeled before a competent court. If any complaint is to be made on the part of the captured, it must be by his government to the neutral government, for a fraudulent, or unworthy, or unnecessary submission to a violation of its territory, and such submission will naturally provoke retaliation.—*Ibid.*

Arming in Neutral Ports.—The government of the United States was warranted, by the law and practice of nations, in the declarations made in 1793, of the rules of neutrality, which were particularly recognized as necessary to be observed by the belligerent powers, in their intercourse with this country. These rules were, that the original arming or equipping of vessels in our ports, by any of the powers at war, for military service, was unlawful; and no such vessel was entitled to an asylum in our ports. The equipment by them of government vessels of war, in matters of which, if done to other vessels, would be applicable equally to commerce or war, was lawful. The equipment by them of vessels fitted for merchandise and war, and applicable to either, was lawful; but if it were of a nature solely applicable to war it was unlawful. And if the armed vessel of one nation should

depart from our jurisdiction, no armed vessel, being within the same, and belonging to an adverse belligerent power, should depart until 24 hours after the former, without being deemed to have violated the law of nations.—*Ibid.*

Prizes in Neutral Ports.—Though a belligerent vessel may not enter within neutral jurisdiction for hostile purposes, she may, consistently with a state of neutrality, until prohibited by the neutral power, bring her prize into a neutral port, and sell it. The neutral power is, however, at liberty to refuse this privilege, provided the refusal be made, as the privilege ought to be granted to both parties, or to neither. The United States, while a neutral power, frequently asserted the right to prohibit, at discretion, the sale within their ports of prizes brought in by the belligerents; and the sale of French prizes was allowed as an indulgence merely, until it interfered with the treaty of England of 1794, in respect to prizes made by privateers.—*Ibid.*

Neutral Property in an Enemy's Vessel.—It is also a principle of the law of nations relative to neutral rights that the effects of neutrals, found on board of enemy's vessels, shall be free; and it is a right as fully and firmly settled as the other, though, like that, it is often changed by positive agreement.

The two distinct propositions, that enemy's goods found on board a neutral ship may lawfully be seized as prize of war, and that the goods of a neutral found on board of an enemy's vessel were to be restored, have been explicitly incorporated into the jurisprudence of the United States, and declared by the Supreme Court to be founded in the law of nations. The rule, as it was observed by the court, rested on the simple and intelligible principle, that war gave a full right to capture the goods of an enemy, but gave no right to capture the goods of a friend.

The neutral flag constituted no protection to enemy's property, and the belligerent flag communicated no hostile character to neutral property. The character of the property depended upon the fact of ownership, and not upon the character of the vehicle in which it is found.—*Ibid.*

Of Restrictions upon Neutral Trade.—The principal restriction which the law of nations imposes on the trade of neutrals, is the prohibition to furnish the belligerent parties with warlike stores, and other articles which are directly auxiliary to warlike purposes. Such goods are denominated contraband of war; but in the attempt to define them, the authorities vary, or are deficient in precision, and the subject has long been a fruitful source of dispute between neutral and belligerent nations.

Contraband of War.—In the time of Grotius, some persons contended for the rigor of war, and others for the freedom of commerce. As neutral nations are willing to seize the opportunity which war presents, of becoming carriers for the belligerent powers, it is natural that they should desire to diminish the list of contraband as much as possible. Grotius distinguishes between things which are useful only in war, as arms and ammunition, and things which serve merely for pleasure, and things which are of a mixed nature, and useful both in peace and war. He agrees with other writers in prohibiting neutrals from carrying articles of the first kind to the enemy, as well as in permitting the second kind to be carried. As to articles of the third class, which are of indiscriminate use in peace and war, as money, provisions, ships and naval stores, he says that they are sometimes lawful articles of neutral commerce, and sometimes not; and the question will depend upon circumstances existing at the time.

Law of Blockades.—A neutral may also forfeit the immunities of his national character by violations of blockade; and among the rights of belligerents, there is none more clear and incontrovertible, or more just and necessary in the application, than that which gives

rise to the law of blockade. Bynkershoek says, it is founded on the principles of natural reason, as well as on the usage of nations; and Grotius considers the carrying of supplies to a besieged town, or a blockaded port, as an offense exceedingly aggravated and injurious. They both agree that a neutral may be dealt with severely; and Vattel says he may be treated as an enemy. The law of blockade is, however, so harsh and severe in its operation, that, in order to apply it, the fact of the actual blockade must be established by clear and unequivocal evidence; and the neutral must have had due previous notice of its existence; and the squadron allotted for the purposes of its execution must be competent to cut off all communication with the interdicted place or port; and the neutral must have been guilty of some act of violation, either by going in, or attempting to enter, or by coming out with a cargo laden after the commencement of the blockade. The failure of either of the points requisite to establish the existence of a legal blockade, amounts to an entire defeasance of the measure, even though the notification of the blockade had issued from the authority of the government itself.

Right of Search at Sea.—In order to enforce the rights of belligerent nations against the delinquencies of neutrals, and to ascertain the real as well as assumed character of all vessels on the high seas, the law of nations arms them with the practical power of visitation and search. The duty of self-preservation gives to belligerent nations this right. It is founded upon necessity, and is strictly and exclusively a war right, and does not rightfully exist in time of peace, unless conceded by treaty. All writers upon the law of nations, and the highest authorities, acknowledge the right in time of war as resting on sound principles of public jurisprudence, and upon the institutes and practice of all great maritime powers. And if, upon making the search, the vessel be found employed in contraband trade, or in carrying enemy's property, or troops, or dispatches, she is liable to be taken and brought in for adjudication before a prize court.

Neutral nations have frequently been disposed to question and resist the exercise of this right. This was particularly the case with the Baltic confederacy, during the American war, and with the convention of the Baltic powers in 1801. The right of search was denied, and the flag of the State was declared to be a substitute for all documentary and other proof, and to exclude all right of search. Those powers armed for the purpose of defending their neutral pretensions; and England did not hesitate to consider it as an attempt to introduce, by force, a new code of maritime law, inconsistent with her belligerent rights, and hostile to her interests, and one which would go to extinguish the right of maritime capture. The attempt was speedily frustrated and abandoned, and the right of search has, since that time, been considered incontrovertible.

This right of search is confined to private merchant vessels, and does not apply to public ships of war. Their immunity from the exercise of any civil or criminal jurisdiction but that of the sovereign power to which they belong, is uniformly asserted, claimed and conceded. A contrary doctrine is not to be found in any jurist or writer on the law of nations, or admitted in any treaty; and every act to the contrary has been promptly met and condemned.

Neutral Documents.—A neutral is bound, not only to submit to search, but to have his vessel duly furnished with the genuine documents requisite to support her neutral character. The most material of these documents are, the register, passport or sea letter, muster-roll, log-book, charter-party, invoice and bill of lading. The want of some of these papers is strong presumptive evidence against the ship's neutrality; yet the want of any one of them is not absolutely conclusive. "*Si aliquid ex solemnibus deficit, cum equi-*

tas poscit subveniendum est." The concealment of papers material for the preservation of the neutral character, justifies a capture and carrying into port for adjudication, though it does not absolutely require a condemnation. It is good ground to refuse cost and damages on restitution, or to refuse further proof to relieve the obscurity of the case, where the cause labored under heavy doubts, and there was *prima facie* ground for condemnation independent of the concealment.

The spoliation of papers is a still more aggravated and inflamed circumstance of suspicion. That fact may exclude further proof, and be sufficient to infer guilt; but it does not in England, as it does by the maritime law of other countries, create an absolute presumption *juris et de jure*; and yet, a case that escapes with such a brand upon it, is saved so as by fire. The Supreme Court of the United States has followed the less rigorous English rule, and held that the spoliation of papers was not, of itself, sufficient ground for condemnation, and that it was a circumstance open for explanation, for it may have arisen from accident, necessity, or superior force.—KENT'S *Comm.*, vol. I. See WHEATON'S *International Law*.

Neutral Trade.—The present position of the United States in regard to neutrals may be learned from the following extract:

"Soon after the commencement of the late war in Europe, this government submitted to the consideration of all maritime nations two principles for the security of neutral commerce; one, that the neutral flag should cover enemy's goods, except articles contraband of war; and the other, that neutral property on board merchant vessels of belligerents should be exempt from condemnation, with the exception of contraband articles. These were not presented as new rules of international law, having been generally claimed by neutrals, though not always admitted by belligerents. One of the parties to the war (Russia), as well as several neutral powers, promptly acceded to these propositions; and the two other principal belligerents, Great Britain and France, having consented to observe them for the present occasion, a favorable opportunity seemed to be presented for obtaining a general recognition of them both in Europe and America.

"But Great Britain and France, in common with most of the States of Europe, while forbearing to reject, did not affirmatively act upon the overtures of the United States.

"While the question was in this position, the representatives of Russia, France, Great Britain, Austria, Prussia, Sardinia, and Turkey, assembled at Paris, took into consideration the subject of maritime rights, and put forth a declaration containing the two principles which this government had submitted nearly two years before to the consideration of maritime powers, and adding thereto the following propositions: 'Privateering is and remains abolished,' and 'Blockades, in order to be binding, must be effective, that is to say, maintained by a force, sufficient really to prevent access to the coast of the enemy;' and to the declaration thus composed of four points, two of which had already been proposed by the United States, this government has been invited to accede by all the powers represented at Paris, except Great Britain and Turkey. To the last of the two additional propositions—that in relation to blockades—there can certainly be no objection. It is merely the definition of what shall constitute the effectual investment of a blockaded place, a definition for which this government has always contended, claiming indemnity for losses where a practical violation of the rule thus defined has been injurious to our commerce. As to the remaining article of the declaration of the conference of Paris, 'that privateering is and remains abolished,' I certainly can not ascribe to the powers represented in the conference of Paris any but liberal and philanthropic views

in the attempt to change the unquestionable rule of maritime law in regard to privateering. Their proposition was doubtless intended to imply approval of the principle that private property upon the ocean, although it might belong to the citizens of a belligerent State, should be exempted from capture; and had that proposition been so framed as to give full effect to the principle, it would have received my ready assent on behalf of the United States. But the measure proposed is inadequate to that purpose. It is true that if adopted, private property upon the ocean would be withdrawn from one mode of plunder, but left exposed, meanwhile, to another mode, which could be used with increased effectiveness. The aggressive capacity of great naval powers would be therefore augmented, while the defensive ability of others would be reduced. Though the surrender of the means of prosecuting hostilities by employing privateers, as proposed by the conference of Paris, is mutual in terms, yet, in practical effect, it would be the relinquishment of a right of little value to one class of States, but of essential importance to another and a far larger class. It ought not to have been anticipated that a measure, so inadequate to the accomplishment of the proposed object, and so unequal in its operation, would receive the assent of all maritime powers. Private property would be still left to the depredations of the public armed cruisers.

"I have expressed a readiness, on the part of this government, to accede to all the principles contained in the declaration of the conference of Paris, provided that relating to the abandonment of privateering can be so amended as to affect the object for which, as is presumed, it was intended, the immunity of private property on the ocean from hostile capture. To effect this object, it is proposed to add to the declaration 'that privateering is and remains abolished,' the following amendment: 'And that the private property of subjects and citizens of a belligerent on the high seas shall be exempt from seizure by the public armed vessels of the other belligerent except it be contraband.' This amendment has been presented not only to the powers which have asked our assent to the declaration to abolish privateering, but to all other maritime States. Thus far it has not been rejected by any, and is favorably entertained by all which have made any communication in reply.

"Several of the governments, regarding with favor the proposition of the United States, have delayed definite action upon it, only for the purpose of consulting with others, parties to the conference of Paris. I have the satisfaction of stating, however, that the Emperor of Russia has entirely and explicitly approved of that modification, and will co-operate in endeavoring to obtain the assent of other powers; and that assurances of a similar purport have been received in relation to the disposition of the Emperor of the French.

"The present aspect of this important subject allows us to cherish the hope that a principle so humane in its character, so just and equal in its operation, so essential to the prosperity of commercial nations, and so consonant to the sentiments of this enlightened period of the world, will command the approbation of all maritime powers, and thus be incorporated into the code of international law."—*Message President United States, Dec., 1856.* See MARITIME LAW, NAVIGATION LAWS.

Nevis, a West India island, belonging to Great Britain, leeward group, in lat. $17^{\circ} 10' N.$, long. $62^{\circ} 40' W.$, separated from the south end of St. Christopher's by a channel two miles across. Area about 20 square miles. Population in 1851, 10,200. Shape circular; the surface rises to a central peak 2,500 feet in elevation. Soil generally fertile, and in 1841, the total produce exported amounted in value to £17,455, sugar standing for £15,527. Total value of imports in 1841, £23,728. The legislature is composed of the ad-

ministrators of the government, a legislative council, and a house of assembly of 15 members. Salary of administrator, £500. The island consists of 5 parishes. Charlestown, the capital, is at its south-west extremity. Public revenue in 1845, £4,566. A letter from the United States' consul, dated December 5, 1855, says: "The legislature of Nevis has passed a law, to go into operation on the 1st of March ensuing, removing all duties on imports, exports, and tonnage duties on vessels, thereby creating a free port. The consequence will be that the commercial intercourse with the United States will be very considerable."

New Bedford, a port of entry in Massachusetts, 55 miles south of Boston, 28 east of Newport, 49 south-east of Providence, 226 east of New York, 434 from Washington; in $41^{\circ} 38' 10'' N.$ lat., and $70^{\circ} 55' 16'' E.$ long. Population in 1830, 7,592; in 1840, 12,087; in 1850, 16,443; in 1851, 18,044; and in 1854, 20,000. There are 33 manufactories of all sorts; the most important of which are, 15 for oil and candles, the product of the whale fishery; one large cotton factory, called the Wamsutta mill, propelled by steam, containing 12,500 spindles, 288 looms, employing 230 hands, and turns out daily 4,800 yards of cotton cloth, which has obtained several medals for its superior quality; one cordage factory, with an invested capital of \$75,000, employing 100 hands, and producing annually 1,000 tons of cordage, celebrated for being of the best quality; a large paper-hanging manufactory which turns out 400,000 rolls of paper annually; also a rivet factory worked by steam, and two iron foundries; four printing offices, issuing two daily, three weekly, and one monthly publication; and 186 mercantile stores. There are two marine railways, one of them capable of taking up large ships. Railroad cars leave three times daily for Boston and Providence, and every afternoon for Fall River and Stonington to connect with steamboats at those places running to New York. The whale fishery is the principal business which is carried on at New Bedford, and has been the means chiefly of building it up to its present importance in population and wealth. As early as 1764, small sloops of 40 to 60 tons burden were fitted out to cruise, during the summer months, off the Capes of Virginia and Hatteras for sperm whales; taking care to return to port before the equinoctial gales commenced; the blubber was brought into port and tried out on shore. Gradually the voyages were extended in larger vessels to the Bay of Mexico, and about the West India Islands, thence to the Azores, and Cape de Verd Islands, and coast of Guinea. In 1791, a ship called the *Rebecca*, was fitted out for a whaling voyage to the Pacific Ocean; this ship was the first American whaler that ever entered that ocean in pursuit of whales; her voyage was successful. From these small beginnings, the whale fishery has steadily increased to its present importance, with the exception of the interruption of the revolutionary war, and of the war of 1812 with Great Britain, until New Bedford has become the greatest whaling port in the world. Her ships now circumnavigate the globe, and explore every ocean and sea from the Arctic to the Antarctic in pursuit of whales. The number of vessels employed in the whale fishery from the United States at this time, 1852, is 620, their tonnage, 193,990, of which there are belonging to the district of New Bedford, 372 vessels, employing upwards of 10,000 seamen. There were entered into the United States, during the year 1851, of sperm oil, 99,591 bbls.; of right whale oil, 328,483 bbls.; of whalebone, 3,916,500 lbs.; amounting in value to \$10,028,089, of which there were imported into the district of New Bedford, of sperm oil, 60,465 bbls.; of right whale oil, 175,460 bbls.; of whalebone, 2,473,500 lbs.; amounting in value to \$5,781,118; of which value, about \$5,000,000 was brought into the port of New Bedford. The average length of the voyages of the right whale ships are 36 months; sperm whale ships

44 months. New Bedford is the great nursery for seamen in the United States. See article OIL.

New Brunswick, a British province, east coast of North America, lat. $45^{\circ} 5'$ to $48^{\circ} 40'$ N., long. $63^{\circ} 50'$ to $68^{\circ} W.$; bounded west by the State of Maine; north-west Lower Canada, from which it is separated by the River Restigouche; north, Bay of Chaleurs; east, Gulf of St. Lawrence and Northumberland Strait, the latter separating it from Prince Edward Island; and south, the Bay of Fundy, and part of Nova Scotia. Its coast-line is about 500 miles in length, interrupted only at the point of junction with Nova Scotia, where an isthmus of not more than 10 miles in breadth connects the two provinces, and separates the waters of Northumberland Strait from those of the Bay of Fundy, which it is proposed to unite by means of a canal. The most remarkable bays and harbors are Bathurst Bay, on the north coast; Miramichi Bay, on the east coast; Passamaquoddy Bay, and St. John harbor, on the south coast. There are, besides these larger indentations, numerous smaller harbors, particularly on the south portion of the east coast. Area, 27,704 square miles.

The population of this province is principally composed of British settlers and their descendants. The remnant, of French extraction, are settled around the Bay of Chaleurs. There is still a few of the aborigines left, consisting of the Micmacs, Melicites, and others, amounting in 1851 to 1,116 persons.

Physical Features, etc.—The general surface of the country presents a series of bold undulations, sometimes rising into mountains, or continuous ridges of high land. The latter are seldom of any considerable height; but their precipitous acclivities, sharp outline, and deep ravines, give them an alpine and picturesque character that finely and strikingly contrasts with the rich valleys and sheltered plains which alternate with the more rugged scenery. The shores of the Gulf of St. Lawrence and Northumberland Strait, however, present different and far less pleasing features. There the land, for about 12 miles inland, is low and sandy, covered with trees of a stunted growth, and skirted with extensive marshes, large deep morasses, and long sand beaches. Along the shores of the Bay of Chaleurs and the Gulf of St. Lawrence, gray sandstone and gray clay-slate predominate, with detached rocks of granite, quartz, and ironstone; on the south coast, limestone, graywacke, clay-slate, with sandstone, interrupted occasionally by gneiss, trap, and granite. Specimens of amethyst, cornelian, jasper, etc., have been picked up in various places. Coal is plentiful, and iron ore abundant; the former is said to extend over 10,000 square miles, or above one third part of the whole area of the province.

New Brunswick is drained by numerous rivers and small streams, the principal of which is the St. John, navigable for vessels of 50 tons to Fredericton. The next river in importance is the Miramichi, which rises near the west limits of the territory, whence it flows north-east, and falls into Miramichi Bay, on the east coast, about lat. $47^{\circ} 5'$ N., long. $64^{\circ} 53'$ W.; its whole course is upward of 110 miles, it is navigable for nearly 40 miles, and admits vessels of 600 or 700 tons. The Restigouche is the next considerable river; it forms the north-west limit of the province, and falls into the head of the Bay of Chaleur, after a course of about 100 miles. There are a number of small lakes in New Brunswick, particularly in the northern part, but none of any considerable size. In the south there are a few somewhat larger, the most important of which are Grand Lake, 20 miles long, by about 5 miles broad; and Washedemoak Lake, about 20 miles long, by 2 miles broad—both lying between St. John and Fredericton.

Manufactures, etc.—There were in the province in 1851, 52 woolen factories, employing 96 persons; 261 grist mills, employing 366 persons; 584 saw mills,

employing 4,302 persons; 125 tanneries, employing 255 persons; 11 foundries, employing 242 persons; 8 breweries; 52 weaving and carding establishments (5,475 hand looms), employing 96 persons; 96 of various manufacturing establishments, employing 953 persons. Coals raised, 2,482 tons; iron smelted, 810; lime burnt, 35,599 casks; grindstones quarried, 58,849; gypsum, 5,465 tons quarried.

Products.—Cloth, 622,287 yards; and 100,975 gallons malt liquor. Value of boots and shoes made, £89,367; leather, £45,165; chairs, cabinet ware, and wood ware, £33,977; candles, £19,860; soap, £18,562; hats, £6,360; iron castings, £20,025.

The principal places are St. John, the metropolis, and Fredericton, the capital. There were in 1854 several railroads in course of construction; 5 banks, aggregate capital, £337,500; a savings' institution, and 4 insurance companies.

Fisheries of New Brunswick.—There were French fishing establishments in that part of Acadia now known as New Brunswick, as early as 1638. The English succeeded to these at the treaty of Utrecht, in 1713; but they do not seem to have formed many others until after the cession of Canada, in 1763.* Among the first, I suppose, was that of Lieutenant Walker, of the royal navy, in the Bay of Chaleurs, which was extensive, controlling the fur and fish trade of that region for several years. There were similar settlements on the River St. John; but from the estimates of Mr. Grant, made in 1764, at the request of the Rev. Dr. Stiles, the whole population of British origin could not have exceeded 1000.

At the peace of 1783, several thousand "Tories," or loyalists, compelled to abandon their native land, settled in New Brunswick, and transferred thither the jurisprudence, the social and political institutions of "the old thirteen;" and, the year following, were allowed to organize a separate colonial government. Like those who went to that part of Acadia still called Nova Scotia, many of the loyalists were gentlemen of education, eminent private virtue, and distinguished consideration. Some obtained offices of honor and emolument; others adopted agricultural pursuits; and another class, fixing their abodes on islands and the shores of the main land, resolved to earn their support on the sea. Of the latter description, several, though compelled to toil and exposure in open fishing boats, had been persons of note and property. But, ruined by the confiscation laws of the Whigs, or by the general disasters of a civil war, they resorted to the hook and line to relieve the pressure of immediate want, indulging the hope of "better times," and more congenial avocations. Few, however, abandoned the employment, and their children, trained to it from early youth, and acquiring fishermen's habits, succeeded to boats, fishing-gear, and smoke-houses, as their only inheritance, and continue it at the present day. I have often met with common boat fishermen of this lineage, whose earnings were hardly sufficient to procure the absolute necessities of life.

The fisheries of New Brunswick are prosecuted with neither skill nor vigor. The *apparent* exports, small as are the statistics, do not indicate their real condition; since it is certain, that of the products of the sea shipped to other countries, a part is first imported from Nova Scotia, and form a proportion of the exports of that colony.† The number of vessels sent to Labrador and other distant fishing grounds is never large, and often almost nominal. The cod-fishery in the Gulf of St. Lawrence and the Bay of Chaleurs is

* The French built two forts on the River St. John prior to the peace of Utrecht (1713), which they repaired in 1754, although the country had been ceded to England quite half a century.

† The imports into St. John from Nova Scotia for three months only (July 10 to October 10) of the year 1852, were 7,861 quintals of dried fish, 860 barrels of mackerel, 2,423 barrels of herring, and other pickled fish.

not as extensive as might be reasonably expected from the long experience of the inhabitants there, and the general safety and productiveness of the harbors and indentations of the coast.

The same remarks need slight qualification when applied to the Bay of Fundy, and its principal branch, the Bay of Passamaquoddy. Cameron's, Doggett's, Drake's, Woodward's, Money, and Whale Coves; Dark Harbor, Long's Eddy, Grand Harbor, and Long, Duck, Nantucket, and Kent's Islands, which are all in the group of islands known as "Grand Menan," afford excellent facilities for catching and curing cod, pollock, and herring, in large quantities. In the waters that surround Campo Bello, Deer, and Indian Islands, as well as in those that wash Bean's, Adams's, Parker's, Minister's, Hardwood, and Fish Islands, and along the coast between L'Etite Passage and Point Lepreau, embracing Mace's and Back Bays, Bliss' Island, Seely's Cove, Crow, Beaver, and Deadman's Harbors, the advantages for fishing are very good. Every place here mentioned is within a few hours' sail of the frontier ports of Maine, and many of them are within cannon-shot distance of the shores of the United States. The fishermen of both countries meet on the same fishing grounds; borrow and lend "bait;" ask after each other's "woman"* at home; narrate the wonderful cures of the last-discovered remedy for the "rheumatis;" complain of the "scarcity" of fish, and the low price of "ile;" discourse about "flat-hooped flour;" and generally conduct toward one another as friends and brethren, owing allegiance to one government. Indeed, the observation of quite 25 years authorizes me to say that the colonists always agree far better with the Americans than with each other. Our countrymen are not often considered interlopers when they leave the fishing grounds nearest home and visit those of Grand Menan; but the fishermen of Campo Bello, and the other islands on the British side of the Passamaquoddy, are sometimes roughly accosted and "twitted" when they venture to take the same liberty. Frequent attempts have been made to disturb the friendly relations which have generally existed between the people of the two flags, but without success. The efforts of officious individuals, and of functionaries of the colonial government, have been alike disregarded. The captains of the British ships-of-war on the station, gentlemen in their feelings, have steadily refused to stoop to wage a petty warfare against the American boats that cross the imaginary boundary line in the waters of the Passamaquoddy, though, of course, they have *always* obeyed their instructions. Yet, in the spirit of Nelson, who looked at the signal he meant to disobey with his blind eye, they have never been able to see a "Yankee," or to distinguish one from a subject of her majesty. Some of them—as I remember the stories of by-gone years—admitting the necessity of driving off the aggressors, have asked, "How are we to know them—are they marked?" Others, sending their barges into the fleet of boats, have directed that "all who say they are Americans must be told to go to their own side of the line;" but, strangely enough, the unbroken silence of the fishermen to whom the question was propounded afforded proof that all were "Bluenoses." Still others, satisfying themselves, by peering through glasses from their quarter-deck, that *all* the boats in sight must belong to the islands in New Brunswick, have thought the sending of barges to inquire a needless ceremony. One, in 1840—the captain of the *Ringdove*—in his official report, recommended that "every British boat should have a license; otherwise," said he, "it is impossible to discriminate them from Americans."

Those who seek to put an end to this state of things, whatever their motives, do not take into the account

that the instant they shall accomplish their object, border strifes will follow of necessity. Before renewing their efforts, they may be kindly asked to consider that harmony and good-fellowship between the inhabitants of frontier settlements are indispensable, and far better securities against the marauder's torch and bludgeon than armed ships or bodies of troops. The produce of the boat-fishery of the Bay of Fundy, and of the Passamaquoddy, is not only small in value, but generally inferior in quality. An increase of this fishery, under present circumstances, is not desirable. The fishermen dress and cure the cod, pollock, hake, and haddock—the kinds usually dried—in a slovenly manner.

It is stated in an official document that in 1850, at the different fishing-stations mentioned as within these bays, there were employed 62 vessels of 1,268 tons, 844 open boats, 55 weirs, and 1,337 men, in catching and curing the several kinds of fish just referred to; and that the value of the products of the various branches of the fishery were £33,080 currency, or \$132,320. These facts show that the fishermen received a miserable pittance for their toil; since, without allowing for the use and depreciation of the capital invested in the vessels, boats, weirs, nets, and other fishing-gear, they earned for the year less than \$100 each. We may lament that men who pursue their avocation both day and night, 'mid rains and gales, are so poorly rewarded. We may lament, too, that the people of Grand Menan, falling short of those of Campo Bello, West Isles, and the parishes on the coast of the main land, earn even less than the average. But, what then? The fault is their own; entirely so. They may, if they will, produce as sweet and as well-cured pollock and cod as do their brethren of Barrington, and as good colored and flavored smoked herring as do those of Digby, and obtain prices to correspond with the quality.

The general poverty among them is not to be attributed entirely or principally, as they aver, to the occasional loss of boats and nets, nor to glutted markets and bad seasons, nor to the interlopers who visit their fishing grounds, but to their own want of industry, thrift, cleanliness, and honesty. The few "who work it right," acquire property, and enjoy the entire confidence of the dealers, command credit for supplies, and high prices for their commodities when offered for sale.

It remains to speak of the fisheries of the Bay of Chaleurs, and of the Gulf of St. Lawrence. The county of Restigouche borders on Canada, and the counties of Gloucester, Northumberland, and Kent, are favorably situated for adventures in these waters. The fishing grounds are safe, and generally close to the shores; and those near Caraquet, in Gloucester, are much frequented by boats from Gaspé, and owned by residents of Canada. Since 1835, the catch of both cod and herring by the fishermen of Restigouche and Northumberland has fallen off more than half, and in Kent has nearly become extinct. But the inhabitants of the port of Caraquet, availing themselves of the advantages of their position, have actually produced a large portion of the dried cod exported from the colony for some years. These four counties are more remote from the capital of New Brunswick, and from the markets of the United States, than the county of Charlotte, which embraces Grand Menan, and the other islands in the Bay of Fundy (where the fish are so badly cured), and the attention of the people is divided between several branches of industry; but fishing, as an occasional and irregular employment merely, has commonly proved a source of profit, or at least has afforded a fair reward for the labor and capital devoted to it. The fish shipped at Caraquet are in much better repute than those caught in the Bay of Fundy, and the remark is true of the produce of the Bay of Chaleurs and St. Lawrence fisheries generally. It may be presumed that *there* the herring does not

* They thus speak of their wives.

"become rotten before salting;" that, when sold as the "gibbed" article, it is not packed without taking out the entrails; and that the cod is washed after being split, and not salted and put in "kinch" in all its blood and dirt.—*SABINE'S American Fisheries.*

The following statement exhibits the value of imports and exports to and from the United States and New Brunswick during the years 1849 and 1850:

	1849.	1850.
Exports to New Brunswick....	\$1,822,810	\$1,810,740
Imports from ".....	257,910	387,000

The following abstract of the trade between the United States and the port of St. John, New Brunswick, shows the number of ships and tonnage entered inward, and the value of imports at that port during the year ending 31st December, 1851: Vessels inward: 605 vessels, of an aggregate tonnage of 166,952 tons; value of imports, \$1,458,205. Vessels outward: 359 vessels, of an aggregate tonnage of 64,344 tons; value of exports, \$312,895.

The United States export to New Brunswick, principally, books and stationery, Indian corn, flour, wheat, lumber, salted provisions, rice, coal, tobacco, timber, and various kinds of manufactured goods, and merchandise; and receive, in return, timber of different kinds (except pitch-pine, oak, locust, hickory, and black walnut), lumber, staves, laths, shingles, spars, and fish. Coal and timber being classed among the staples of both countries, an examination has been instituted with a view to ascertain the probable effect of the Reciprocity Treaty on the trade in these articles between the United States and New Brunswick. To meet this inquiry, it is necessary to know whether the coals and timber of New Brunswick and the United States are similar in character and kind, or whether they differ in both, and in the uses to which they are applied; each having their own peculiar advantages for certain purposes.

Dr. Jackson, an American geologist of ability, in a sketch "of the early history and of the present state of our knowledge of the geology, etc., of Nova Scotia and New Brunswick," referring to the mineral productions of these provinces, says: "The coals of Nova Scotia are of various kinds, and are wholly different from those of the United States; at least, they differ from all the coals which are found on the eastern side of the Appalachian Mountains, so that they do not enter into competition with the coals obtained from mines in the United States, which supply our coast." In a subsequent part of this essay Dr. Jackson remarks, in substance, that recent explorations in New Brunswick have brought to light a beautiful and before unknown variety of highly bituminous coal, containing 60 per cent. of gas-making bitumen and 40 per cent. of coke. This coal is a new variety, particularly adapted to the uses of the gas-house; and it is represented by Dr. Jackson as the very material wanted by gas-manufacturers to enrich the products of our semi-bituminous coals of Maryland and Virginia. In the formation of gas, this New Brunswick production can not be used alone, but is mixed with other coals, in the proportion of from one fifth to one third; and thus gives the best material that can be obtained. It also gives greater value to the coke of our more ash-bearing coals. If these facts are to be relied upon (and they are supported by high authority), it follows that the importation of the New Brunswick coal into the United States, so far from interfering with the sale of our own coals, would contribute, in a great measure, to make available, in the manufacture of gas, much of those which would otherwise be unsuitable for that purpose. With these distinctive characters and different applications, the coals of New Brunswick and Nova Scotia will always be required, whatever may be the supply of our own mines of Pennsylvania, Maryland, and Virginia. Indeed, the mine near Richmond, Virginia, is the only one in the United States that furnishes bituminous coal

that will fully serve in the place of the coals of Nova Scotia.

From the imports and exports of timber between the United States and New Brunswick, it will be seen that New Brunswick imports from the United States large quantities of pitch-pine, oak, locust, hickory, and black walnut, none of which are found in that province; while the United States receives, in return, boards, scantling, deals, various kinds of lumber, and fish. The interchange of these products must be greatly increased under a system which relieves them from all import duties.—*U. S. Com. Rel.*

Newcastle. The following information is from the United States' consul at Newcastle in answer to a circular issued by the State Department: "In this port there are no privileges that British or any other vessels have which American vessels have not to the same extent; but there are restrictions and extra charges at this port on the vessels of some other nations that have not treaties of reciprocity with England, viz., France, Two Sicilies, and Portugal. French vessels, taking cargoes to, or bringing them from, any place but France proper, are subject to double the ordinary light-house dues; also, to double harbor lights, double Ramsgate dues; and in case the vessel loads coals or grindstones, instead of paying 4 cents, or 2d., per chaldron town dues, as the vessels of nations in reciprocity, 16 cents, or 8d., per chaldron, is charged. When the vessel goes to any place but France proper, such vessels also pay 12 cents, or 6d., per foot extra pilotage. Vessels belonging to the Two Sicilies are subject to the same extra charges. Vessels belonging to Portugal have the additional privilege of taking cargoes to or from their own colonies on the same terms as to Portugal proper, but to or from any other country they are subject to the above extra charges. There are, also, other nations, such as some of the South American States, whose vessels are subject to these extra charges, but such vessels never visit this port. These extra local dues are, nevertheless, payable by all foreign vessels coming to this port, but the British government satisfy these claims on the vessels of nations in reciprocity.

"The port charges on vessels of the United States are the same as on British vessels. Annexed are particulars of the charges on a vessel of 400 tons register, carrying 200 chaldrons, or 530 tons, of coals and 60 tons of other goods. Vessels belonging to the United States (by a law passed this (1854) session of Parliament) are allowed to carry goods of any kind coastwise without any restriction, and with every privilege that British vessels enjoy.

LIST OF CLEARING CHARGES AT THE PORT OF NEWCASTLE, CHARGED ON AN AMERICAN VESSEL OF FOUR HUNDRED TONS REGISTER, CARRYING TWO HUNDRED CHALDRONS OF COALS AND SIXTY TONS OF OTHER GOODS.

Charges.	U. S. currency.	Sterling.
Low lights.....	\$0 61	£0 2 8
Life boats (once a year).....	78	3 0
Pier dues.....	8 07½	1 18 4
Night office.....	48	2 0
Brindlington pier.....	1 21	5 0
Whitby pier.....	2 02½	8 4
River watch.....	2 02½	8 4
Ramsgate.....	4 84	1 0 0
Trinity lights.....	54 55½	11 5 5
Tower dues { Cargo.....	8 07	1 18 4
{ Ship.....	77	8 2
Total.....	\$88 39	£17 4 7

"If the vessel bring ballast, there is an additional charge on it of 1s. 6d., or about 36 cents, per ton on the ballast. Sea pilotage, in winter, 1s. 6d.; and in summer, 1s. 3d. per foot. Towage, according to distance, from 5s. to £3.

"Insurances are mostly effected in the States; the rate here runs from 2½ to 5 per cent., according to season and class of vessel. Freights from \$4 84, or 20s., to \$7 74, or 32s., per ton, according to circum-

stances. Commission for purchasing is usually 2½ per cent. Sales are made either by direct correspondence or through agents resident here. Terms vary, with the articles, from 2 to 4 months. Bills, and a various discount for cash, are the ordinary terms. There is no export duty payable on goods to the United States. There are no internal taxes levied on any of the commodities mentioned, either in a crude, partially manufactured, or wholly complete state."

Newfoundland, Colony of, is in lat. 46° 40' and 51° 39' N., and long. 52° 44' and 59° 31' W. Area, 35,913 square miles. Extreme length, about 420 miles, and extreme breadth, about 300 miles.

Newfoundland is an island lying on the north-east side of the Gulf of St. Lawrence, and is bounded on the whole east shore by the Atlantic Ocean, on the north-west and north by the Strait of Belleisle, which separates it from Labrador, on the west by the Gulf of St. Lawrence, and on the south-west it approaches at Cape Ray toward Cape Breton, so as to form the main entrance from the Atlantic into the St. Lawrence. Capital, St. John's. The island is of a somewhat triangular form, but without any approach to regularity, each of its sides being broken into numerous bays, harbors, creeks, and estuaries. Its perimeter is not less than 1000 miles. From the sea it has a wild and sterile appearance, and its general character is that of a rugged, and, for the most part, a barren country. Hills and valleys continually succeed each other, the former never rising into mountains, and the latter rarely expanding into plains. Of various character, the hills sometimes form long, flat-topped ridges, and are occasionally rounded and isolated, with sharp peaks and craggy precipices. The valleys vary also from gently sloping depressions to rugged and abrupt ravines. The sea-cliffs are bold and lofty, with deep water to their bases; and the rough character of the country is increased by the existence of vast boulders scattered over it. This uneven surface is naturally distinguished into woods, marshes, and barrens. The "woods" are spread over the whole country wherever there is any water-course, and are even found crowning the summits, and near the sea-coast are especially luxuriant. The trees consist principally of pine, spruce, fir, larch (or hackmatack), and birch; in some districts the mountain ash, the alder, the aspen, and a few others are found. Most of the wood is of small and stunted growth, although the character of the trees is greatly varied in this respect according to soil and situation, and in small groups wood of fair growth and length may be found. The open tracts are generally called "marshes." These are not necessarily low, or even level lands, but are frequently at a considerable height above the sea, and have often an undulating surface. They are open tracts, covered with moss, sometimes to the depth of several feet. This thick coating of moss is precisely like a great sponge spread over the country. At the melting of the snow, it becomes thoroughly saturated. Numerous small holes and pools, and in the lower parts small sluggish brooks or gullies are met with. But in most cases the surface is sufficiently eligible for drainage, and when the moss is stripped off, dry ground or bare rock is generally found beneath. The "barrens" occupy the summits of the hills and ridges, and other elevated and exposed tracts. They are covered with a thin and scrubby vegetation, consisting of berry-bearing plants, and dwarf bushes of various kinds. Bare patches of gravel and boulders, and crumbling fragments of rock are frequently met with upon the barrens, which are generally altogether destitute of vegetable soil. These different tracts are none of them of great extent; woods, marshes, and barrens frequently alternating.

Not the least remarkable features of the island are its lakes and ponds. These are found in every direction, and in almost every situation, not only in the

valleys, but on the highlands, and even in the hollows of the summits, and on the very tops of the hills. They vary in size from pools of 50 yards in diameter to lakes 30 miles in length, and from ¼ to 5 miles wide. The number exceeding 2 miles in extent amount to several hundreds, while those of smaller size are absolutely countless.

But with all this lake surface, there are few large water-courses; yet this absence of any thing which can be called a navigable river is readily explained. The character of the natural surface, indeed, is such that it absorbs every new accession of moisture from rain and melted snow, and only parts with it again by evaporation or a slow drainage into the ponds, the overflow of which is the only supply the brooks have. Thus there is never formed a current sufficiently powerful to dig out a deep channel, or to breach opposing barriers. The area covered by fresh water has been estimated at one third the whole island, and this large proportion will not probably be found exaggerated.

The coast of Labrador is also included in the government of Newfoundland, to which it was annexed in 1808. It has a sea-coast of about 100 miles, and is frequented during the summer season by more than 20,000 fishermen. This vast country, inhospitable in climate and uninviting, is inhabited by Esquimaux and Moravian missionaries, in all numbering some 8000 or 10,000 souls. Situate in a severe and gloomy climate, and producing nothing that can support human life, this is one of the most barren and desolate of countries. But, as if in compensation for these disadvantages, the sea in its vicinity teems with fish, and thus thousands of hardy adventurers are drawn to its rugged shores, and their industry and enterprise amply rewarded. The sea in this locality indeed forms the most valuable fishery in the world. In no part the mainland of Labrador exceeds the height of 500 feet above the sea, and is often much lower, as are all the islands, except Great and Little Mecatina. Both are of granite rock, and almost bare of trees; and there are many ponds of dark bog water, frequented by water-fowl and flocks of Labrador curlew. The coasts are beset with islands and rocks, sometimes so intricate as to forbid navigation. There are, however, several harbors fit for large vessels, and which may be safely entered. The Strait of Belleisle, which separates the two parts of the government, is about 50 miles long and 12 wide. It is deep, but its passage is not considered a safe one, owing to its currents. There are no harbors on that part of the Newfoundland coast which faces this strait, and few on the opposite coast. During the winter months the resident population of European descent scarcely numbers 800 souls, and many of these have intermarried with the Esquimaux. The few widely scattered families reside at the establishments for sea and salmon fishing and for fur-trading. Seals and salmon are very plentiful, and the latter are of a large and superior description. The furs of Labrador are very valuable, and consist of fox, otter, sable, lynx, bear, wolf, deer, ermine, hare, etc. The Canadian partridge and the ptarmigan are also plentiful. The "egging" business employs a large number of small schooners. The eggs obtained are chiefly those of the murr, but the eggs of puffins, gannets, gulls, eider ducks, and cormorants, are also collected. Halifax is the principal market for these, although no small quantity is disposed of at Boston and other United States' ports. Feathers are also extensively collected on the coasts and islands.

The average size of Newfoundland vessels is about 130 tons. The chief coasting trade consists in carrying provisions and supplies for the fishery, and bringing back the proceeds of the voyage.

Newfoundland proper is divided into nine districts, the population of which, in 1845, the last census year, was as follows:

The annexed is an account of the vessels and tonnage, both British and foreign, entered inward, and cleared outward, of the colony of Newfoundland, in the year ending 5th January, 1852:

Countries.	ENTERED.				CLEARED.			
	British vessels.		Foreign vessels.		British vessels.		Foreign vessels.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
Great Britain.....	200	29,514	2	436	120	16,117	3	333
Gibraltar.....	..	..	..	..	11	1,159	1	149
Jersey and Guernsey.....	11	1,445	..	..	8	451	..	..
Spain.....	72	11,021	36	4,425	13	2,173	36	4,276
Portugal.....	76	9,429	1	76	90	11,608	1	76
Denmark.....	5	1,122	3	474	1	107	..	..
Germany.....	36	5,738	7	1,239	..	..	..	..
Naples.....	3	437	..	..	50	3,860	..	..
Sardinia.....	1	121	..	..	..	..	..	..
Roman States.....	..	..	..	..	5	546	..	..
Tuscany.....	..	..	..	..	9	1,153	16	1,947
Azores.....	..	..	..	..	1	94	..	..
Sicily.....	..	..	..	..	1	125	1	147
Zante.....	..	..	..	..	1	155	..	..
Madeira.....	..	..	..	..	1	62	..	..
British N. Amer. Colonies..	563	49,842	8	503	564	55,866	7	1,514
United States.....	121	14,692	11	1,907	31	3,041	4	813
British West Indies.....	23	8,487	..	..	71	10,219	1	136
Spanish West Indies.....	21	2,326	19	2,473	16	1,920	1	179
Danish West Indies.....	..	..	..	..	1	133	1	200
Brazil.....	8	1,661	..	..	43	8,841	7	1,292
St. Pierre (French).....	33	594	..	..	10	93	..	..
Total.....	1,183	180,929	82	11,588	1,027	117,778	79	11,112

Making an aggregate of 1265 vessels, and 142,467 tons (manned by 8465 men), entered, and a total of 1106 vessels, and 128,890 tons (with 7741 men), cleared. From this exhibit it will be seen that the arrivals from the United States greatly exceed the departures for this country, thereby showing the balance of trade to be strongly against this colony.

The entrances and clearances for the past four years have been as follows:

Years.	Entered.		Cleared.	
	Vessels.	Tons.	Vessels.	Tons.
1849	1,156	132,383	1,074	126,643
1850	1,220	138,228	1,087	108,795
1851	1,232	137,465	1,034	141,578
1852	1,265	142,467	1,106	128,890

The statistics of ship-building for a series of years exhibit the following results:

Years.	No.	Tons.	Years.	No.	Tons.
1844.....	25	1,281	1848.....	19	734
1845.....	32	1,607	1849.....	30	1,054
1846.....	31	1,723	1850.....	30	1,497
1847.....	17	854	1851.....	33	1,806

Ships owned and registered in the colony, on the 31st December, 1851: ships, 830; tons, 52,078.

The total value of the commerce of the colony for the past five years, ending 5th January, 1852, has been as exhibited in the following table:

Years.	Value of imports.	Value of exports.	Total value.
1847.....	\$243,409	\$206,605	\$1,750,014
1848.....	769,623	887,531	1,657,209
1849.....	770,190	876,567	1,646,757
1850.....	867,316	975,770	1,843,086
1851.....	943,191	959,751	1,902,942

COMPARATIVE STATEMENT OF THE REVENUE AND EXPENDITURES IN THE YEARS 1849, 1850, AND 1851.

	1849.	1850.	1851.
Imper'l customs duties	\$23,538 5 8	..	..
Colonial duties	52,796 2 6	\$59,381 19 0	\$74,205 4 1
Light dues.....	1,693 7 9	2,390 16 11	2,467 13 8
From other sources.....	11,332 9 2	5,142 8 0	3,722 11 5
Totals.....	\$69,405 5 1	\$66,915 3 11	\$80,395 14 2
Expenditure.....	66,262 2 1	71,307 1 5	75,770 5 1

TOTAL AMOUNTS RECEIVED AND PAID FOR THE YEAR ENDING 31st DECEMBER, 1851.

RECEIPTS FOR THE YEAR.

Customs revenue.....	\$74,205 4 1
Light dues.....	2,467 13 8
Rent fund.....	1,601 8 4
License fund.....	849 0 9
Fees from public officers.....	772 2 4
From N. A. clergy, estimate.....	500 0 0

Total.....\$80,395 14 2

EXPENDITURES FOR THE YEAR 1851.

Civil department.....	\$5,990 0 0
Customs establishment.....	4,392 13 10
Judicial department, etc.....	6,304 10 7
Police and magistracy.....	5,323 10 0
Ecclesiastical department.....	500 0 0
Legislative.....	4,125 19 6
Printing and stationery.....	545 4 8
Jail expenses.....	637 4 0
Coroners.....	230 12 1
Fuel and light.....	510 4 3
Repairs of court-houses, etc.....	509 16 5
government buildings.....	245 1 8
Relief of the poor.....	6,329 13 10
Roads and bridges.....	6,765 13 10
Postage and incidentals.....	107 12 2
Public institutions.....	475 0 0
Education.....	7,745 5 0
Light houses.....	2,323 13 6
Registration of voters.....	30 0 0
Interest on loans.....	5,733 10 5
Pensions.....	161 4 0
Crown lands act.....	231 11 2
Loans paid off.....	6,730 0 0
St. John's rebuilding acts.....	2,351 16 10
Ferries and packets.....	619 10 0
Postal act.....	155 13 7
Electric telegraph.....	633 1 9
Harbor Grace streets acts.....	836 13 4
St. John's burying ground.....	602 0 0
Steam communication.....	500 0 0
Miscellaneous.....	2,334 13 8

Total.....\$75,770 5 1

The Labrador coast, as before observed, is the resort of a large number of fishermen. Since the treaty of Paris, this fishery has increased more than sixfold. No accurate account of the products can be ascertained, but the following is considered to be an approximation. The salmon fisheries average annually about 30,000 tierces. The herring fisheries are also very large, and the seal fisheries are equal in value to those of Newfoundland. The imports of Labrador have been estimated by the authorities of Newfoundland at \$600,000 per annum, and the following is an approximation to the value of the exports:

American vessels.....	\$430,000
Nova Scotia vessels.....	430,000
Canada vessels.....	144,000
Vessels owned or chartered by English and Jersey houses having establishments on the coast.....	430,000
Vessels owned or chartered by the people of Newfoundland.....	1,200,000

Total.....\$2,784,000

The total exports, however, are by some persons estimated at \$4,000,000.

[Authorities: Official Abstract of Census, 1845; Return showing the Value of Articles, etc., imported, and the Newfoundland Almanac for 1853, furnished by Hon. James Crowdy, Colonial Secretary; MARTIN'S

British Colonies (London edit.); *ANDREWS'S Report on Colonial and Lake Commerce* (U. S. Sen. Doc. 112, part viii., p. 578); *Report of the Committee* (Canada) to prepare a *Statement of the Population, Income, Expenditure, and Debt of the Provinces of British North America* (June, 1853), etc., etc.]

Trade with the United States.—The great staple of this colony is derived from its extensive fisheries. An elaborate and interesting account of these may be found in Mr. Andrews's Report on Canada, etc., already referred to.

Imports from Newfoundland into U. S. . . . 1850. . . . 1851.
Exports to Newfoundland from U. S. . . . \$63,270 \$92,220
767,550 954,266

COMPARATIVE STATEMENT EXHIBITING THE QUANTITIES AND VALUES OF THE PRINCIPAL ARTICLES IMPORTED INTO THE PORT OF ST. JOHN'S, N.F., FROM THE UNITED STATES OF AMERICA, DURING THE YEARS 1853, 1854, AND 1855.

Description of goods.	1853.		1854.		1855.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Apothecaries' ware. ....	...	\$997 08	...	\$1,252 18	...	\$1,291 84
Bacon and hams.	229	3,082 01	310	3,516 52	255	4,190 00
Beef, salted.	679	6,868 44	886	10,412 52	1,028	11,750 00
Bread.	7,910	29,337 65	9,849	53,475 48	6,996	39,105 00
Butter.	1,649	27,688 72	1,547	25,052 10	2,552	39,685 00
Candles.	84,903	11,104 28	74,153	10,685 62	116,104	17,407 88
Coffee.	725	2,759 08	262	3,261 44	265	3,350 38
Indian corn.	210	608 12	3,553	3,316 44	7,512	9,160 00
Indian meal.	8,086	84,540 00	11,498	65,308 65	15,146	88,535 00
Flour.	55,117	279,855 00	51,493	423,405 00	75,847	841,623 60
Hardware and cutlery. ....	...	682 00	...	1,186 20	...	6,479 30
Leather and leather wares. ....	...	13,246 10	...	15,516 25	...	20,387 25
Molasses.	12,630	3,410 00	39,983	10,567 00	5,617	2,210 00
Pork, salted.	9,289	128,850 00	11,359	146,832 88	15,612	287,040 00
Rum.	14,231	9,724 20	13,954	7,463 86	2,213	1,205 43
Tea.	90,678	25,077 44	159,758	46,480 00	42,716	10,826 00
Tobacco, manufactured. ....	...	45,413 25	...	85,729 25	...	85,381 50
Miscellaneous. ....	...	33,568 50	...	24,437 61	...	88,160 81
Total. ....	...	661,801 90	...	887,043 48	...	1,407,788 54

STATEMENT EXHIBITING THE ARTICLES MADE FREE BY THE RECIPROcity TREATY, THE VALUE OF SUCH IMPORTED, AND THE AMOUNT OF DUTIES PAID THEREON, DURING THE FISCAL YEAR ENDING JUNE 30, 1854.

Articles.	Rate of duty per cent.	Value of articles.	Duties.
Grain, flour, and breadstuffs.	20	\$3,906,073	\$781,214
Animals, free. ....	..	75,406	..
" dutiable.	20	225,642	45,128
Fresh, smoked, and salted meat	20	5,184	1,036
Cotton-wool, free. ....	..	125	..
Seeds, plants, shrubs, etc., free.	..	18,210	..
" dutiable.	20	555	111
Vegetables.	20	102,806	20,561
Undried fruits.	20	13	2,738
Dried.	20	13,692	6
Fish of all kinds.	20	901,671	180,334
Products of fish, and of all other creatures living in the water. ....	..	..	..
Poultry.	20	1,016	203
Eggs.	20	5,500	1,100
Hides and skins.	5	34,729	1,736
Furs, undressed.	10	13,920	1,392
Tails, undressed.	20	76	1
Unwrought stone.	10	10,758	1,075
Unwrought marble.	20	4	..
Butter.	20	126,311	25,262
Cheese.	30	127	38
Tallow.	10	87	8
Lard.	20	837	167
Horns.	5	1,421	71
Manures. ....	..	..	..
Ores of metals, free. ....	..	18,790	..
" dutiable.	20	516	103
Coal.	30	254,775	76,432
Pitch, tar, and turpentine.	20	75	15
Ashes.	20	4,441	888
Fire and other wood.	30	728,658	218,606
All other wood.	20	574,051	114,810
Pelts.	20	24,639	4,927
Wool.	30	69,132	20,754
Fish oil.	20	110,402	22,080
Rice. ....	..	..	..
Broom corn. ....	..	..	..
Bark.	20	978	195
Gypsum, ground.	20	353	70
" unground, free. ....	..	113,312	..
Grindstones.	5	23,265	1,163
Dye stuffs.	5	14,717	735
Hemp, flax, tow, unmanufactured. ....	..	..	..
Tobacco, unmanufactured.	30	2,015	874
Rags.	5	12,696	634
Total. ....	..	\$7,398,358	\$1,524,577

The trade of Newfoundland with other countries than the United States, particularly with Spain, Portugal, Italy, and the Brazils, is much more extensive, in proportion to its commercial capabilities, than is that of any other North American colony. The heavy balance against that island, in its trade with the United States, may suggest a reason why it seeks a European market for so large a portion of its products. The United States export to Newfoundland, beef, pork, pitch and tar, corn-meal, flour, rice, tobacco, and general merchandise. It may be seen from the following table that flour and pork amount to fully three fourths of the total exports from this country to Newfoundland.

STAPLE ARTICLES OF PRODUCE, AND THEIR QUANTITIES, EXPORTED FROM THE PORT OF ST. JOHN'S, NEWFOUNDLAND, TO THE UNITED STATES OF AMERICA, IN THE YEARS 1853, 1854, AND 1855.

Description of goods.	1853.	1854.	1855.
	Quantity.	Quantity.	Quantity.
Fish, cod.	21,386	14,362	60,257
" salmon.	1,350	1,070	2,145
" herring.	8,310	967	3,040
Oil, seal.	6	5	28
" cod.	836	41	187
Skins, seal.	6,00	..	..

NUMBER AND TONNAGE OF UNITED STATES' VESSELS ARRIVING AT AND CLEARING FROM THE PORT OF ST. JOHN'S, DURING THE YEARS 1853, 1854, AND 1855.

Years.	Entered.		Cleared.	
	Vessels.	Tons.	Vessels.	Tons.
1853.	10	1,802	10	1,802
1854.	13	3,170	11	2,853
1855.	42	9,107	42	9,107

"Article 3. It is agreed that the articles enumerated in the schedule hereunto annexed [the preceding list], being the growth and produce of the aforesaid British colonies, or of the United States, shall be admitted into each country, respectively, free of duty." The colonies referred to in the foregoing articles are, Canada, New Brunswick, Nova Scotia, and Prince Edward's Island. With respect to Newfoundland, article 6 provides as follows: "And it is hereby further agreed, that the provisions and stipulations of the foregoing articles shall extend to the island of Newfoundland, so far as they are applicable to that colony. But, if the imperial Parliament, the provincial Parliament of Newfoundland, or the United States, shall not embrace in their laws, enacted for carrying this treaty into effect, the colony of Newfoundland, then this article shall be of no effect; but the omission to make provision by law to give it effect, by either of the legislative bodies aforesaid, shall not in any way impair the remaining articles of this treaty." This treaty is limited to ten years, with the usual notice of 12 months by either of the high contracting parties who may wish to terminate the same. Date of exchange of ratifications of the treaty above referred to, September 9, 1854. Date of President's proclamation of

the same, September 11, 1854. Date of its acceptance by Canada, 23d September, 1854; by New Brunswick, 11th November, 1854; by Nova Scotia, December 15, 1854; by Prince Edward's Island, 11th October, 1854; and by Newfoundland, 14th November, 1855.—*U. S. Com. Digest*, 1856: See HUNT'S *Mer. Mag.*, x., 380; FRASER, xxxii., 740; *Elec. Rev.*, xliii., 316.

New Granada is the most important of the three republics into which the South American republic of Colombia resolved itself at the dissolution of that confederation in 1831. Till 1810 it was a vice-royalty under the Spanish crown, but subsequently a part of the republic of Colombia, the middle and western portions of which it now embraces. New Granada is bounded on the north by the Caribbean Sea, on the east by the republic of Venezuela, on the south-east by Brazilian Guiana, on the south by the republic of Ecuador, and on the west by the Pacific Ocean. It lies mostly between the equator and 12° N. lat., and between 70° and 83° W. long. Area about 480,000 square miles.

The *llanos* or plains of the Orinoco extend over the entire tract, stretching away to the western banks of the Orinoco and to the Cassiquiare, between the Rio Negro on the south, and the Rio Apure on the north. As far south as the Vichada, the northern part is a complete level, averaging only 300 feet above sea-level near the mountains, whence it gradually, but almost imperceptibly, declines toward the Orinoco. With the exception of a few palms that occur at great intervals all over the plain, and some low bushy trees along the rivers, this district is quite destitute of trees. During the rainy season, which is from April till November, rain falls in torrents, accompanied with fearful thunder-storms, which usually occur between two and four o'clock in the afternoon; but the contrast is very striking in December, January and February, when a cloud never crosses the sky. This immense plain is not at all fit for cultivation; but innumerable herds of cattle and horses find abundant pasture on it during the rainy season, though they suffer much during the dry months, from November till April. The wet season is, on an average, 8° Fahr. hotter than the dry, and the mean annual temperature is 80° Fahr.

The principal rivers of New Granada are the Magdalena and Cauca, which run their whole course within the territory of the republic, taking their rise in the Andes near the southern frontier, and after flowing nearly the entire length of the country from south to north, unite in one channel, and discharge their combined waters through a delta, by three channels, into the Caribbean Sea, about W. long. 75°. Besides these two principal streams, a large number of the tributaries of the Orinoco, having their sources in the different ranges of the Andes, drain the *llanos* of the east. Of these, the principal are the Apure, Meta, Vichada, Guaviare, Rio Negro and Japura, on the mutual boundary with Ecuador. The lakes of New Granada are inconsiderable; the most celebrated is the Guatavita, not far from the city of Bogotá, into which, it is affirmed, large treasures were thrown by the natives during the Spanish invasion and conquests.

The mineral riches of New Granada are considerable, and mostly occur in the western declivity of the three chains of the Andes. They consist of salt-rock, lead, iron, copper, mercury, platinum, silver, and gold. Along all the central and western declivity of the Andes gold is found, and is obtained by washing the sand of the rivers, as well as that on the sides and foot of some hills. It is found on the plateaux of Cucuta and Girona in the eastern Andes, where silver also is obtained in considerable quantity. There are also some very rich mines in the mountain region between the Rios Cauca and Magdalena, north of N. lat. 5½°. Platinum is found in the western declivity of the western Andes, and mercury in the valley of Santa Rosa, near Antioquia, and near the Pass of

Quindiu in the central Andes. Copper is found in the eastern Andes, near Pamplona, and north of Tunja. Iron and coal occur in the mountains bordering on the table-lands of Bogotá, and lead in various parts of the eastern Andes. In some mountains north-east of Bogotá large masses of rock-salt are found, and it is worked by the government. Large quantities of salt are furnished also by salt-springs in the same mountains.

From the great diversity of surface, soil, and climate of New Granada, the natural productions are extremely varied, embracing almost every variety found in the temperate as well as in the tropical zone. The chief objects of culture over the table-lands of Bogotá, and the district north of it, along the western slopes of the eastern range, are the cereals as in Europe, the aracacha-root, and potatoes; but in the river-valleys, and on the coast-plains, maize is the chief grain cultivated, with rice, sweet potatoes, and plantains. As articles of commerce, are cultivated coffee, cotton, cocoa, tobacco, some sugar, and indigo. The forests abound with numerous kinds of useful timber trees; but those converted into articles of export are the log-wood, Brazil, Nicaragua, and fustic trees, which grow most abundantly in the forests of the Santa Marta chain. The balsam of Tolu, so named from a village near Cartagena, is collected largely on the banks of the Rio Sinu, and ipecacuanha on those of the Rio Magdalena; cinchona, or Peruvian bark, is obtained in large quantities in the region of the Sierra de Santa Marta, as well as in several other places; cochineal of the finest quality is procured from the banks of the Sogamozo. Previous to the discovery of this country by Europeans, horses and cattle were unknown in these regions; but now *tasajo*, or jerked beef, and hides, as articles of commerce, are furnished by the immense herds of cattle which the *llanos* support; and mules, horses, and cattle are exported to the West Indies.

The population of New Granada are descendants of the Spaniards who have settled there during the three last centuries, and some of the native tribes intermixed with a few negroes. Very different degrees of civilization are found among the native tribes. Before the invasion of the Spaniards, those of the table-lands along the eastern Andes had organized a political system, and made some progress in the simpler arts of civilization. These, with the Indians in the valley of the upper Magdalena, are still the best husbandmen in the republic. Between the Pacific and the western Andes, nearly all the population are descendants of the aboriginal native tribes, whose progress in the arts of civilized life is very small, and almost exclusively owing to the few Spanish priests scattered among them as missionaries. None but the descendants of Europeans dwell in the treeless *llanos*; and their occupation is the care of the herds of mules, horses, and cattle. Wandering Indians, still in a very barbarous state, occupy the southern wooded portion of the *llanos*. The numbers of the respective races occupying New Granada have been estimated by Hubner as follows:—

White Caucasians.....	450,000
Native civilized Americans.....	801,000
Negroes.....	80,000
Mestis (descendants of Spaniards and natives)	999,000
Mulattoes.....	283,000
Samoyes.....	120,000
Zambos (in Magdalena).....	100,000
Quadrones.....	30,000

Total estimated population in 1853, 2,263,000

Agriculture holds the first place in the industry of New Granada. Rice, cotton, tobacco, cocoa, sugar, and tropical fruits, are among the productions of the coast region; while the elevated plains yield maize, wheat, and all the products of a temperate zone. The cultivation of the soil, however, is carried on very carelessly; and reclaimed land bears but a small proportion to the whole. On the *llanos* toward the Orinoco, almost the sole occupation of the people is the

rearing of cattle and horses. Agriculture is chiefly in the hands of the converted Indians, who manifest a very decided predilection for these labors of peace. Manufacturing industry is of so little importance that it can hardly be said to exist in the republic. It is limited to home-made coarse woollens and cottons, adapted for the use of the lower classes only. At Bogotá, the capital, and the other principal towns, indeed, straw hats, carpets, and some other articles are made, but in no case does the native industry become commensurate with the demands of the country, so that nearly all manufactured goods in use are imported. Mining is carried on, but only to a very inconsiderable degree. There is a silver mine at Santa Ana, in Bogotá, the only one now worked; and gold is collected in a few localities. Emeralds, diamonds, and pearls, are also obtained. The salt mines of Zipaquirá are, however, extensively worked. With the exception of this last, the mining business of the country is left entirely to the poor and ignorant.

The principal ports of New Granada are—on the Caribbean Sea, Santa Marta, Cartagena, Chagres, Río de la Hacha, and Portobello; on the Pacific, Panamá and Buenaventura. Steamers now navigate the Magdalena; and the only railway in the country is that from Aspinwall to Panamá.

Christopher Columbus discovered terra firma in 1498, and, during his fourth voyage, on the 2d of November, 1502, found Chagres and the Bay of Limones, called also Navy Bay. Different governments have been established throughout the Granadian territory, while Spanish colonies; a vice-royalty was at length formed in 1732, of what are now the republics of New Granada and Ecuador. In 1810, New Granada separated herself from the Spanish monarchy, and maintained a constant war until 1824, when the Spanish army was conquered by the republican, of which two thirds consisted of Colombians. Bolívar, the most distinguished leader of the Spanish-American revolution, was the first proposer of the union of Venezuela and New Granada, in 1818; and when the Congress of Angostura met, early in 1819, the fundamental law was enacted which established Colombia, on the 17th of December of that year. Venezuela separated herself in November, 1829, and Ecuador in May, 1830; and the central part of Colombia instituted itself the republic of New Granada on the 21st of November, 1831. In 1832, the constitution of the State was sanctioned, under the form of a democratic republican government, by dividing the supreme power into the executive, legislative, and judicial, under a central regimen, but giving to the provinces a municipal corporation, that each section might legislate in its local affairs. The republic was divided into provinces, these into cantons, and the cantons into parochial districts. The State recognized no national religion; but has declared that it will pay for the Catholic worship, and protect Granadians in its exercise. The law of Colombia, which attributed to itself the law of patronage exercised by Spain, has continued in vigor to the present time. The republic was first divided into 18 provinces; and they have since been increased to 35. The constitution of 1832 was reformed in 1843, without any variation in the form of government.

Commercial relations between the United States and New Granada are regulated by treaty of December 12, 1846, proclaimed June 12, 1848. The following summary presents the principal commercial features of this treaty:

There shall be a perfect, firm, and inviolable peace and friendship between the two republics. No favors to be granted by either party to other nations, which shall not become common to the other. Mutual benefits in trade and residence to be equally enjoyed. The coasting trade reserved by each country to its own flag. Equalization of duties granted by each country on vessels and their cargoes. The privileges respecting

drawbacks equalized to the flag of each in the ports of either. Importations and exportations of articles, the produce or manufacture of either country, into or from the other, equalized as to duties with similar importations and exportations of any other foreign country. All prohibitions as to articles of import or export to be equal in each country as respects the flag of the other; the three preceding stipulations to apply, whether the vessels proceed from their own ports or from foreign ports, respectively. The citizens of either country to be free to manage their own business, as well with respect to shipping and its incidents, as to purchases, sales, etc., in the country of the other; and this privilege to be enjoyed personally or by agents—they being in all these cases treated as citizens or subjects of the most favored nation. In case of embargoes, detention of vessels, etc., for public or private uses, full indemnity to be allowed. The vessels of either party seeking refuge in the ports of the other to be protected. Vessels captured by pirates to be delivered up to the owners. Assistance to be given in cases of shipwreck, etc., in the ports of each to the vessels of the other, in the same manner as to the national flag. Citizens of either country authorized to dispose of their personal goods and real estate within the jurisdiction of the other, by sale, donation, testament, or otherwise; and their representatives, being citizens of the other country, to succeed to their said personal goods or real estate, whether by testament or *ab intestato*, and to take possession thereof, either by themselves or others acting for them, and to dispose of the same at their will, paying only such dues as the inhabitants of the country are subject to in like cases. Protection to persons and property formally guaranteed, whether such persons are transient or dwellers in the territories under the jurisdiction of either party, respectively; and access to the legal tribunals of each country, free and unrestricted, granted to the citizens of the other, on the same terms as to the native or other citizens of such country. Liberty of conscience and the free and unrestricted rites of burial guaranteed. Both parties at liberty to trade with those at enmity with the other. Free ships to make free goods, contraband of war excepted. Enemy's property, to be protected by a neutral flag, must be shipped within two months after declaration of war. Articles contraband of war specified. Blockade defined to be the besieging or blockading of those places only which are actually attacked by a belligerent force capable of preventing the entry of the neutral. All contraband articles liable to confiscation. In case of blockade, vessels to be turned away, but not detained. Vessels entering before blockade may quit unmolested. During a visit at sea, armed vessels to remain out of cannon-shot. In case of war, sea-letters, certificates of cargo, etc., to be furnished, showing to whom the property belongs. In case of war between the two nations, merchants allowed time (6 months to those residing in ports, and 12 months to those residing in the interior) to arrange their business, transport their effects, etc. Citizens of other occupations, who may be established in the territories of the United States or of New Granada, to be respected and maintained in the full enjoyment of their personal liberty and property, this protection being dependent on their conduct. No confiscation of debts, etc., in the event of war. Citizens of the United States, their vessels and merchandise, placed on the same footing as those of New Granada in the ports of Panamá. Right of transit across the Isthmus of Panamá guaranteed to citizens of the United States, and no other or higher tolls to be exacted from them than from citizens of New Granada. The United States guarantees to New Granada the perfect neutrality of the Isthmus. Citizens to be held personally responsible for infringing any articles of the treaty; but reprisals not to be authorized, nor war declared, until justice has been demanded and refused.

An additional article provides that the two republics will hold and admit as national ships, of one or the other, all those that shall be provided by their respective governments with a patent issued according to its laws. The treaty to continue in force twenty years from the date of its ratification, and after that period the usual twelve months' notice required. The navigation and tariff regulations of New Granada are marked by a spirit of liberality, though the foreign commerce of the republic has not, as yet, attained any considerable importance. The commerce of the United States, however, with that republic, is thought to labor under some disadvantages, as appears from the following extract from a late consular return: "Our commerce, by treaty, is put on the footing of the most favored nations. But this is nominal only; for, in the list of dutiable articles, those supplied by the United States are taxed at a higher rate than such as come from England, France, and Germany. I can not now give you many instances; but my recollection is, that flour, bacon, and provisions generally, as well as common hats, boots, and shoes, may be enumerated. The articles mainly produced by the United States being taxed at a higher rate than articles produced by England, etc., etc., creating a practical discrimination against us, necessarily operates as a double injury in the exchange for the products of this country. * * * These matters should be corrected, and there should be a stipulation inserted in the treaty (should a new treaty be entered into) prohibiting the provinces from adding any tax, direct or indirect, except, perhaps, to enforce *bona fide* inspection."

The principal commercial ports of New Granada are Santa Martha, Cartagena, and Panama; the aggregate trade of which ports, for the year 1852, is given in the following statement:

COMMERCE OF NEW GRANADA, 1852.

Principal ports.	Entered.		Cleared.	
	Ships.	Tons.	Ships.	Tons.
Cartagena.....	114	14,871	109	13,734
St. Martha.....	59	4,157	48	4,127
Panama.....	312	143,899	297	133,836
Total.....	485	162,427	454	151,697

	Value entered.	Value cleared.
Cartagena....	881,946 livr. sterl.	99,207 livr. sterl.
St. Martha....	84,734 "	15,993 "
Panama.....	302,368,000 francs.	2,476,009 "

The subjoined analysis of this statement will show the distribution of the commerce of New Granada for the year specified:

	Per cent.		Per cent.
England and colonies	80·83	Cuba.....	0·50
France.....	7·42	Holland.....	0·49
United States.....	4·28	Hanse Towns.....	0·40
Curacao.....	2·54	Mexico.....	0·27
St. Thomas.....	2·31	Spain.....	0·23
Sardinia.....	0·63	Nicaragua.....	0·10

The imports, during the same year, consisted of printed, dyed, and white cottons, calicoes, and other similar tissues; silks, linens, woollens, hardware, furniture, manufactures of metals, medicinal drugs, wines, spirits, flour, and provisions generally. The chief article of export was gold, of which the amount for this year was about \$1,000,000.

A comparison of exports for a number of years exhibits the fact, that the quantity of gold exported has either remained stationary or slightly diminished. The cause is not found in any deficiency in the auriferous resources of the country, as the mines of Antioquia, and those in the country along the Pacific, on the Rio Zulia and the Rio Hacha, contain large quantities of the precious metals; but the difficulties attending the transportation of heavy machinery, indispensable in working the mines of Antioquia, seem to be insuperable, beyond a certain weight. Until good roads shall have been established, and the mines thereby rendered more accessible, but little improve-

ment in the mining industry of this region (the richest in New Granada) can be expected.

Large quantities of gold, in ingots and dust, enter into the clandestine trade of the republic, of which no account can be taken in the official returns.

Next to gold, tobacco is the most important article in the export trade of New Granada, and its most productive staple. The soil, in many parts of the republic, is peculiarly adapted to the growth of tobacco, and its production might be made a source of the principal agricultural wealth of the State, under a different system of properly regulated industry. The quantity exported in 1848 exceeded that of the preceding year by 35 per cent.; and the returns for several preceding years exhibit a regular, though not so large, augmentation.

Cabinet-maker's wood and dye-stuffs rank next in the exports of the country. In 1848, they amounted in value to \$161,500. The large bulk of these products is sent to the United States, in part exchange for provisions, cotton goods, furniture, medicinal drugs, and sundries. Excellent coffee and cocoa are raised, chiefly in the valley of Cucuta; whence transported to Maracaibo, in Venezuela, they enter into the returns of Venezuelan exports.

In addition to these products of New Granada, a new species of bark has recently been discovered, which promises to become a valuable article of commerce. A letter from a mercantile house in London to a correspondent in New Granada, written in 1845, says: "We imported last year 17,000 seroons (hampers or baskets) of New Granada and 500 seroons of Bolivian bark. The New Granada all sold; but the Bolivian being held for a monopoly price, is still in the market—proving that this kind has very little demand."

Delondre, in his new work on quinine barks, gives an analysis of a New Granadian bark containing quite as much quinine as Bolivian calisaya. If the calisaya of Santa Fé, or fusagasuga and pitaya barks of New Granada, had been introduced into the market before the Bolivian, there would be no question about the quality of the alkaloids they yield.

There seems a probability that this New Granadian bark will soon enter largely into the export trade of that country. The chemical test to which it has been subjected in England, has already stamped it as a valuable acquisition to the materia medica; and the periodical scarcity of quinine, which sometimes raises that article to a most exorbitant price, will render it still more popular. In reference to this bark, and other valuable products of New Granada, a report submitted in July, 1856, to the French government, relative to the commercial movements of France in New Granada, says: "Formerly, that republic had no other equivalent to offer, in exchange for foreign merchandise, than the gold of its mines." The abolition, in 1853, of the monopoly of tobacco, however, has given a new stimulus to agricultural industry, and attracted numbers to the cultivation of that article. This agricultural movement is not the only benefit accruing to New Granada from the suppression of this monopoly. In bringing the capitalists of the country in contact with foreign merchants, it has taught them to appreciate better than formerly the immense wealth to be found in the soil of the republic. Thus, quinquina, which has remained almost unknown since the departure of the Spaniards, has been a second time discovered in 1853, and has already entered into their exports, and will soon become a considerable article among the staples of New Granada. The cultivation of cocoa, formerly limited to the consumption of the country, has also been largely extended, and is now become an article of export.

The navigation laws of New Granada, by a decree of the Senate and Chamber of Representatives of that republic, bearing date May 27, 1853, a translation of

which is subjoined, undergo some modifications in favor of foreign commerce, as follows :

ARTICLE 1. The following ports and territories of the province of Choco shall be free for all nations in the world, from January 1, 1854, for twenty years :

1. The ports of the Atlantic and the territory watered by the River Atrato, from its mouth to its confluence with the River Guito, comprehended between the western chain of the Andes and that branch of it toward the eastward which separates said province from that of Antio-Chin.

2. The ports of the Pacific and the territory watered by the River San Juan, from its embouchure, as far as the city of Navita, contained between the above-mentioned chain of the Andes and that branch of it which separates it toward the southward from the province of Buenaventura.

ART. 2. Consequently, no custom-houses can be established in said ports and territories within the time specified ; nor can any duties be levied, save those of toll, passage, and excise, corresponding to the municipal revenues, and in conformity with the existing laws.

ART. 3. In order to recover the duties on importation of foreign merchandise which may be introduced for the consumption of the interior of the rest of the province, and other provinces of the republic, there shall be established two custom-houses, one in the city of Quibdo, and the other in the city of Navita, with necessary officers, etc., etc.

ART. 4. The executive power is authorized, when it deems it indispensable for weighty motives of public convenience, to assign other ports for custom-houses than those expressed in this law ; in which case, the maritime ports expressed in article 1, and the territory comprised between the coasts and the spot on which such custom-houses shall be fixed, alone can enjoy freedom.

Another decree of similar importance to the interests of foreign commerce was published in the official paper of the New Granadian government of the 20th of July, 1856, in virtue of legislative authority, declaring Cartagena a free port for the commerce of all nations, from the 1st of September ensuing. By this decree, however, vessels will continue to pay tonnage duty, conformable to the law of the 25th of June last in relation to that subject. The exemption from import duties is circumscribed to the walled portion of the city, and hence does not apply to goods carried to the outside villages of Cabrero, Bocagrande, Espinal, and Manga i Pie de la Popa. Counterfeit money, and Spanish, Colombian, and Granadian money, under the standard of 0.900, as well as copper not sold for the use of the republic, are prohibited ; also, rum, and its compounds, so long as the legislature shall not decree the free manufacture and sale of that article. Vessels must exhibit the usual papers on entering the port ; and when a vessel is only going to leave a part of her cargo, the captain must, within twenty-four hours, present a manifest of what he intends to land, and what to leave on board. If the vessel come in search of a market, and not for the determined purpose of landing her goods, the captain will be allowed forty-eight hours to present a manifest of what he intends to land and what to retain on board. If the vessel come in ballast, a manifest will not be required, but the visiting officer will satisfy himself that such is the state of the vessel. A vessel from another port of the republic, or from a port of a nation in which, by virtue of stipulations entered into with this republic, by treaty or convention, merchandise put on board in the ports of such nation must be accompanied by bills of lading, will be required to produce bills of lading for articles which may have been shipped in said ports, and a general manifest for the remainder of the cargo not embraced in such bill. The captain or supercargo not fulfilling these regulations must leave port immediately ; first paying

tonnage duty, unless exempted from such payment by the law of the 25th of June, before cited. Vessels carrying a mail, and steam or sailing packets, shall be visited at any hour of the day or night, and in like manner their goods and the baggage of their passengers may be landed. A custom-house officer will board vessels at Bocachica. When the vessel contains goods subject to import duties, the hatchways, etc., shall be closed and sealed by the commanding revenue officer, packets being excepted from this regulation ; after which formality, the custom-house officers will retire, leaving a suitable guard, which shall be relieved daily. The seals on the hatches, etc., are not to be broken, except by the commanding officer who placed them there, or by his deputy. The decree embraces a number of additional provisions in relation to the discharge of cargo, custom-house inspection, re-exportation, etc., etc., and is accompanied by an explanatory note from the Secretary of the Treasury of New Granada.

The coasting trade of New Granada is open to all foreign vessels, but only foreign steamers are permitted to navigate the rivers of the republic. This is an important privilege to foreign vessels, and one which is destined to stimulate American enterprise in this neighboring republic. When the repairs of the canal connecting the harbor of Cartagena with the Magdalena, now in progress, under the superintendence of an American engineer, shall have been completed, the internal trade of New Granada will be the means of developing more fully its great resources, and bringing to market the tobacco, India rubber, quinia, hides, corn, cocoa, coffee, sugar, etc., the production of which can be increased to an incredible extent. When this canal shall have been completed, Cartagena will become the great emporium of New Granada—at least of 20 of the principal agricultural provinces, containing a population of 1,628,471 inhabitants. The present tariff regulations of New Granada, to be found in Part II., have been in force since May 1, 1855 ; but by a late act of Congress, the manumission duty of 20 per cent. is to be suppressed, and, in lieu, the additional duty of 25 per cent. on the total amount of the import duty is to be increased to 50 per cent. The port regulations of New Granada are such as are deemed necessary, as well in view of the general convenience and safety of vessels, as to answer proper police and harbor discipline. Places are pointed out into which all rubbish, etc., is to be thrown. Ballast is to be taken in and thrown out under written authority of proper officers. Cannon are not to be fired without permission of the captain of the port. At Cartagena, it is forbidden to sound the upper or interior channels of the port, or to have any communication with the shore between eight o'clock at night and five o'clock in the morning. It is also forbidden to disembark any individual before the visits of the officers of customs and captain of the port. For the violation of any of these regulations, fines are imposed, varying from 10 to 40 dollars, according to the nature of the case.

There are no quarantine regulations at any of the ports of New Granada, and consequently no bills of health are required. No light or hospital money is levied. No local impost is charged. At the port of Savanilla there is a water-tax upon all vessels arriving there of \$4 each, imposed by the provincial legislature. Pilots are employed and paid by government. Their duty is to visit all vessels requiring their assistance, and all vessels coming from a foreign port are required to pay the full fees, whether they take on board a pilot or not. The fee is \$11, in and out. There is also a fee of \$6 40 to be paid to the captain of the port on visiting the vessel, and \$1 60 for the interpreter. With the exception of the interpreter's fee, this amount is also levied on New Granadian vessels. By a decree of the Congress of New Granada, bearing date June 19, 1856, which, like that of July 20, already given, comes to hand as these sheets go to press, new regu-

lations respecting tonnage dues are established, of which a translation is given as follows: "Tonnage dues, port dues, pilotage, and visit fees, shall be the same in all the ports of the republic, including the free ports of the Isthmus of Panama, Cartagena, Choco, Buenaventura, and Tumaco, and the following sums shall be collected: 1. Every vessel under 100 tons shall pay 40 cents per Granadian ton for her capacity. 2. Every vessel exceeding 100 tons shall pay 40 cents per ton for the first 100 tons, and 20 cents per ton for each ton over the same. 3. Tonnage dues shall only be paid at the first port at which a vessel touches, proceeding from foreign countries: vessels proceeding from one port to another in the republic shall not pay tonnage dues. 4. War vessels of the country, or of friendly nations, and transports assimilated to them, which may touch at the ports of the republic, shall not pay tonnage dues. 5. The executive may exempt from tonnage dues, and permit to coast, sail or steam vessels that agree to convey the mails between the ports of the republic, and carry such correspondence gratis as may be entrusted to them. Those that do not agree to this, shall pay tonnage dues, cash, in hard dollars of the country. 6. Vessels arriving in ballast, or which load in New Granada, shall not pay tonnage dues; neither shall those chartered to bring immigrants to the republic, when the number of the same exceeds 50. Tonnage dues shall be charged at the Isthmus ports from the 1st September next; the product shall be divided equally between the State and general government."—*Com. Rel. U. S.*, vol. iii., 1857.

Since January 1, 1850, Panama, and all the other ports on the Isthmus, have been free—Aspinwall, of course, included. The only duties levied at these free ports are navigation dues, as above given; from which, however, the vessels in the service of the Panama railroad at Aspinwall are exempt by charter. In February, 1855, Panama was erected into an independent State, with the power vested in the legislature to establish custom-houses, or, in other words, to abolish the existing freedom of its ports. It is not very likely, however, that the new State will be disposed to take any legislative action by which the existing franchise of Aspinwall would be abolished, or even abridged. This new State has now become the principal centre of commercial interest in this republic. In 1852 there entered and cleared at its Pacific port (the port of Panama) 609 vessels, measuring an aggregate of 277,785 tons, of which 312 entered floating cargoes, including

specie, to the value of \$60,473,000; and there cleared 297 vessels, with cargoes valued at nearly \$500,000. In this movement, the number of vessels under the American flag was 169, measuring an aggregate of 163,113 tons; under the British flag, 188 vessels, measuring in all 83,070 tons; and under the French flag, 20 vessels, with an aggregate of 5836 tons. The freights under the United States' flag were valued at \$51,935,000; those under the British, at \$8,000,000; and the remainder of the total given above was distributed between the South American, French, and other European flags. The American and British freights included the gold dust brought down from California by the steamers for the former, and the silver brought up the coast for the latter, in neither case including the large amounts in the hands of passengers. See PANAMA.

The total amount of gold and silver which passed through Panama in transit in 1853 was \$52,037,785. The countries whence this sum was exported, and the amounts from each, are given as follows:

California.....	\$42,627,852
Mexico.....	2,765,000
Peru and Chili.....	6,584,876
Australia.....	60,557
Total.....	\$52,037,785

The total number of passengers who crossed the Isthmus the same year was 23,690, of whom 13,937 came from California, and 9753 were proceeding to that country. In 1855 the total number of passengers that crossed the Isthmus was 28,704. Of this number there came from California 10,015, and there proceeded to that State 16,289, all in American steamers; by the British steamers there came from Europe 1300 passengers, and there proceeded to Europe 1100. The transit of gold and silver the same year amounted to \$40,407,907. This amount was brought from the following points:

San Francisco.....	\$31,671,815
Chili and Peru.....	6,854,573
Mexico.....	1,867,961
Panama.....	513,558
Total.....	\$40,407,907

The total exports of New Granada, during the year ending December 31, 1853, amounted to \$30,849,595 65. Of this aggregate amount, Cartagena exported \$17,913,146; Cucuta, \$4,153,898; Guanapalo, \$14,312; Rio Hacha, \$628,069 40; Savanilla, \$8,105 728 25; Tumaco, \$34,412.

COMMERCE OF THE UNITED STATES WITH NEW GRANADA, FROM OCTOBER 1, 1840, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	Exported.	Imported.	American.	Foreign.
Sept. 30, 1841.....	\$50,562	\$59,878	\$110,485	\$144,117	\$14,153	\$42,432	533	722
1842.....	57,363	46,961	104,324	176,216	....	41,584	1,615	161
9 mos. 1843.....	72,069	89,944	161,953	115,733	2,430	39,714	1,245	....
June 30, 1844.....	75,621	49,225	124,846	189,616	....	62,605	1,691	....
1845.....	48,717	30,260	78,977	171,921	....	47,389	1,562	....
1846.....	51,849	24,095	75,944	67,043	....	32,100	1,069	293
1847.....	58,655	19,405	78,060	156,654	....	75,179	565	734
1848.....	79,165	45,438	124,603	213,296	19,000	77,500	733	1,567
1849.....	244,460	58,324	297,784	158,960	52,077	62,562	25,094	1,354
1850.....	970,619	285,610	1,256,219	591,992	273,000	480,089	121,753	6,237
Total....	\$1,704,020	\$703,525	\$2,407,545	\$1,985,543	\$360,710	\$911,104	155,860	11,063
1851.....	\$2,507,701	\$593,121	\$3,040,822	\$695,606	\$65,895	\$495,758	205,890	12,585
June 30, 1852.....	1,298,336	217,553	1,515,734	750,527	50,461	456,744	183,375	5,158
1853.....	758,391	108,079	866,470	558,523	3,462	295,956	205,402	2,840
1854.....	855,254	82,052	937,306	1,473,520	2,017	855,022	170,460	1,164
1855.....	892,245	169,800	1,062,045	1,799,672	273,864	478,943	121,563	1,698
1856.....	1,444,943	166,549	1,611,892	2,825,018	257,474	292,490	129,518	1,812

Principal Ports.—Chagres, a sea-port town of New Granada, Central America, on the northern coast of the Isthmus of Panama, at the mouth of the Chagres River, on the Caribbean Sea. Latitude of fort San Lorenzo 9° 18' 6" N., long. 79° 59' 2" W. It is a mere collection of huts, with a harbor only for vessels drawing 10 or 12 feet of water; but it has frequent traffic with Panama, and is sometimes resorted to by

shipping from the United States, Cartagena, and the British West Indies.

Panama, a city and sea-port town of New Granada, on the Pacific, 33 miles south-east of Chagres, lat. 8° 56' N., long. 79° 31' 2" W. Population estimated at 7000. It stands on a rocky peninsula, projecting into the Bay of Panama, and has an imposing aspect from the sea. Its streets are well ventilated, and it is said

to be cleaner than most Spanish American cities. It is encircled by irregular and not very strong fortifications, constructed at different periods. The houses are partly of wood, straw, and other fragile materials. The tides daily rise and fall from 20 to 27 feet, so that it is peculiarly well fitted for the repair and building of ships. The Panama railroad has one of its termini here, and another at Aspinwall, on Manzanilla Island, Navy Bay. Trains take about four hours in passing from sea to sea. See PANAMA.

Cartagena, or Carthagena, a strongly-fortified city and sea-port of New Granada, South America, of which republic it is the chief naval arsenal, capital of the province, on a sandy peninsula in the Caribbean Sea. Lat. of the dome $10^{\circ} 25' 36''$ N., long. $75^{\circ} 34'$ W. Population, 10,000, nine tenths of whom are a mixed black race. Its excellent port is defended by two forts, and is the only harbor on the north coast of New Granada adapted for repairing vessels. Cartagena is the principal dépôt for the produce of the provinces watered by the Cauca and Magdalena Rivers, and is connected with the Magdalena by a canal. It exports sugar, cotton, coffee, tobacco, hides, specie, bullion, etc. Under the Spaniards, this city was the seat of a captain-general, and one of the three tribunals of the Inquisition in America. It was the first town that proclaimed independence, and in 1815 endured a most vigorous siege, and was subdued only by famine. Population of the province, 103,783.

New Hampshire. It is situated between lat. $42^{\circ} 41'$ and $45^{\circ} 11'$ N., and $70^{\circ} 40'$ and $72^{\circ} 30'$ W. long. It contains 8,030 square miles.

Population in 1790, was 141,885; in 1800, 138,858; in 1810, 214,460; in 1820, 244,161; in 1830, 269,328; in 1840, 284,574; and in 1850, 317,864.

Early History.—John Mason, one of the first eminent settlers of the north-eastern coast of New England, having agreed with Sir Ferdinando Georges to make the Piscataqua the division line between them,

took subsequently from the Plymouth Council a patent of what lies between that river and Merrimack, and he called that tract of land "*New Hampshire*," because he had been Governor of Portsmouth, in Hampshire, in England.

In the year 1680 New Hampshire separated from the province of Massachusetts, and was established as an independent royal province. It was afterward united again with Massachusetts, but in 1749 finally separated, and has existed since that time as an independent community, first under the name of "*the Province of New Hampshire*," and since 1776 under that of "*the State of New Hampshire*."

The Connecticut River has its source in the highlands, on the north border of the State, and its west branch forms the boundary line between New Hampshire and Canada to within one mile of the 45th degree of north latitude. Its general course is south by west, and dividing New Hampshire and Vermont it passes through the western part of Massachusetts, and the central part of Connecticut, where it enters Long Island Sound. Merrimack River, the Pemigewassit branch, rises near the Notch in the White Mountains, and is joined by the Winnipiseogee, 70 miles below the source of the former. It here takes the name of Merrimack. The Androscoggin and Saco Rivers rise and have a part of their course in this State.

Granite is plentiful throughout the State, and also marble and limestone. Iron ore, zinc, tin, lead, and copper exist, some of which have been worked to advantage.

There were in this State in 1850, 2,251,488 acres of land improved, and 1,140,926 of unimproved land in farms. Cash value of farms, \$55,245,997, and the value of implements and machinery, \$2,314,125. *Live Stock.*—Horses, 34,233; asses and mules, 19; milch cows, 94,277; working oxen, 59,027; other cattle, 114,606; sheep, 334,756; swine, 63,487; value of live stock, \$8,871,901.

FOREIGN COMMERCE OF THE STATE OF NEW HAMPSHIRE, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Tonnage Cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821.....	\$180,129	\$80,636	\$260,765	\$350,021	8,287	....	17,467	6,282
1822.....	188,882	10,817	199,699	380,052	8,846	....	....	....
1823.....	182,945	54,760	237,705	371,770	7,563	....	....	....
1824.....	178,508	6,875	185,383	245,518	8,048	....	....	....
1825.....	181,840	16,840	198,680	331,244	7,566	4,691	....	....
1826.....	150,682	16,898	167,075	348,609	7,177	....	....	....
1827.....	155,580	21,518	177,398	302,211	6,849	....	....	....
1828.....	115,947	8,486	124,433	299,849	5,894	....	....	....
1829.....	95,264	7,476	102,740	179,889	6,748	....	....	....
1830.....	98,499	2,685	96,184	180,828	4,682	....	....	....
Total.....	\$1,526,276	\$226,786	\$1,753,062	\$2,889,936	71,060	4,691	....	....
Sept. 30, 1831.....	\$109,456	\$1,766	\$111,222	\$146,205	4,926	....	8,790	5,910
1832.....	115,892	....	115,892	115,171	4,777	250	....	....
1833.....	143,355	9,903	153,258	167,754	6,002	....	....	....
1834.....	79,656	1,214	80,870	118,695	4,380	78	....	....
1835.....	75,076	6,605	81,681	71,514	3,877	119	....	....
1836.....	15,015	505	15,520	68,912	2,496	574	....	....
1837.....	26,000	8,641	34,641	81,550	2,575	429	....	....
1838.....	56,103	18,567	74,670	169,985	11,191	1,615	....	....
1839.....	74,914	7,080	81,994	50,665	3,849	678	....	....
1840.....	20,761	218	20,979	114,647	1,925	2,989	....	....
Total.....	\$717,918	\$54,449	\$772,367	\$1,100,093	45,288	6,682	....	....
Sept. 30, 1841.....	\$10,261	\$87	\$10,348	\$73,701	1,475	2,390	17,371	7,363
1842.....	28,419	128	28,547	60,481	1,241	3,612	....	....
9 mos., 1843.....	44,659	115	44,774	8,289	1,018	2,256	....	....
June 30, 1844.....	5,994	690	6,684	81,420	201	4,515	....	....
1845.....	2,374	10	2,384	22,689	169	2,849	....	....
1846.....	4,997	75	5,072	15,485	898	3,413	....	....
1847.....	1,407	283	1,690	16,985	281	1,671	....	....
1848.....	7,807	496	8,303	61,908	8,229	2,689	....	....
1849.....	5,852	26	5,878	64,351	1,623	5,819	....	....
1850.....	8,722	205	8,927	49,079	682	7,531	....	....
Total.....	\$120,492	\$2,055	\$122,547	\$408,738	10,162	36,635	....	....
June 30, 1851.....	\$4,949	....	\$4,949	\$58,028	2,866	5,307	17,849	7,578
1852.....	67,204	\$2,254	69,458	83,310	2,284	5,182	....	....
1853.....	1,126	....	1,126	32,608	845	3,692	....	....
1854.....	913	118	1,031	34,505	1,643	2,519	....	....
1855.....	1,523	....	1,523	17,786	2,405	3,061	....	....
1856.....	5,168	107	5,275	24,389	2,268	3,479	....	....

Manufactures, etc.—There were in the State in 1850, 43 cotton factories, with a capital invested of \$10,974,700, employing 2,915 males and 9,235 females, producing sheetings valued at \$8,861,749; 91 woolen factories, with a capital of \$2,547,500, employing 873 males, and 1,021 females, manufacturing 9,712,840 yards of cloth, and 165,200 lbs. of yarn, valued at \$2,439,967; 1 establishment with a capital of \$4,000, employing 30 persons, producing 200 tons of pig iron, etc., valued at \$17,200; 26 establishments with a capital of \$232,700, employing 374 persons, and making 5,764 tons of castings, etc., valued at \$371,710; 2 establishments with a capital of \$4,000, employing 6 persons, manufacturing 110 tons of wrought iron valued at \$10,400; 178 flouring and grist mills, 80 saw mills, 165 tanneries, with a capital of \$441,975, employing 513 persons; 40 printing offices, 2 daily, 36 weekly, 1 semi-monthly, and 2 monthly newspapers. Capital invested in manufactures, \$18,242,114; value of manufactured articles, \$23,160,503.

Agricultural Products, etc.—Wheat, 185,658 bushels; rye, 183,117; Indian corn, 1,573,670; oats, 973,381; barley, 70,256; buckwheat, 65,265; peas and beans, 70,856; potatoes, 4,304,919; value of products of the orchard, \$248,563; produce of market gardens, \$56,810; pounds of butter made, 6,977,056; of cheese, 3,196,563; maple sugar, 1,294,863; molasses, 9,811 gallons; beeswax and honey, 117,140 pounds; wool, 1,108,476; flax, 7652; silk cocoons, 4,191; hops, 257,174; tobacco, 50; hay, tons of, 598,854; clover seeds, 829 bushels; other grass seeds, 8,071; flax seed, 189; and were made 344 gallons of wine. Value of home-made manufactures, \$393,455; of slaughtered animals, \$1,522,873.

Principal Port.—Portsmouth is the only sea-port in the State. It is situated on the south side of the Piscataqua River, on a peninsula, three miles from the sea, lat. 43° 40' N., long. 70° 45' W. The harbor is one of the best in the world; it has 42 feet water at low tide through the whole channel, and the current is sufficient to prevent it from freezing. The United States' Navy Yard is located on an island near the main bank of the river. The city has valuable manufactures and a large foreign and country trade, and being intersected by the line of railroads between Boston and Portland is connected thereby with all the New England and Canada towns; a railroad also extends to Concord. The tonnage of Portsmouth in 1856, was 34,590 tons.

The principal places in this State are Concord, the capital, Manchester, Portsmouth, Dover, Exeter and Nashua. There were in 1856, 15 railroads, with 660 miles of track completed and in operation, and 24 in course of construction. The only canals are those facilitating the navigation of the Merrimack River.

For commerce, resources, etc., of New Hampshire, see *Hunt's Merch. Mag.*, iv., 346; *Am. Jo. Science*, xlix., 27; *Am. Quar. Reg.*, xiii., 170; *North Am. Rev.*, xviii., 33.

New Jersey lies between 38° 55' and 41° 24' N. lat., and between 73° 59' and 75° 29' W. long. It is 163 miles long and 52 broad, and containing 6,851 square miles.

Population in 1790, was 184,189; in 1800, 211,149; in 1810, 245,592; in 1820, 277,575; in 1830, 320,779; in 1840, 373,306; and in 1850, 489,555.

Early History of New Jersey.—The shore and territory of the present State of New Jersey were at first, since 1606, a part of the great English province of northern Virginia; and then (since about 1621) it was considered (at least by the Dutch) as a part of their *New Netherlands*.

The English, however, always claimed the country; and in the year 1648 Sir Edmund Ploydon and some English gentlemen received a charter and grant of a great tract of country "lying midway between New England and Maryland," to which the name of *New*

Albion was given. This is the first English name which this country received. The charter had, however, no great consequences. The Dutch remained in possession, and the name *New Albion* was forgotten.

When the English conquered the *New Netherlands* for the Duke of York, all this land was included in the large territory given to the Duke of York. But the Duke of York very soon sold (as early as the year 1664) that part of his grant which was lying between Delaware and Hudson's River to Sir George Carteret and John Lord Berkeley. The grant which he gave to them is dated on the 24th of June, 1664. The country received at once the name of New Jersey, in compliment of Sir George Carteret, whose ancestors came from the Island of Jersey, and who was himself Governor of the Island of New Jersey.

The Hudson and Delaware Rivers flow on the eastern and western sides of this State. The Raritan is navigable 17 miles to New Brunswick, and it enters Raritan Bay; the Passaic is navigable for small vessels for about 15 miles, and enters into Newark Bay; the Hackensack, navigable 15 miles, also enters Newark Bay. Great Egg Harbor River, navigable 20 miles for small craft, passes through a bay of the same name and enters into the Atlantic. The principal bays are Newark and Raritan. Delaware Bay is on its south-eastern border. It has two important capes, viz., Cape May on Delaware Bay, and Sandy Hook at the entrance of the Bay of New York. It contains quarries of good building stone, valuable mines of zinc and of iron, and in the south parts, beds of marl.

The principal places in this State are Trenton, the capital, Princeton, New Brunswick, Rahway, Elizabethtown, Jersey City, Hoboken, Paterson, Hackensack, Morristown, South Amboy, Freehold, Burlington, and Camden. There were in the State, July, 1857, 38 banks with a paid capital of \$5,147,741. The total tonnage of the State, January, 1853, amounted to 93,300 tons.

The northern part of the State is mountainous, being crossed by a branch of the Alleghany Ridge; the middle portion is agreeably diversified by hills and valleys; while the southern part is level, sandy, and mostly covered with pines and a scanty growth of shrub oaks. The northern and middle portions of the State have a fertile soil.

There were in the State in 1850, 1,767,991 acres of improved land, and 984,955 of unimproved in farms. Cash value of farms \$120,237,511; and the value of implements and machinery \$4,425,503. *Live Stock.*—Horses, 63,955; asses and mules, 4,089; milch cows, 118,736; working oxen, 12,070; other cattle, 80,455; sheep, 160,488; swine, 250,370; value of live stock, \$10,679,291.

Agricultural Products, etc.—Wheat, 1,601,190 bushels produced; rye, 1,255,578; Indian corn, 8,759,704; oats, 3,378,063; barley, 6,492; buckwheat, 878,934; peas and beans, 14,174; potatoes, 3,207,236; sweet potatoes, 508,015; value of products of the orchard, \$607,278; produce of market gardens, \$475,242; lbs. of butter made, 9,487,210; of cheese, 365,756; maple sugar, 2,197; molasses, 954 gallons; beeswax and honey, 156,694 lbs.; wool, 375,396; flax, 182,965; silk cocoons, 23; hops, 2,133; tobacco, 310; hay, 435,950 tons; clover seed, 28,280 bushels; other grass seeds, 63,051; flax seed, 16,525; and were made, 1,811 gallons of wine; value of home-made manufactures, \$112,781; of slaughtered animals, \$2,638,552.

Manufactures, etc.—There were in the State in 1850, 29 cotton factories with a capital invested of \$1,691,000, employing 739 males and 1,299 females, producing 8,122,580 yards of sheeting, etc., and 2,000,000 pounds of yarn valued at \$1,289,648; 61 woolen factories with a capital invested of \$410,650, employing 407 males and 137 females, manufacturing 771,100 yards of cloth, etc., valued at \$784,772; 9 establishments making pig iron, with a capital invested of

\$967,000, employing 600 persons, producing 24,031 of pig iron, etc.; entire value of products \$917,000; 45 establishments with a capital of \$593,250, employing 803 persons, making 10,259 tons of castings, valued at \$686,430; 53 establishments with a capital of \$1,016,843, employing 593 persons, manufacturing 8,162 tons of wrought iron valued at \$629,273; 391 flouring and grist mills; 75 printing offices, 61 newspapers, 8 daily,

50 weekly, and 3 monthly publications. Capital invested in manufactures, \$22,184,710; value of manufactured articles, \$39,134,514. The Delaware and Raritan Canal, 42 miles long, and the Morris, 102 miles long, are the canals in this State. There were, January 1, 1856, 11 railroads with an aggregate length of 504 miles in operation, and 29 miles in course of construction. The State of New Jersey has no public debt.

FOREIGN COMMERCE OF THE STATE OF NEW JERSEY, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Tonnage cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept 30, 1821.....	\$33,613	\$93	\$33,711	\$17,606	281	....	207	84,043
1822.....	53,551	....	53,551	103,190	2,302	....	....	....
1823.....	26,064	....	26,064	5,993	1,298	....	....	....
1824.....	28,989	....	28,989	637,518	1,463	....	....	....
1825.....	43,980	3,233	47,213	27,688	1,657	....	....	....
1826.....	30,859	7,106	37,965	48,004	1,658	....	....	....
1827.....	25,627	....	25,627	388,497	993	571	....	....
1828.....	1,892	....	1,892	706,572	130	....	....	....
1829.....	8,022	....	8,022	786,247	414	....	....	....
1830.....	8,224	100	8,324	13,444	627	....	....	....
Total....	\$290,821	\$10,537	\$301,358	\$2,684,999	10,713	571	....	....
Sept. 30, 1831.....	\$11,430	....	\$11,430	....	708	....	1,254	80,978
1832.....	53,991	\$7,808	61,794	\$70,460	732	800	....	....
1833.....	30,858	1,900	32,753	170	1,424	....	....	....
1834.....	8,131	....	8,131	4,492	790	236	....	....
1835.....	66,868	7,673	74,041	18,982	2,337	....	....	....
1836.....	38,769	24,040	62,809	24,263	3,076	....	....	....
1837.....	19,640	24,577	44,217	69,152	427	9,002	....	....
1838.....	25,010	....	25,010	1,700	990	....	....	....
1839.....	78,434	19,645	98,079	4,182	3,904	347	....	....
1840.....	14,888	1,193	16,076	19,209	725	....	....	....
Total....	\$350,504	\$36,586	\$437,340	\$212,560	15,153	10,885	....	....
Sept. 30, 1841.....	\$19,166	....	\$19,166	\$2,315	2,739	....	842	52,762
1842.....	64,931	3,976	70,907	145	2,301	....	....	....
9 mos. 1843.....	8,093	2,538	10,631	....	130	....	....	....
June 30, 1844.....	13,839	4,300	18,139	17,670	609	....	....	....
1845.....	....	....	....	829	....	....	....	....
1846.....	4,087	....	4,087	635	131	....	....	....
1847.....	18,428	700	19,128	4,837	552	615	....	....
1848.....	62	....	62	1,835	....	220	....	....
1849.....	85	8	93	4,258	....	423	....	....
1850.....	1,655	....	1,655	1,494	150	931	....	....
Total....	\$130,606	\$13,572	\$144,178	34,013	6,662	2,244	....	....
June 30, 1851.....	\$139	....	\$139	\$1,111	....	923	877	88,518
1852.....	1,438	....	1,438	2,491	....	1,393	....	....
1853.....	1,354	....	1,354	3,539	....	2,631	....	....
1854.....	2,225	....	2,225	3,971	....	2,029	....	....
1855.....	637	....	637	1,473	....	606	....	....
1856.....	390	....	390	2,738	....	608	....	....

Principal Ports.—Jersey City is a flourishing city at the mouth of the Hudson River, opposite New York city, and is the terminus of the southern railroad travel, and also of the New York and Erie Railroad and of the Morris Canal. Though a separate municipality, it may be considered as a suburb of the great metropolis, with which it connects by several ferries. It is a place of considerable manufacturing industry, ship-building, and commerce, and it is the American station of the Cunard line of New York and Liverpool steamships.

Paterson is situated immediately below the falls of the Passaic River, 17 miles from New York. It ranks next to Newark in manufactures, and is the third city in the State as to population. Its principal products are cotton and silk goods, locomotives, machinery, paper, etc. On the opposite side of the river is the manufacturing town of Manchester. Paterson communicates with New York by the Paterson and Hudson Railroad and Morris Canal.

The other towns of note are Newark, New Brunswick, Camden, Trenton, and Princeton.

New London, Connecticut, is situated on the Thames River, 3 miles from the ocean, 50 miles east of New Haven by railroad. Its harbor is one of the best in the United States, but is seldom visited by foreign vessels. The whale fisheries constitute its main interest, and it has also a large coasting trade. Several railroads connect it with the interior, New York, and Boston, and regular steamboats ply to and

from New York. The tonnage in 1856, was 40,371 tons. Population in 1830, 4350; in 1854, 10,000.

New Mexico, a Territory of the United States of America, lies between lat. 32° 30' and 38° 32' N., and long. 103° and 116° W. from Greenwich, England. Area, 210,744 square miles.

New Mexico is a mountainous country, with an extensive valley in the middle, running from north to south, and formed by the *Rio del Norte*. The valley is generally about 20 miles wide, and bordered on the east and west by mountain chains, continuations of the Rocky Mountains, which have received here different names, as Sierra Blanca, de los Organos, Oscura, on the eastern side, and Sierra de los Grullas, de los Mimbres, toward the west. The height of the mountains south of Santa Fé is from 6000 to 8000 feet, while near Santa Fé, and in the more northern regions, some snow-covered peaks rise from 10,000 to 12,000 feet above the sea. The mountains are principally composed of igneous rocks, as granite, sienite, diorite, basalt, etc. On the higher elevations, excellent pine timber grows; on the lower, cedars, and sometimes oak; in the valley of *Rio del Norte*, mezquite. The main artery of New Mexico is the *Rio del Norte*. Its head waters were explored in 1807 by Captain Pike, between 37° and 38° N. latitude; but its highest sources are supposed to be about 2° further north in the Rocky Mountains, near the head waters of the Arkansas and the Rio Grande (of the Colorado of the west). Following a generally southern direction, it

runs through New Mexico, where its principal affluent is the Rio Chamas from the west, and winds its way then in a south-eastern direction along the borders of Chihuahua, Coahuila, and Tamaulipas, to the Gulf of Mexico, in 25° 56' N. lat. Its tributaries below El Paso, are the Pecos, from the north; the Conchos, Salado, Alamo, and San Juan, from the south. The whole course of the river, in a straight line, would be near 1,200 miles; but by the meandering of its lower half, it runs at least 2,000 miles from the region of perpetual snows to the almost tropical climate of the Gulf. The elevation of the river above the sea near Albuquerque is about 4,800 feet; at el Paso del Norte, about 3,800; and at Reynosa (between 300 and 400 miles from its mouth), about 170 feet. The fall of its water between Albuquerque and el Paso, is from 2 to 3 feet in a mile, and below Reynosa 1 foot in 2 miles. The fall of the river is seldom used as a motive power, except for some flour mills, which are oftener worked by mules than water. The principal advantage which is at present derived from the river, is for agriculture, by their well-managed system of irrigation. As to its navigation in New Mexico, even canoes could not be used, except perhaps during May or June, when the river is in its highest state from the melting of the snows in the mountains. The river is entirely too shallow, and interrupted by too many sand-bars, to promise any thing for navigation. On the southern portion of the river, the recent exploration by Captain Sterling, of the United States' steamer *Major Brown*, has proved that steamboats may ascend from the Gulf as far as Laredo, a distance of 700 miles. Although the steamboat used did not draw over two feet of water, yet the explorers of that region express their opinion, that "by spending some \$100,000 in a proper improvement of the river above Mier, boats drawing four feet could readily ply between the mouth of the Rio Grande and Laredo."

There were in this Territory in 1850, 166,201 acres of land improved, and 124,370 of unimproved land in farms. Cash value of farms \$1,653,952, and the value of implements and machinery \$77,960. *Live Stock*.—Horses, 5,079; asses and mules, 8,654; milch cows, 10,635; working oxen, 12,257; other cattle, 10,085; sheep, 377,271; swine, 7,814; value of live stock, \$1,494,629.

Agricultural Products, etc.—Wheat, 196,516 bushels produced; Indian corn, 365,411; oats, 5; barley, 5; buckwheat, 100; peas and beans, 15,688; potatoes, 3; value of products of the orchard, \$8,231; produce of the market gardens, \$6,679; pounds of butter made, 111; of cheese, 5,848; molasses, 4,236 gallons; bees-wax and honey, 2 pounds; wool, 32,901; hops, 50; tobacco, 8,467; and were made, 2,365 gallons of wine; value of home-made manufactures, \$6,033; of slaughtered animals, \$82,125.

Besides agriculture, the inhabitants of New Mexico pay a great deal of attention to the raising of stock, as horses, mules, cattle, sheep, and goats. Their stock is all rather of a small size, because they care very little for the improvement of the breed; but it increases very fast, and as no feeding in stables is needed in the winter, it gives them very little trouble. There are large tracts of land too distant from the water-courses to be cultivated, or in too mountainous parts, which afford, nevertheless, excellent pasturage for millions of stock during the whole year; but unfortunately the raising of the stock has been crippled by the invasions of the hostile Indians, who consider themselves secret partners in the business, and annually take their share away.

A third, much neglected branch of industry in New Mexico, are the mines. A great many now deserted mining places in New Mexico, prove that mining was pursued with greater zeal in the old Spanish times than since, which may be accounted for in various ways, as the want of capital, want of knowledge in

mining, but especially the unsettled state of the country and the avarice of its arbitrary rulers. The mountainous parts of New Mexico are very rich in gold, copper, iron, and silver. Gold seems to be found to a large extent in all the mountains near Santa Fé, south of it in a distance of about 100 miles, as far as *Gran Quivira*, and north for about 120 miles up to the River Sangre de Cristo. Throughout this whole region, gold dust has been abundantly found by the poorer classes of Mexicans, who occupy themselves with the washing of this metal out of the mountain streams. At present, the old and new *Placer*, near Santa Fé, have attracted most attention, and not only gold washes, but some gold mines, too, are worked there. They are the only gold mines worked now in New Mexico. Several rich silver mines were, in Spanish times, worked at Avo, at Cerrillos, and in the Nambe Mountains, but none at present. Copper is found in abundance throughout the country, but principally at las Tijeras, Jemas, Abiquiu, Gaudelupita de Mora, etc. There is but one copper mine worked at present south of the placers. Iron, though also abundantly found, is entirely overlooked. Coal has been discovered in different localities, as in the Raton Mountains, near the village of Jemez, south-west of Santa Fé, and in a place south of the placers. Gypsum, common and selenite, are found; most extensive layers of it exist in the mountains near Algodones, on the Rio del Norte, and in the neighborhood of the celebrated "Salinas." It is used as common lime for whitewashing, and the crystalline or selenite instead of window-glass.

Santa Fé is the capital of the Territory. There were in 1850, 3 printing offices in the Territory, issuing a weekly and a tri-monthly, and a monthly publication. In the same year there were 1 academy, with 40 pupils; 146 Roman Catholic churches. Total amount of church property valued at \$188,200.

The climate of New Mexico is of course very different in the higher, mountainous parts, from the lower valley of the Rio del Norte; but generally taken, it is temperate, uniform, and healthy. The summer heat in the valley of the river will sometimes rise to nearly 100° Fahrenheit, but the nights are always cool and pleasant. The winters are long and severe; the higher mountains are always covered with snow, and ice and snow are common in Santa Fé; but Rio del Norte is never frozen with ice thick enough to admit the passage of horses and carriages, as was formerly believed. The sky is generally clear, and the atmosphere dry. Between July and October, rain falls; but the rainy seasons are here not so constant and regular as in the southern States. Disease seems to be very little known, except some inflammations and typhoid fevers in the winter season.

Of the history of New Mexico we authentically know but little. The Spaniards, it seems, received the first information in regard to it, in 1581, from a party of adventurers, commanded by Captain Francisco de Leyva Bonillo, who, finding the aboriginal inhabitants and the mineral wealth of the country to be similar to those of Mexico, called it New Mexico. In the year 1594, the Count de Monterey, then viceroy of Mexico, sent Juan de Oñate, of Zacatecas, to take formal possession of the country, in the name of Spain, and to establish colonies, missions, and presidios (forts). They found many Indian tribes, which they succeeded in Christianizing in the usual Spanish way, with sword in hand, and made them slaves. The villages of the Christianized Indians were called *Pueblos*, in opposition to the wild and roving tribes that refused such favors. Many towns, of which only ruins exist now, were established at that time; many mines were worked, and the occupation of the country seemed secure, when, in 1680, a general insurrection of all the Indian tribes broke out, and the Spaniards, who were quite unsuspecting and unprepared, were

massacred almost to a man. The Governor of New Mexico, Don Antonio de Otermin, after a hard struggle, retreated from Santa Fé, and marched as far south as Paso del Norte, where he and his followers met with some friendly Indians, made a stand, and laid the foundation of the town of that name. The war with the Indians lasted 10 years, when the Spaniards reconquered the whole country. Subsequently, several insurrections have taken place, none, however, have been so disastrous as the first, but the deep rancor of the Indian race against the white, has continued to the present time. There has grown up a hatred between the Indians and the Mexicans, never to be subdued but with the extinction of the race.

Santa Fé was taken by General Kearney, September 8, 1846, and the Territory was ceded to the United States by the treaty of Guadalupe Hidalgo, February, 1848, and the present territorial government established in 1850. The legislative assembly consists of a council of 13 members, elected for 2 years, and a house of representatives, of 26 members, elected for 1 year. Governor appointed by the President of the United States for 4 years. Every free white inhabitant, 21 years of age, and a citizen of the United States, is a legal voter.

New Orleans, the capital of Louisiana, one of the United States, on the eastern bank of the Mississippi, about 105 miles from its mouth, lat. $29^{\circ} 57' 45''$ N., long. $90^{\circ} 9'$ W. Population, in 1850, 119,461. The new-built streets are broad, intersecting each other at right angles; and the houses are mostly of brick. It is the grand emporium of all the vast tracts traversed by the Mississippi, the Missouri, and their tributary streams, enjoying a greater command of internal navigation than any other city, either of the Old or New World. Civilization has hitherto struck its roots, and begun to flourish only in some comparatively small portions of the immense territories of which New Orleans is the sea-port; and yet its progress has been rapid beyond all precedent. It appears from the accounts printed by order of Congress, that during the year ended the 30th June, 1852, the value of the native American produce exported from this city amounted to \$48,808,169, while the value of that exported from New York was \$74,042,581. With respect to imports, the case is materially different; the value of those of New Orleans, in the year just mentioned, being only \$12,057,724, whereas those of New York amounted to \$132,329,306. It is believed by many, seeing how rapidly settlements are forming in the "West," that New Orleans must, at no very distant period, exceed every other city of America, as well in the magnitude of its imports as of its exports; and, considering the boundless extent and extraordinary fertility of the uncultivated and unoccupied basins of the Mississippi and Missouri, the anticipations of those who contend that New Orleans is destined to become the greatest emporium, not of America only, but of the world, will not appear very unreasonable. Steam navigation has been of incalculable service to this port, and, indeed, to the whole of the valley of the Mississippi. The voyage up the Mississippi, that used formerly to be so difficult and tedious, is now performed in commodious steam packets with ease, celerity, and comfort. "There have been counted," says Mr. Flint, "in the harbor, 1500 flat-boats at a time. Steam-boats are arriving and departing every hour; and it is not uncommon to see 50 lying together in the harbor. A forest of masts is constantly seen along the levee, except in the sultry months. There are often 5000 or 6000 boatmen from the upper country here at a time; and we have known 30 vessels advertised together for Liverpool and Havre. The intercourse with the Havana and Vera Cruz is great, and constantly increasing." As a shipping port, New Orleans now ranks third in the Union; being in this respect inferior only to New York and Boston. Vessels of the

largest burden may navigate the river several hundreds of miles above the city. The aggregate burden of the shipping belonging to the port on the 30th June, 1852, amounted to 266,013 tons; of which 162,637 were employed in steam navigation. In the year ending 31st August, 1852, the arrivals of steamers, principally from the interior, were 2784. The depth of water in the river opposite to New Orleans is, at a medium, about 70 feet; and it maintains soundings of 30 feet till within a mile of its confluence with the sea. Besides three or four of inferior consequence, the Mississippi has four principal passes or outlets. In the south-east, or main pass, at Balize, the water on the bar, at ordinary tides, does not exceed 12 feet; and as the rise of tides in the Gulf of Mexico is not more than 2 or $2\frac{1}{2}$ feet, vessels drawing much water can not make their way from the ocean to New Orleans. The unhealthiness of the climate is the great drawback on New Orleans. This probably arises from the low and marshy situation of the city and surrounding country, which is under the level of the Mississippi, being protected from inundation by an artificial levee or mound, varying from 5 to 30 feet in height, and extending along the bank of the river a distance of 100 miles. The unhealthy season includes July, August, and September; during which period the yellow fever often makes dreadful havoc, particularly among the poorer classes of immigrants from the North and from Europe. Latterly, great efforts have been made to improve the health of the city, by supplying it abundantly with water, paving the streets, removing wooden sewers, and replacing them with others of stone, etc. Many places, where water used to stagnate, have been filled up; and large tracts of swampy ground contiguous to the town have been drained. And as such works will no doubt be prosecuted on a still larger scale, according to the increase of commerce and population, it is to be hoped that the ravages of fever may be materially abated, though the situation of the city excludes any very strong expectation of its ever being rendered quite free from this dreadful scourge. It has latterly been proposed to bring earth from the upper parts of the Mississippi, and to employ it in forming a site for a new city raised some feet above the level of the river. It is believed that this would be the most likely means to guard against fever; and the object in view is of such paramount importance, that the expense of the scheme should be reckoned a very inferior matter.

Several cotton presses are among the most imposing structures in the city. The Orleans cotton press is on ground 632 feet long and 308 wide, which is nearly covered with buildings. It contains a centre building, three stories high, surmounted by a cupola, which affords a fine view of the city. The wings are two stories high, and very extensive. It presses, on an average, 150,000 bales of cotton annually, but its capacity is much greater. There are other cotton presses. Several of the banks have fine buildings, and some of the hotels are magnificent. Two of these hotels cost \$600,000 each. The United States' branch mint has an edifice, 282 feet long, and 108 feet deep, with two wings 29 by 81 feet, the whole, three stories high, which cost \$182,000. The city is supplied with water raised by powerful steam-engines from the Mississippi River into a reservoir constructed on an artificial mound, 21 feet high at its base. The reservoir is 250 feet square, built of brick, and plastered with hydraulic cement. It is divided into four compartments, to allow the water to settle before it is distributed over the city in cast-iron pipes, which are laid to the aggregate length of 18 miles. The water works belonged to the Commercial Bank, and cost \$722,004. The city lighted with gas. A draining company, with a capital of \$64,000, has two steam-engines for draining the marshes of 35 miles in extent between the city and Lake Pontchartrain. There are in the city a United

States' land office, several public and private banks, having a large capital, and several insurance companies, with commensurate capitals.

The manufacturing establishments of this city are comprised under the head of furnaces, foundries, machine shops, sugar refineries, cotton factories, distilleries, tobacco factories, saw mills, etc. The whole employed a capital in 1850 of \$2,962,060, and manufactured articles valued at \$4,462,944; since which time the increase has been very rapid, and in 1854 were estimated to have doubled the amounts of 1850.

On the right bank of the river, and opposite to New Orleans, connected by a steam ferry, is Algiers; and adjoining, the suburb of Macdonough, where are the United States' Marine Hospital and many pleasant residences. Algiers contains several large machine shops, iron foundries, and ship-building establishments.

There are steam and sailing packet lines to all the large sea-port cities, sailing weekly. Also, steam packets weekly to Vera Cruz and other ports in the Gulf.

For commercial purposes, New Orleans occupies a very superior and commanding situation. It is the natural entrepôt for supplies destined to all parts of the Mississippi valley, as well as the dépôt for those products of that salubrious region which seek a market seaward. By means of the Mississippi River and its tributaries, an inland trade is opened to her grasp, the magnitude of which has never been equaled. Steamers may leave her wharves and proceed on voyages of several thousand miles without breaking bulk. The Mississippi and its affluents are flanked on either side by extensive territories, unsurpassed in richness of soil, which readily yield a harvest to the labors of the agriculturist, whether it be of sugar, corn, or cotton. These are the principal staples of the valley, and the receipts of each of their products at New Orleans are rapidly increasing. Heretofore, the river has been the only channel depended upon for their transportation. Several lines of railroad are in process of construction now, however, to facilitate the transportation of cotton and sugar produced at a distance from the river, to market, and thus enlarge the area of production. These bulky products will not bear an extensive land carriage by the old mode, and result in wealth to the producer; but the construction of railroads for their cheap transit to the river even, will not only change the prospects of the interior planters for the better, but will add greatly to the wealth and commerce of New Orleans, which is eminently a place of exchange and distribution. It is the great dépôt of the south-western plantations, where cotton and sugar crops are bought and sold while still in the field, or "advanced" upon prospectively if necessary. It has also an extensive trade with Texas, Mexico, and the Gulf ports, as well as a very heavy foreign export trade. She has, besides, a large coasting trade with Atlantic ports, the value of which can only be known generally by its results. Her commercial life may be said to date after the cession of Louisiana to the United States, in 1803, as previous to that, her commerce was insignificant; and yet, in this short period of about 40 years, she already ranks as the fourth city of the world for the magnitude and value of her commerce. The facilities and convenience of transacting business at New Orleans are fully equal to, and in many respects superior to those of any other place. It is the centre of immense exchange operations, and any amount of funds can at all times be obtained at the shortest notice under good letters of credit, and bills negotiated with great readiness and facility on any prominent point in the United States, or any of the commercial cities of western Europe; and the banking institutions afford all reasonable accommodations to the local wants and trade of the city. Some European cities can show more splendid quays or magnificent docks for the accommo-

dation of shipping, and the landing and loading of cargoes, far exceeding in appearance and durability any thing of the kind in New Orleans, but in no way superior in point of actual convenience to the unpretending wharves of the city. As is generally known, the surface of the alluvial soil of Louisiana, including, of course, the site of the city, is considerably below the river in ordinary stages of high water, and the country is protected from inundation by a raised and solid embankment called the "levee," extending on both sides of the river below, and a great distance above the city. Outside of the levee the bank of the river is called the "batture," which in many places is increasing from the continual alluvial deposits, while in other places the river has what is called "a falling bank," and the water gradually encroaches on the land. In the former case the levee is advanced as the batture increases, and this has been the case in a large portion of the front of New Orleans, where, in some parts, the levee has, in the last 25 years, advanced fully 1000 feet; and the front warehouses now stand for a long extent that distance from the water, affording a splendid space for the vast bulk of produce that is annually landed and shipped. The wharves are constructed outside the levee on massive piles, driven with a heavy iron ram into the mud, and extending over the river into the water sufficiently deep to admit the heaviest steamboats and ships to lie up against them; heavy sleepers connect the piles at their tops, and on these piles the platform is laid, of thick planking, the edges of which are separated about one inch, to prevent the accumulation of dirt, which falls through these interstices into the river flowing below, and in five minutes after the heaviest storm the whole surface is in perfect condition to receive any description of merchandize. These wharves are thus planked back till they join the crown of the levee, in some places 150 to 200 feet, which is made firm and solid by a constant coating of shells, and always kept in good order. One of these wharves presents an unbroken front on the river of 1500 feet, and others 600 to 800 feet, and in the business season it is usual to see these fronts entirely occupied with steamboats lying bow on, and each with her stage rigged out to the wharf, actively engaged in loading or unloading. The wharves intended for sea-going vessels are detached from each other with an intervening dock, and each wharf accommodates a tier of vessels, which, unlike the steamboats are moored up and down the river, one outside the other, three, four, and five tiers deep, with a broad, common stage communicating with the levee, and extending on the bulwarks of the vessel to the outside one; the timber, plank, and all the conveniences for this staging, being furnished by the city, who even also supply tarpaulins to protect the goods in case of rain.

New Orleans was founded by the French in 1717. In 1762 it was conveyed to the Spanish, who, in 1800, re-conveyed it to the French, and in 1803 it was included in the purchase of Louisiana by the United States. On January 8th, 1815, the British under General Packenham made an attack on the city, approaching it through Lake Borgne, but were signally defeated by the Americans under General Jackson. The British loss in killed and wounded was 3000 men, and General Packenham was killed; the Americans lost only 7 men killed and 6 wounded. In 1718 Bienville, at that time governor of the province, selected the present site of New Orleans, but owing to difficulties he had to encounter, it was not located until 1722. In 1727 the Jesuits arrived and were located in a tract of land, on a portion of which St. Charles Hotel now stands. In 1763 they were compelled to quit Louisiana by an order from Pope Clement XIII., and all their property confiscated, then estimated to be worth \$180,000, which is now worth over \$20,000,000. In 1769 the first case of yellow fever known, was introduced by a British slaver with a cargo from Africa.

In 1778 *Le Moniteur*, the first newspaper, was published; there are now 12 dailies and as many weekly papers published. In 1810 the first street was paved in New Orleans. At this time such was the state of the streets after a rain, that sleds were used to drag cotton, which paid \$1 a bale. In 1834 gas and water were introduced. The present area of the city is not far from 40 square miles, double the size of New

York. In 1825 the grounds above Canal-street and below Esplanade-street were principally plantations.

The following statistics give a complete view of the trade of this great and growing emporium. Its preponderance in shipment of cotton is as decided as that of Manchester in its manufacture: for further information refer to articles, COTTON, COTTON MANUFACTURE, GREAT BRITAIN, LOUISIANA, UNITED STATES.

EXPORTS OF COTTON AND TOBACCO FROM NEW ORLEANS FOR SIX YEARS, COMMENCING SEPTEMBER 1, AND ENDING AUGUST 31.

Whither exported.	Cotton.						Tobacco.					
	1856-57.	1855-56.	1854-55.	1853-54.	1852-53.	1851-52.	1856-57.	1855-56.	1854-55.	1853-54.	1852-53.	1851-52.
	Bales.	Bales.	Bales.	Bales.	Bales.	Bales.	Hhds.	Hhds.	Hhds.	Hhds.	Hhds.	Hhds.
Liverpool.....	721,111	931,541	702,541	779,021	869,335	751,172	6,164	2,931	5,272	6,860	9,458	7,844
London.....				893		50	5,179	4,600	7,571	5,048	6,082	5,197
Glasgow, Greenock, etc.	18,930	26,018	8,621	12,851	39,767	11,700						
Cork, Falmouth, etc.	5,494	8,605	3,460	15,611	12,494	7,211	103		549	578	610	982
Cork, Belfast, etc.	8,900	20,458	1,878	6,258		2,159						
Havre.....	247,481	227,152	168,650	185,254	202,957	183,054	148	3,844	8,430	5,707	1,482	9,056
Bordeaux.....	2,856	2,811	1,814	1,285	2,817	1,554	213	194	8,056	2,317	169	1,916
Marseilles.....	2,833	8,819	3,496	2,019	5,098	4,805	982	1,904	6,661	4,428	1,257	2,976
Nantes, Cete, & Rouen.	5,463	6,082	4,573	5,018	1,154	7,388						
Amsterdam.....	4,830	7,807	1,875	4,211	1,375	259	14	100	624	800	1,157	
Rotterdam and Ghent.	6,786	6,400	1,907	1,810	1,982	1,507	623	560		644	282	222
Bremen.....	55,385	58,238	29,451	32,349	14,621	10,248	10,667	8,240	5,293	7,970	15,053	15,515
Antwerp, etc.	15,089	18,147	7,577	9,010	22,232	24,562	8,725	3,747	2,492	8,926	4,084	7,618
Hamburg.....	11,500	21,852	5,661	28,709	10,531	17,694			46		125	475
Gottun'g & Stockholm	19,294	20,167	15,361	18,152	7,892	6,634	121	893	904	768	414	1,229
Spain, Gibraltar, etc.	58,530	83,174	47,154	58,796	51,448	47,645	4,671	14,279	7,618	6,282	10,175	7,662
Mexico, etc.	17,737	17,291	18,787	24,985	20,698	11,919						
Genoa, Trieste, etc.	58,352	78,347	43,223	52,240	76,902	75,093	5,457	4,472	4,947	1,128	1,906	11,184
St. Petersburg, etc.	43,666	30,534		9,634	37,502	15,046					2,647	8,583
Other foreign ports.							3,587	4,824	8,714	2,479		
New York.....	50,653	51,940	69,959	58,168	73,043	101,938	6,245	7,176	6,019	4,318	7,281	18,847
Boston.....	153,138	151,469	118,675	118,851	151,580	128,629	1,446	1,408	739	126	1,381	1,941
Providence, R. I.....		2,394	1,453		16,029	4,561						
Philadelphia.....	18,979	10,532	8,105	14,054	19,362	15,594	849	410	459	190	688	1,296
Baltimore.....	1,255	8,178	4,070	4,057	5,126	4,745	66		108	50	124	355
Portsmouth.....		1,540		2,189								
Other coastwise ports.	94	1,212	50	253	357	45	32	162	97	110	147	230
Western States.....					1,200	1,200						
Total.....	1,516,921	1,795,023	1,270,264	1,429,180	1,644,981	1,435,815	50,181	59,074	64,100	53,043	64,075	93,715
RECAPITULATION.												
Great Britain.....	749,485	936,622	717,928	813,736	922,086	772,242	11,446	7,581	13,892	11,981	16,150	14,023
France.....	258,163	244,814	178,823	193,571	211,526	196,254	1,298	5,342	18,147	12,447	2,908	13,943
North of Europe.....	156,450	162,675	62,692	93,875	95,635	75,950	15,150	13,870	9,247	13,932	20,798	26,814
S. Europe, Mexico, etc.	120,619	178,812	89,164	185,971	149,038	184,657	18,665	23,075	15,867	9,889	14,698	21,781
Coastwise.....	233,204	222,100	202,317	192,527	266,696	256,712	8,692	9,156	7,447	4,794	9,521	17,199
Total.....	1,516,921	1,795,023	1,270,264	1,429,180	1,644,981	1,435,815	50,181	59,074	64,100	53,043	64,075	93,715

COMPARATIVE RATES OF FREIGHT, ON COTTON AND TOBACCO, TO LIVERPOOL, HAVRE, AND NEW YORK, ON THE 1ST OF EACH MONTH FOR THE PAST TWO YEARS.

Months.	Cotton, per pound.						Tobacco, per hoghead.					
	1856-57.			1855-56.			1856-57.			1855-56.		
	Liverpool.	Havre.	New York.	Liverpool.	Havre.	New York.	Liverpool.	Havre.	New York.	Liverpool.	Havre.	New York.
September.....	Pence. 8-8	Cents. 1-2	Cents. 3-8	Pence. 8-4	Cents. 1-1-2	Cents. 1-1-2	s. d. 42 6		\$3 50	s. d. 12 50	\$10 00	
October.....	1-2	1	7-16	7-8	1-7-3	1	42 6		5 00			
November.....	15-32	1	1-2	7-8	1-8-4	0 3-4	45 0		5 00			12 00
December.....	17-32	1 1-16	1-2	1-2	1-1-2	0 1-2	42 6		5 00		12 00	7 50
January.....	9-16	1 3-16	9-16	3-4	1 1-2	0 1-2	55 0		7 75			7 75
February.....	9-16	1 3-16	9-16	1-2	1 1-16	0 9-16			7 75			7 50
March.....	15-32	1	1-2	5-8	1 1-4	0 3-4	40 0		7 75			8 50
April.....	5-16	0 3-4	3-8	5-8	1 1-4	0 3-4	35 0		6 00			8 50
May.....	3-16	0 7-16	1-4	5-16	0 5-8	0 7-16	27 6		2 50			5 75
June.....	5-16	0 5-8	3-16	11-32	0 3-4	0 3-8	30 0		2 50	35 0		4 75
July.....	11-32	0 3-4	3-16	1-4	0 5-8	0 1-4	30 0		2 50	30 0		8 50
August.....	7-16	1	5-16	7-16		0 8-8	35 0		3 50	37 6		4 50

COMPARATIVE PRICES OF MIDDLING TO FAIR COTTON AT NEW ORLEANS, ON THE FIRST DAY OF EACH MONTH DURING A PERIOD OF FIVE YEARS, TOGETHER WITH THE TOTAL RECEIPTS AT NEW ORLEANS AND THE TOTAL CROPS OF THE UNITED STATES.

Months.	1856-57.	1855-56.	1854-55.	1853-54.	1852-53.
	Bales.	Bales.	Bales.	Bales.	Bales.
September.....	11-13	8-10	8-10	10-12	9-11
October.....	11-13	8-10	8-10	10-12	9-11
November.....	11-13	8-10	8-10	8-10	9-10
December.....	11-13	8-10	8-10	8-10	9-10
January.....	11-13	8-10	8-10	8-10	9-10
February.....	12-14	8-10	8-10	8-10	9-10
March.....	12-14	8-10	8-10	8-10	9-10
April.....	13-15	8-10	8-10	8-10	9-10
May.....	13-15	8-10	8-10	8-10	9-10
June.....	13-15	8-10	8-10	8-10	9-10
July.....	13-15	8-10	8-10	8-10	9-10
August.....	13-15	8-10	8-10	8-10	9-10
Receipts at N. O.	1,513,247	1,759,293	1,284,768	1,440,779	1,664,864
Crop.....	2,935,000	3,527,845	2,947,889	2,980,027	3,220,000

COMPARATIVE ARRIVALS, EXPORTS, AND STOCKS OF COTTON AND TOBACCO AT NEW ORLEANS, FOR TEN YEARS, FROM 1ST SEPTEMBER EACH YEAR.

Years.	Cotton.			Tobacco.		
	Arrivals.	Exports.	Stocks.	Arrivals.	Exports.	Stocks.
1856-57	1,513,247	1,516,921	7,821	55,067	50,181	13,711
1855-56	1,759,293	1,795,023	6,995	56,090	59,074	9,125
1854-55	1,284,768	1,270,264	39,425	53,848	64,100	12,658
1853-54	1,440,779	1,429,180	24,121	48,905	53,043	24,045
1852-53	1,664,864	1,644,981	10,522	75,010	64,075	29,166
1851-52	1,429,183	1,435,815	9,758	89,675	93,715	18,881
1850-51	995,086	997,458	15,890	60,930	54,501	28,871
1849-50	887,728	888,591	16,612	60,304	57,955	14,842
1848-49	1,142,882	1,167,308	15,480	52,385	52,896	13,293
1847-48	1,213,805	1,201,397	87,401	55,882	60,364	14,851

Commerce of New Orleans.—The following tables, which we have compiled from our records, present some leading facts connected with the commercial progress of this city, and will be found valuable for future reference by the readers of this work:

STATEMENT OF THE RECEIPTS AND EXPORTS OF COTTON AND TOBACCO AT THE PORT OF NEW ORLEANS IN EACH YEAR, FROM 1822-23 TO 1856-57, A PERIOD OF THIRTY-FIVE YEARS.

Years.	Cotton.		Tobacco.	
	Receipts.	Exports.	Receipts.	Exports.
	Bales.	Bales.	Hhds.	Hhds.
1822-23	161,959	171,872	16,292	28,624
1823-24	141,524	148,843	25,262	25,910
1824-25	206,858	208,914	17,759	16,849
1825-26	249,881	259,681	18,242	18,281
1826-27	386,573	386,516	29,681	26,540
1827-28	295,853	304,078	29,448	35,098
1828-29	268,639	367,736	24,637	25,288
1829-30	362,977	351,237	32,498	28,028
1830-31	429,392	428,942	32,098	38,572
1831-32	446,646	358,104	31,174	35,056
1832-33	403,838	410,524	20,627	23,637
1833-34	467,984	461,026	25,871	25,210
1834-35	586,172	586,991	35,059	38,501
1835-36	495,442	490,495	50,555	41,604
1836-37	605,813	588,969	25,501	35,821
1837-38	742,720	789,318	37,588	35,555
1838-39	578,514	579,179	28,153	30,852
1839-40	954,445	949,820	43,827	40,496
1840-41	822,970	821,288	53,170	54,667
1841-42	740,155	749,267	67,555	68,058
1842-43	1,089,642	1,088,870	92,509	89,891
1843-44	910,854	895,375	82,435	81,249
1844-45	979,238	984,616	71,493	68,679
1845-46	1,068,638	1,054,857	72,896	62,045
1846-47	740,669	724,505	55,588	50,376
1847-48	1,218,905	1,201,807	55,852	60,864
1848-49	1,142,832	1,167,308	52,335	52,896
1849-50	837,728	838,591	60,304	57,955
1850-51	995,086	997,458	64,030	54,501
1851-52	1,429,188	1,455,815	89,675	98,715
1852-53	1,664,864	1,644,981	75,010	64,075
1853-54	1,440,779	1,429,180	48,905	53,043
1854-55	1,254,768	1,270,264	58,348	64,100
1855-56	1,759,298	1,795,023	56,090	59,074
1856-57	1,518,247	1,516,921	55,067	50,181
Total..	27,201,866	27,181,889	1,642,451	1,625,581

Upon the supposition that the average value of cotton and tobacco for the 35 years above stated may be fairly estimated at \$40 per bale for the former, and \$70 per hogshead for the latter, it would give a total value for these two articles alone of \$1,203,048,310.

IMPORTS OF SPECIE AT NEW ORLEANS, FOR TWELVE YEARS, FROM 1ST SEPTEMBER TO 31ST AUGUST.

Years.	Value.	Years.	Value.
1856-57.....	\$6,500,015	1850-51.....	\$7,937,119
1855-56.....	4,913,540	1849-50.....	3,792,662
1854-55.....	3,746,087	1848-49.....	2,501,250
1853-54.....	6,967,056	1847-48.....	1,845,803
1852-53.....	7,865,226	1846-47.....	6,680,050
1851-52.....	6,278,528	1845-46.....	1,872,071

EXPORTS OF SUGAR AND MOLASSES FROM NEW ORLEANS, FOR THREE YEARS (UP THE RIVER EXCEPTED), FROM SEPTEMBER 1ST, 1854, TO AUGUST 31ST, 1857.

Whither exported.	1856-57.				1855-56.				1854-55.			
	Sugar.		Molasses.		Sugar.		Molasses.		Sugar.		Molasses.	
	Hhds.	Barrels.	Hhds.	Barrels.	Hhds.	Barrels.	Hhds.	Barrels.	Hhds.	Barrels.	Hhds.	Barrels.
New York.....	387	40	6,917	14,479	3,483	45,745	74,970	6,116	62	107,452	107,452	20,783
Philadelphia.....	55	.....	1,184	2,840	1	10,863	14,352	320	.....	20,783	.....	17,829
Charleston, S. C.....	171	15	1,890	3,688	9	12,932	5,018	10	.....	17,829	.....	5,047
Savannah.....	88	.....	340	759	54	4,061	854	5	.....	5,047	.....	1,273
Providence & Bristol, R. I.....	.....	.....	50	.....	.....	1,201	5	214	.....	1,273	.....	25,508
Boston.....	.....	.....	1,226	439	.....	12,227	2,654	143	204	25,508	.....	21,866
Baltimore.....	680	.....	1,372	11,880	554	15,784	14,445	866	.....	21,866	.....	749
Norfolk, Richmond and Petersburgh, Va.....	508	.....	1,622	4,618	.....	6,037	6,424	.....	.....	11,180	.....	26,346
Alexandria, D. C.....	.....	.....	499	.....	.....	591	843	.....	.....	749	.....	3,016
Mobile.....	5,050	22	6,662	7,696	.....	20,208	7,070	.....	.....	26,346	.....	16,940
Apalachicola & Pensacola.....	539	578	1,076	1,161	417	8,272	734	226	.....	3,016	.....	.....
Other ports.....	1,944	1,870	2,777	3,459	1,410	9,506	2,118	2,565	.....	16,940	.....	.....
Total.....	9,372	2,525	24,556	51,013	5,838	142,967	129,487	10,466	266	257,444	.....	.....

COMPARATIVE PRICES OF SUGAR AND MOLASSES AT NEW ORLEANS, ON THE FIRST OF EACH MONTH, FOR FIVE YEARS.

Months.	Sugar.					Molasses.				
	1856-57.	1855-56.	1854-55.	1853-54.	1852-53.	1856-57.	1855-56.	1854-55.	1853-54.	1852-53.
	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
September....	54-94	5-74	24-41	31-51	31-61	30-48	28-32	8-13	13-20	16-23
October.....	61-104	4-5	3-51	21-6	31-7	30-45	22-30	9-13	13-20	18-23
November.....	81-104	5-74	3-51	21-6	21-61	50-55	24-31	10-24	13-22	25-26
December.....	81-104	4-71	21-5	14-41	21-51	57-59	27-30	12-18	12-18	23-23
January.....	71-101	5-8	24-41	2-41	21-51	601-63	37-40	14-16	13-18	17-22
February.....	71-111	5-8	24-41	2-41	3-51	58-62	30-35	13-17	121-18	21-24
March.....	7-111	4-81	3-5	21-41	3-51	58-63	32-34	151-19	121-17	18-24
April.....	7-111	4-81	21-51	1-41	21-5	45-58	30-35	121-20	9-15	17-24
May.....	71-12	4-81	4-6	1-41	21-51	50-62	30-37	22-20	9-13	15-20
June.....	9-12	41-9	4-61	1-5	21-5	61-67	35-43	20-23	8-11	14-22
July.....	9-12	5-01	4-61	11-51	21-5	47-63	35-43	20-28	7-11	11-20
August.....	10-11	51-94	31-61	31-31	31-6	47-63	30-45	20-28	8-13	13-19

COMPARATIVE PRICES OF FLOUR, ON THE 1ST OF EACH MONTH FOR FIVE YEARS.

Months.	1856-57.	1855-56.	1854-55.	1853-54.	1852-53.
	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
September....	61-6	71-74	7-8	51-61	31-41
October.....	61-6	71-74	6-7	51-6	41-46
November.....	61-6	81-83	8-8	6-7	41-46
December.....	71-7	81-9	8-9	6-61	41-5
January.....	61-7	81-8	8-9	6-6	41-5
February.....	71-7	81-8	91-94	71-74	41-5
March.....	61-6	6-7	9-9	7-7	41-46
April.....	61-6	7-7	9-9	6-6	31-41
May.....	61-7	6-61	10-11	6-7	31-41
June.....	71-7	6-61	91-93	7-74	31-41
July.....	61-6	6-61	8-81	6-7	41-5
August.....	61-6	6-6	71-8	6-81	51-61

COMPARATIVE PRICES OF CORN, SACKS, AT NEW ORLEANS ON THE 1ST OF EACH MONTH, FOR FIVE YEARS.

Months.	1856-57.	1855-56.	1854-55.	1853-54.	1852-53.
	Cents.	Cents.	Cents.	Cents.	Cents.
September....	70-90	70-75	70-85	58-65	52-58
October.....	60-75	60-65	60-80	63-69	58-62
November.....	65-70	65-75	75-87	65-70	56-60
December.....	68-65	65-90	86-90	57-66	55-60
January.....	59-61	61-65	87-91	60-70	52-58
February.....	105-110	65-72	93-95	80-90	42-54
March.....	621-70	43-54	90-92	60-70	33-46
April.....	62-75	43-53	94-97	52-61	34-45
May.....	70-78	43-48	100-120	58-65	44-50
June.....	100-110	54-57	95-115	52-60	43-52
July.....	75-85	46-50	70-88	45-58	50-60
August.....	70-85	63-72	75-95	50-60	66-75

COMPARATIVE RATES OF EXCHANGE ON LONDON, PARIS, AND NEW YORK, AT NEW ORLEANS, ON THE 1ST OF EACH MONTH FOR THREE YEARS. (60 DAY BILLS.)

Months.	1856-57.			1855-56.			1854-55.		
	London.	Paris.	New York.	London.	Paris.	New York.	London.	Paris.	New York.
Sept....	pm. 94	per 5	dis. 20	pm. 84	per 5	dis. 15	pm. 94	per 5	dis. 15
October....	9 5	22 1	21	8 5	20 1	20	9 5	22 1	21
Novem....	8 5	25 2	21	7 5	20 1	21	9 5	22 1	21
Decem....	7 5	27 2	21	7 5	25 2	21	8 5	25 2	21
January....	7 5	30 2	21	7 5	30 2	21	7 5	29 2	21
Feb....	7 5	30 2	21	6 5	35 2	21	7 5	25 2	21
March....	7 5	27 2	21	8 5	25 2	21	8 5	24 2	21
April....	8 5	25 2	21	8 5	25 2	21	9 5	24 2	21
May....	9 5	17 1	11	9 5	19 1	11	10 5	16 1	11
June....	9 5	12 1	11	9 5	12 1	11	10 5	10 7	11
July....	10 5	20 1	11	9 5	15 1	11	10 5	10 7	11
August....	9 5	15 1	11	9 5	15 1	11	9 5	10 7	11

EXPORTS OF FLOUR, PORK, BACON, LARD, BEEF, WHISKY, AND CORN, FOR TWO YEARS, FROM SEPT. 1 TO AUG. 31.

Ports.	1856-57.							1855-56.						
	Flour.	Pork.	Bacon.	Lard.	Beef.	Whisky.	Corn.	Flour.	Pork.	Bacon.	Lard.	Beef.	Whisky.	Corn.
New York.....	Barrels. 44,625	Barrels. 46,025	Casks. 2,970	Kege. 183,658	Barrels. 5,627	Barrels. 1,956	Sacks. 26,087	Barrels. 181,591	Barrels. 60,632	Casks. 4,124	Kege. 154,788	Barrels. 14,147	Barrels. 1,762	Sacks. 77,906
Boston.....	241,466	53,725	2,728	57,308	10,857	8,925	55,322	200,179	52,624	4,373	122,216	13,998	4,454	195,660
Philadelphia.....	.....	.....	.....	.....	.....	849	.....	.....	.....	.....	1,593	.....	.....	67
Baltimore.....	.....	8,947	.....	1,480	.....	356	.....	.....	4,565	.....	.....	.....	.....	187
Other coast ports.	141,142	18,874	25,681	17,941	366	46,884	204,608	108,686	80,707	24,648	26,351	1,346	51,402	118,262
Great Britain.....	72,758	15,958	4,716	158,611	1,229	.....	250,641	99,862	9,668	1,990	180,624	4,949	.....	1,174,874
Cuba.....	17,274	1,420	1,740	185,090	314	.....	59,785	3,947	2,658	1,438	212,771	285	.....	5,075
Other foreign ports	290,776	4,722	644	49,758	908	1,088	115,235	185,177	17,688	442	94,534	1,504	754	104,749
Total.....	904,910	145,174	38,447	648,866	18,726	60,058	711,628	729,442	178,682	37,015	742,817	36,179	68,626	1,676,075

In the above the exports to Mobile, etc., via the Pontchartrain Railroad and New Canal, are included.

IMPORTS INTO NEW ORLEANS, FROM THE INTERIOR, FOR TEN YEARS, FROM THE 1ST SEPTEMBER TO THE 31st AUGUST IN EACH YEAR.

Articles.	1856-57.	1855-56.	1854-55.	1853-54.	1852-53.	1851-52.	1850-51.	1849-50.	1848-49.	1847-48.
Apples.....	bbls. 36,612	62,449	32,523	47,451	48,328	20,356	54,808	87,244	54,987	89,518
Bacon.....	asst. casks, etc. 89,127	86,454	40,757	87,684	50,347	46,734	48,602	85,336	82,056	45,119
".....	bbls. & bxs. 8,855	2,732	3,492	9,981	4,009	9,274	8,626	25,241	32,156	.....
".....	hnds. 82,804	28,751	31,371	32,155	42,868	38,488	44,478	19,335	19,831	18,589
".....	in bulk.....	lbs. 7,660	173,760	232,920	121,000	184,300	281,280	235,000	209,045	217,000
Bagging.....	pieces 39,905	40,578	45,263	64,144	60,044	72,304	55,521	72,941	77,682	81,140
Bale rope.....	coils 112,346	101,381	95,336	102,274	121,553	90,272	107,224	86,104	93,322	74,825
Beans.....	bbls. 3,139	6,758	4,690	13,459	9,494	6,698	4,236	9,807	13,157	20,435
Butter.....	kegs 82,345	33,119	33,574	47,649	44,444	44,786	54,967	51,085	57,972	45,213
".....	bbls. 1,060	1,825	1,017	1,984	2,184	1,778	2,720	1,772	2,144	1,156
Beeswax.....	.....	130	141	161	194	171	230	367	451	698
Beef.....	lbs. & tes. 30,958	61,059	41,587	40,011	73,791	52,550	48,066	65,377	70,580	50,260
".....	dried.....	lbs. 30,880	19,010	23,550	31,601	18,900	26,100	15,900	43,219	20,300
Buffalo robes.....	pkcs. 30	1	3	12	17	1,300	155	358	28	14
Cotton.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
La. and Miss.....	bales 1,068,385	1,170,693	865,699	961,526	1,185,172	967,679	618,156	474,411	811,295	883,144
Lake.....	.....	4,632	4,128	19,289	21,614	15,202	14,899	10,902	15,781	13,734
N. Ala. and Tenn.....	277,545	379,454	280,758	255,594	328,176	804,153	286,521	249,631	217,075	227,551
Arkansas.....	30,083	102,154	75,289	107,566	95,082	65,490	62,793	44,890	46,783	64,294
Montgomery.....	18,996	37,081	16,223	33,798	29,995	21,760	15,051	17,501	9,839	.....
Mobile.....	41,040	36,542	15,764	31,008	38,324	15,606	24,473	23,647	25,322	10,857
Florida.....	4,708	5,186	4,147	9,368	7,966	4,807	11,091	10,601	5,065	4,208
Texas.....	17,508	28,001	16,690	21,680	14,665	14,646	9,252	6,088	11,356	10,007
Corn meal.....	bbls. 17,419	41,924	10,701	35,5	1,768	2,514	8,662	5,137	12,097	47,543
".....	in ears.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
".....	shelled.....	sacks 1,437,151	1,990,995	1,110,446	1,740,267	1,225,051	1,298,932	1,114,897	1,706,312	1,088,455
Cheese.....	bxs. 48,579	42,652	45,245	58,132	89,497	72,441	62,509	54,287	52,962	72,962
Candles.....	boxes 74,391	82,893	56,338	72,299	68,796	53,956	50,745	55,806	25,302	16,750
Cider.....	bbls. 17	59	14	59	86	800	245	808	1,159	844
Coal, Western.....	1,770,000	987,000	1,018,000	1,000,000	700,000	850,000	700,000	600,000	315,000	320,000
Dried peaches.....	.....	255	256	397	255	896	2,655	984	469	885
Dried apples.....	.....	255	2,760	855	4,649	465	4,168	665	2,405	1,173
Flaxseed.....	.....	261	230	281	192	1,279	519	204	917	1,188
Flour.....	bbls. 1,290,597	1,120,974	678,111	874,256	808,672	927,212	941,100	501,986	1,013,777	706,953
".....	bbls. & bxs. 1,740	1,030	802	1,048	730	2,136	1,289	444	200	411
Fur.....	hnds. 823	778	1,075	1,377	2,042	2,065	8,645	5,906	3,939	2,594
Feathers.....	bags 80,859	80,326	16,384	24,857	13,408	19,251	16,428	4,887	575	4,260
Glassware.....	boxes 13,003	16,813	31,335	19,992	17,648	25,116	34,792	19,856	21,584	.....
Hemp.....	bales 165,546	161,481	84,295	112,459	101,460	123,657	140,833	43,542	30,570	47,662
Hides.....	bales 59,361	146,737	73,271	72,664	175,000	53,434	48,281	56,255	54,241	61,934
Hay.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iron, pig.....	tons 71	332	17	515	121	62	152	20	413	701
Lard.....	hnds. 3	4	104	.....	167	.....	.....	215	700	459
".....	tes. & bbls. 103,027	110,718	144,036	193,065	113,136	125,496	115,570	228,019	214,362	216,331
".....	kegs 99,559	83,790	93,326	110,477	159,672	157,689	151,931	302,366	275,455	303,661
Lime, Western.....	bbls. 28,309	16,551	19,233	21,890	38,585	42,305	37,738	32,060	10,410	14,920
Lead.....	pigs 18,291	80,624	70,514	74,296	210,257	267,564	325,505	415,400	508,557	606,966
".....	bar.....	841	801	210	157	1,133	629	631	949	737
".....	white.....	85	209	544	726	1,308	1,930	597	7,795	9,208
Molasses.....	bbls. 84,169	288,811	310,718	341,470	254,626	238,923	184,483	189,313	155,807	159,460
Oats.....	bbls. & sacks 399,711	587,138	493,978	586,451	446,956	463,273	479,741	325,795	266,599	467,217
Onions.....	bbls. 14,670	14,477	11,665	22,393	17,718	17,184	14,279	14,279	6,996	7,960
Oil, linseed.....	.....	10	163	848	539	568	758	178	1,098	2,387
".....	castor.....	956	1,520	2,617	2,438	4,742	4,281	1,145	1,412	1,199
".....	lard.....	8,074	10,881	18,332	14,298	14,685	14,114	17,157	8,349	5,401
Pickles.....	kegs & " 74,193	182,556	70,539	206,273	204,327	228,095	162,922	166,008	146,116	151,861
Potatoes.....	.....	277,841	276,399	249,138	816,592	276,066	825,008	543,694	550,649	356,480
".....	boxes 10,924	6,833	7,485	15,206	9,074	803	1,930	15,695	13,273	.....
".....	hnds. 2,872	2,893	3,067	1,750	2,547	2,475	1,231	13,668	18,199	14,901
".....	in bulk.....	lbs. 3,417,940	7,450,354	6,263,650	12,646,600	12,985,510	8,900,000	10,518,895	15,362,431	10,273,650
Porter and ale.....	bbls. 1,788	1,637	1,210	1,770	1,140	406	384	304	1,383	3,492
Packing yarn.....	reels 1,495	3,314	1,723	2,443	2,811	2,098	4,190	4,131	2,211	3,333
Skins, deer.....	packs 794	406	498	305	425	998	1,119	1,375	1,301	1,861
Shot.....	kegs 2,745	3,398	3,435	3,675	2,283	2,704	2,044	4,435	4,377	5,258
Sugar.....	hnds. 62,463	155,319	159,742	274,906	186,001	141,406	125,755	143,912	125,592	128,112
".....	bbls. 3,995	8,826	13,175	12,245	10,694	11,218	13,675	17,395	6,879	.....
Soap.....	boxes 9,593	10,257	7,758	9,178	6,911	5,898	9,434	9,930	6,520	5,580
Shingles.....	M 6,000	5,000	1,908	8,126	2,500	6,000	7,319	9,000	6,000	2,000
Staves.....	M 7,000	4,647	4,000	2,500	371	1,318	1,307	6,164	4,362	4,357
Tallow.....	bbls. 965	1,135	711	.....	.....	.....	.....	.....	.....	.....
Tobacco, leaf.....	hnds. 59,667	56,990	58,348	43,905	75,010	89,655	64,030	60,804	52,335	55,832
".....	chew.....	boxes 3,261	3,599	4,158	4,617	10,836	4,779	2,321	2,315	6,890
".....	bales 151	109	62	.....	.....	.....	.....	.....	.....	.....
Twine.....	bundles 2,932	8,656	3,249	3,847	4,529	2,941	3,156	2,113	2,067	2,964
Whisky.....	bbls. 179,164	148,753	109,824	128,925	138,515	148,352	157,741	117,753	129,029	135,333
Wheat.....	bbls. & sacks 775,962	869,524	81,288	184,943	47,235	64,913	83,797	57,508	283,911	149,131

EXPORTS OF SUGAR FROM NEW ORLEANS, FROM THE YEAR
1834 TO 1855 INCLUSIVE.

Year.	Exported to Atlantic ports.	Exported to Western States.	First receipt of new crop.
	Hhds.	Hhds.	
1834.....	45,500	44,500	October 15.
1835.....	1,500	24,500	November 5.
1836.....	26,800	35,000	" 1.
1837.....	24,500	32,500	" 1.
1838.....	26,500	32,500	October 17.
1839.....	42,600	58,000	" 13.
1840.....	83,500	46,500	" 14.
1841.....	28,000	50,000	" 13.
1842.....	63,000	60,000	" 12.
1843.....	34,000	52,000	" 22.
1844.....	101,000	70,000	" 3.
1845.....	79,000	70,000	" 4.
1846.....	45,500	70,000	" 7.
1847.....	84,000	115,000	" 2.
1848.....	90,000	108,000	" 5.
1849.....	90,000	125,000	" 11.
1850.....	45,000	123,000	" 17.
1851.....	42,000	149,000	" 19.
1852.....	82,000	206,000	" 9.
1853.....	166,000	185,000	" 6.
1854.....	122,000	143,000	" 4.
1855.....	83,133	131,927	" 10.
Total...	1,816,033	1,984,527	

COMPARATIVE PRICES OF MESS AND PRIME PORK, AT N. O.,
PER BARREL, ON THE 1ST OF EACH MONTH, FOR TWO YEARS.

Months.	1856-57.		1855-56.	
	Mess.	Prime.	Mess.	Prime.
	Dollars.	Dollars.	Dollars.	Dollars.
September.....	19 1/2-20	—	20-20 1/4	17 1/2
October.....	21-21 1/4	—	20-21	17 1/2
November.....	21-21 1/4	18-19	21-22	17 1/2
December.....	—20	—	19-20	18 1/2
January.....	18-18 1/4	16-16 1/4	15-16	15
February.....	21-21 1/4	17 1/2-18	15 1/2-17	—
March.....	21-21 1/4	18 1/2	15 1/2-16	14 1/2
April.....	22-23 1/4	18-18 1/4	15 1/2-15 1/2	12 1/2-13
May.....	22-23 1/4	18-18 1/4	16-16 1/2	13-13 1/2
June.....	23 1/2-24 1/4	17 1/2-19	17 1/2	14 1/2-15 1/2
July.....	23 1/2-24 1/4	17 1/2-19	19-19 1/2	16
August.....	23 1/2-24 1/4	17 1/2-18 1/2	20-20 1/2	16

VALUE OF PRODUCE OF THE INTERIOR.

Articles.	1856-57.	1855-56.	1854-55.
	Dollars.	Dollars.	Dollars.
Cotton.....	86,255,079	70,371,720	51,390,720
Sugar.....	8,137,360	16,199,590	18,025,020
Tobacco.....	11,978,645	8,072,775	7,215,195
Flour.....	9,084,179	8,407,905	5,553,166
Pork.....	5,589,257	5,584,505	4,980,557
Lard.....	4,202,958	3,311,278	4,092,590
Lead.....	91,455	499,940	359,290
Molasses.....	2,635,309	4,532,242	4,255,000
Bacon.....	6,772,241	4,570,369	4,993,154
Corn.....	2,533,237	3,020,031	2,402,140
Whisky.....	2,329,132	1,785,086	1,306,248
Wheat.....	2,237,936	2,782,476	87,606
Bagging.....	512,443	610,290	608,670
Beef.....	484,555	824,289	610,414
Hemp.....	390,090	504,510	940,050
Bale rope.....	1,123,460	1,013,310	667,352
Butter.....	360,550	395,065	267,628
Hay.....	296,805	612,350	366,370
Hides.....	579,411	454,293	189,670
Coal.....	1,150,500	444,150	559,900
Potatoes.....	135,332	456,390	176,343
Staves.....	455,000	232,350	183,000
Tallow.....	23,950	32,265	21,890
Feathers.....	41,150	32,676	30,184
Oats.....	629,073	537,130	519,972
Corn meal.....	4,280	960	1,013
Other articles.....	9,557,967	8,585,412	7,261,001
Total.....	153,061,369	144,256,081	117,106,528

Years.	Total value.	Years.	Total value.
1853-54.....	\$115,386,798	1846-47.....	\$90,033,251
1852-53.....	134,233,735	1845-46.....	77,193,464
1851-52.....	103,051,708	1844-45.....	57,196,122
1850-51.....	106,924,83	1843-44.....	61,094,716
1849-50.....	96,397,873	1842-43.....	53,782,054
1848-49.....	81,989,692	1841-42.....	45,716,045
1847-48.....	70,779,151		

From the above table it results that the total value of all the products received at this port from the interior from September 1, 1841, to September 1, 1857, a period of 16 years, amounts to \$1,526,652,970.

The following is a statement of the imports at New Orleans, for the last four fiscal years:

	Year ending June 1853.	Year ending June 1854.	Year ending June 1855.	Year ending June 1856.
	Dollars.	Dollars.	Dollars.	Dollars.
Dutiable.....	8,019,029	8,272,449	6,939,002	8,990,583
Free.....	4,272,252	3,876,573	4,297,170	6,417,595
Bullion & specie	1,362,332	2,253,128	1,637,436	1,775,143
Total.....	13,654,113	14,392,350	12,923,608	17,183,327

VALUE OF PRODUCE OF THE INTERIOR.—A TABLE SHOWING
THE RECEIPTS OF THE PRINCIPAL ARTICLES FROM THE
INTERIOR, DURING THE YEAR ENDING AUGUST 31ST, 1857,
WITH THEIR ESTIMATED AVERAGE AND TOTAL VALUE.

Articles.	Quantity.	Average price.	Value.
		Dollars.	Dollars.
Apples.....	bbls.	36,612	5 00 183,060
Bacon, assorted.....	hhd. & csks.	89,127	100 00 3,912,700
" " " " " " " "	boxes	8,555	45 00 385,475
" hams.....	hhd. & tes.	32,804	75 00 2,460,300
" in bulk.....	lbs.	7,660	10 00 766
Bagging.....	pieces	32,028	16 00 512,418
Bale rope.....	colls	112,346	10 00 1,123,460
Beans.....	bbls.	3,139	8 00 25,112
Butter.....	kegs & firkins	32,345	10 00 323,450
" " " " " " " "	bbls.	1,060	25 00 37,100
Beeswax.....	"	87	50 00 4,350
Beef.....	"	29,307	15 00 439,605
" " " " " " " "	tierces	1,651	25 00 41,275
" dried.....	lbs.	30,880	12 00 3,705
Cotton.....	bales	1,513,247	57 00 86,255,079
Corn meal.....	bbls.	586	5 00 2,930
" in ear.....	"	14,719	1 25 18,398
" shelled.....	sacks	1,437,051	1 75 2,514,839
Cheese.....	boxes	48,379	5 00 244,395
Candles.....	"	74,391	8 00 595,128
Cider.....	bbls.	17	5 00 85
Coal, western.....	"	1,770,000	65 00 1,150,500
Dried apples & peaches.....	"	630	8 00 5,040
Feathers.....	bags	823	50 00 41,150
Flaxseed.....	tierces	261	12 00 3,132
Flour.....	bbls.	1,290,597	7 00 9,084,179
Furs.....	hhd. & bundles & boxes	1,740	— 00 600,000
Glassware.....	packages	30,559	5 00 154,295
Hemp.....	bales	13,003	30 00 390,090
Hides.....	No.	165,546	3 50 579,411
Hay.....	bales	59,361	5 00 296,805
Iron, pig.....	tons	77	35 00 2,695
Lard.....	bbls. & tierces	103,027	35 00 3,605,945
Lard.....	kegs	93,559	7 00 657,012
Leather.....	bundles	5,184	37 50 194,400
Lime, western.....	bbls	28,309	1 75 49,540
Lead.....	pigs	13,291	5 00 66,455
" bar.....	kegs & boxes	365	21 25 7,756
" white.....	kegs	85	5 35 454
Molasses (estimated crop) galls		4,882,380	55 00 2,685,309
Oats.....	bbls & sacks	393,171	1 60 629,073
Onions.....	bbls.	14,670	5 00 73,350
Oil, linseed.....	"	10	40 00 400
" castor.....	"	956	60 00 57,360
" lard.....	"	8,074	45 00 363,330
Potatoes.....	"	74,133	2 50 185,332
Pork.....	tierces & bbls.	243,228	20 10 4,904,560
" " " " " " " "	boxes	10,924	45 00 491,550
" " " " " " " "	hhd.	2,872	80 00 229,760
" in bulk.....	lbs.	3,417,340	8 00 27,337
Porter and ale.....	bbls.	1,788	10 00 17,880
Packing yarn.....	reels	1,435	6 00 8,610
Rum.....	bbls.	435	30 00 13,050
Skins, deer.....	packs	794	30 00 23,820
Shingles.....	M	6,000	3 00 18,000
Shot.....	kegs	2,745	27 00 74,115
Soap.....	boxes	9,538	4 00 38,152
Staves.....	M	7,000	65 00 455,000
Sugar (estimated crop).....	hhd.	73,976	110 00 8,137,360
Spanish moss.....	bales	8,475	30 00 254,250
Tallow.....	bbls.	965	30 00 28,950
Tobacco, leaf.....	hhd.	47,867	210 00 10,052,070
" strips.....	"	5,850	300 00 1,755,000
" stems.....	"	1,350	63 00 85,050
" chewing kigs & boxes		3,261	25 00 81,525
Twine.....	bundles & boxes	3,132	12 00 37,584
Vinegar.....	bbls.	1,354	6 00 8,124
Whisky.....	"	179,164	13 00 2,329,132
Wheat.....	bbls & sacks	775,962	3 00 2,327,886
Other various articles, est'd ad		—	— 00 6,500,000
Total value.....			158,061,369

RECEIPTS AND STOCKS OF HAY AT THE PORT OF NEW OR-
LEANS, FROM SEPTEMBER 1ST, 1855, TO AUGUST 31ST, 1857.

	1856-57.	1855-56.
Stock on hand, Sept. 1, (all Western).....	82,720	5,000
Receipts, Northern and Eastern.....	88,543	21,333
" Western.....	59,361	146,737
Total.....	180,624	173,075
Increase in total supply.....	7,549	
" Northern and Eastern.....	67,505	
Decrease in Western.....	87,376	

MONTHLY ARRIVALS OF SHIPS, BARKS, BRIGS, SCHOONERS, AND STEAMBOATS, FOR THREE YEARS, FROM SEPTEMBER 1 TO AUGUST 31.

Months.	1856-57.							1855-56.							1854-55.						
	Ships.	Harks.	Brigs.	Schrs.	S. Ships.	Total.	S. Boats.	Ships.	Harks.	Brigs.	Schrs.	S. Ships.	Total.	S. Boats.	Ships.	Harks.	Brigs.	Schrs.	S. Ships.	Total.	S. Boats.
September.....	35	18	9	16	10	88	131	27	13	12	21	14	87	153	23	7	8	21	16	75	118
October.....	65	23	19	32	15	154	234	99	23	25	80	20	208	204	119	25	11	16	16	187	187
November.....	100	36	22	31	17	206	279	134	51	42	39	23	259	291	89	34	17	44	17	201	220
December.....	89	44	22	26	15	196	331	90	40	84	34	23	221	352	94	36	19	49	20	218	284
January.....	94	32	23	59	23	231	253	130	50	27	49	22	287	296	75	31	18	63	22	209	356
February.....	96	48	23	43	16	226	287	62	24	22	59	17	165	287	81	27	20	48	22	193	271
March.....	77	28	35	70	24	234	298	80	34	22	42	23	201	355	55	18	17	44	23	157	268
April.....	74	20	21	50	23	188	250	104	42	24	40	20	230	311	79	22	14	41	22	178	332
May.....	43	32	18	48	23	164	225	48	18	17	84	19	131	270	50	21	14	42	19	146	259
June.....	25	25	21	94	23	123	210	68	34	15	25	21	163	185	41	16	14	25	19	115	190
July.....	11	11	12	20	13	67	129	27	21	14	25	19	109	155	14	7	14	14	15	64	136
August.....	20	9	6	12	10	57	118	10	10	6	18	13	57	97	11	11	14	19	14	60	142
Total.....	729	321	231	441	212	1,934	2,745	874	875	261	939	284	2,143	2,956	781	255	180	426	225	1,917	2,763

MONTHLY ARRIVALS OF FLATBOATS FOR THE PAST SEASON.

Months.	Ohio.	Kentucky.	Indiana.	Virginia.	Pennsylvania.	Illinois.	Arkansas.	Tennessee.	Mississippi.	Total.
September.....	1	..	..	..	..	..	..	1	..	2
October.....	2	..	..	..	..	3	..	1	..	3
November.....	3	..	..	..	..	..	..	..	..	3
December.....	2	2	..	..	..	..	..	..	1	9
January.....	15	4	13	..	..	1	1	1	..	36
February.....	13	1	7	..	..	1	2	1	..	26
March.....	17	9	20	2	46	2	8	16	1	121
April.....	4	5	18	..	6	6	2	8	1	50
May.....	7	4	40	1	20	1	..	11	..	84
June.....	5	2	15	..	24	..	..	16	..	62
July.....	1	7	4	..	10	..	..	17	..	42
August.....	1	..	17	..	13	..	..	20	..	51
Total.....	71	84	136	3	119	12	14	94	8	491

DIRECT IMPORTS OF COFFEE, SUGAR, AND SALT, FOR THREE YEARS, FROM SEPTEMBER 1 TO AUGUST 31.

Articles.	1856-57.	1855-56.	1854-55.
Coffee—Cuba, etc.....bags	11	10,855	2,287
—Rio.....bags	440,903	385,932	341,188
Sugar—Cuba.....bxs. & bbls.	29,367	31,665	20,111
—Cuba.....hhds.	21,394	6,639	443
—Brazil, etc.....bxs. & bags	8,306	..	..
Molasses—Cuba.....hhds. & tes.	24,453	122	114
—Cuba.....bbls.	29,531	1,633	2,261
Salt—Liverpool.....sacks	1,051,190	1,033,254	603,298
—Turk's Island, etc.....bushels	592,778	735,282	382,298

New Orleans Levee Dues.—The subjoined ordinance, passed by the Common Council of the city and approved by the mayor, May 28, 1852, is now in force:

An Ordinance to Regulate the Levee and Wharfage Dues on Ships and Vessels arriving from Sea, and on Steamboats, Flats, Barges, etc.—ARTICLE 1. That from and after the passage of this ordinance the levee or wharfage rates on ships or other sail vessels, steamships, steamboats, flats, barges, and other craft, shall be fixed as follows: On all ships or sail vessels of 1,000 and under, 25 cents per ton. Excess of tonnage over 1,000 tons, 20 cents per ton. On all steamships, 17½ cents per ton. On all steamboats of 1,000 tons and under, 15 cents per ton. Excess of tonnage over 1,000 tons, 10 cents per ton; *provided*, the boats arriving and departing more than once each week, shall pay only two thirds of these rates. On each flatboat not measuring over 80 feet, \$10. On each flatboat measuring 80 to 100 feet, \$12. On each flatboat measuring over 100 feet, \$15. On each barge more than 70 feet long, \$12. On each barge less than 70 feet long, and not exceeding 15 tons burden, \$8. On each steamboat hull used as a barge, \$25. On each scow and coastwise pirogue, \$2. For every flatboat, barge, or other vessel, not including steamboats, employed in the transportation of brick, lumber, or other building materials, or in bringing produce from this and neighboring parishes to this city, and measuring not over 25 tons, the levee and wharfage dues shall be \$30 per annum. From 25 to 50 tons, \$60 per annum. Over 50 and not exceeding 75 tons, \$80 per annum. Over 75 and not exceeding 100 tons, \$125 per annum. Over 100 tons, \$200 per annum.

ARTICLE 2. Every proprietor of any small craft of the description above-mentioned, who shall desire to enjoy the privilege accorded by the present ordinance, must apply to the treasurer of the city of New Orleans for the purpose of obtaining a license, approved by the mayor, and countersigned by the controller, which license shall specify the number or name of such craft, which shall be painted in a conspicuous place on the side of the said craft.

ARTICLE 3. Hereafter it shall not be lawful for any pirogue, flatboat, barge, boat, or keelboat, to remain in port longer than eight days, under the same provisions and penalties contained in Article 3, of an ordinance of the General Council, approved May 20, 1843.

ARTICLE 4. That the payment of the levee dues on ships or sail vessels, steamships, and steamboats, shall be exacted and collected by the collectors of levee dues, and an extra duty of one third these rates shall be paid by all sail vessels or steamships which may remain in port over two months, the same, to be recovered at the commencement of the third month; and if over four months, an additional duty of one third these rates. Steamboats shall be entitled to remain thirty days in port after payment of the dues. All over thirty days to pay an additional duty of \$2 per day.

ARTICLE 5. That all vessels now in port, and that have paid a daily or weekly wharfage, shall be allowed (and the collectors are hereby authorized) to deduct the amount so paid from the rates now to be collected. All ordinances or parts of ordinances conflicting with the foregoing be, and the same are hereby, repealed.

TARIFF OF COMMERCIAL CHARGES AND RATES ADOPTED BY THE NEW ORLEANS CHAMBER OF COMMERCE, IN 1846 AND 1848, AND AMENDED MAY 10, 1852.

Commission on Sales.

Sugar, cotton, tobacco, lead, flour, and other products of the soil.....	2½ per cent.
Domestic manufactures, and all foreign merchandise.....	5 "
Guaranty of sales on time.....	2½ "
Purchase and shipment of merchandise or produce.....	2½ "
Sales or purchase of stock and bullion.....	1 "
Collecting and remitting dividends.....	1 "
Selling vessels or steamboats.....	2½ "
Purchasing.....	5 "
Procuring freights.....	5 "
Collecting freights from foreign ports.....	2½ "
Coastwise.....	5 "
Outfits and disbursements.....	2½ "
Effecting insurance.....	1 "
Adjusting or collecting insurance or other claims without litigation.....	2½ "
With litigation.....	5 "
Purchasing and remitting drafts, or receiving or paying money on which no other commission has been charged.....	1 "
If bills remitted are guaranteed, in addition.....	1½ "
Bills and notes remitted, for collection protested and returned.....	1 "
Landing, custody, and re-shipping merchandise or produce from vessels in distress.....	2 "
Ditto, bullion or specie.....	1 "
Adjusting and collecting general average.....	5 "

Commission on Sales—continued.

Consignments of merchandise withdrawn or re shipped per order, on account of advances and responsibilities—full commission.

On the surplus amount of invoices of such consignments, deducting advances and liabilities—half commission.

Drawing, indorsing, or negotiating foreign bills of exchange..... 1 1/2 "

Ditto, on domestic bills of exchange..... 1 "

Receiving, entering, and re-shipping merchandise to a foreign port—on amount of invoice.. 1 "

On amount of advances, charges, and liabilities on same..... 2 1/2 "

For drawing, accepting, negotiating, or indorsing notes or drafts without funds, produce, or bills of lading in hand..... 2 1/2 "

On cash advances in all cases..... 2 1/2 "

For entering and bonding merchandise for the interior—on amount of duties, freight, and charges (besides the regular charge for forwarding)..... 2 1/2 "

Agency for steamboats—according to special contract.

The foregoing rates to be exclusive of brokerage and charges already incurred.

Receiving and Forwarding Merchandise, exclusive of Charges actually incurred.

Sugar, molasses, and tobacco.....per hhd. 50 cents.

Cotton.....per bale 50 "

Hemp.....per hhd. 20 "

Moss.....per hhd. 10 "

Provisions or bacon.....per hhd. 25 "

Pork, beef, lard, tallow.....per bbl. 5 "

Box pork.....per box 15 "

Flour, grain, and other dry barrels.....per keg 5 "

Lard, nails, and shot.....per keg 2 1/2 "

Lead.....per pig 1 "

Corn, wheat, beans, oats, and other grain, per bag 5 "

Liquids.

Pipes and hogsheads..... 50 cents.

Half pipes and tierces..... 25 "

Quarter casks and barrels..... 12 1/2 "

Whisky.....per bbl. 10 "

Oils.....per bbl. 12 1/2 "

Storage and Labor per Month.

	First Month.	Second and after.
	Cents.	Cents.
Cotton and wool.....per bale	20	10
Tobacco.....per hhd.	50	25
Hemp, per bale not exceeding 300 lbs.	10	07
" " " 450 "	15	10
" " " 600 "	20	15
" " " 800 "	25	18
Moss.....per bale	10	06
Bagging and rope.....	05	03
Peltries.....	10	07
Hides.....each	01 1/2	01
Lead.....per pig	01	01
Hollow ware.....per ton	125	75
Bar iron and castings.....	75	50
Railroad iron and pig iron.....	50	25
Bacon and provisions.....per hhd.	25	28
Pork, beef, lard, tallow, etc. per bbl.	08	06
Molasses, oil, and whisky.....	10	08
Flour.....	05	04
Lard.....per keg	02 1/2	02
Sugar and molasses.....per hhd.	40	25
" Havana.....per box	12 1/2	10
Corn, wheat, oats, and other grain.....per bag	04	03
Coffee, spices, etc.....	05	03
Salt.....	03	02
Candles, soap, wine, fish, raisins, oils, sweetmeats, segars, etc., per box or basket.....	04	02
Ditto, in half boxes.....	02	01
Nails.....per keg	03	02
Dry goods.....not exceeding 10 feet	15	10
" " " 20 "	20	15
" " " 30 "	25	20
" " " over 30 "	40	25
Crockery.....per cask or crate	30	20
" half cask or half crate	15	10
Hardware.....per cask	40	25
" " " per tierce	20	15
" " " per bbl.	10	03
Liquids.....per pipe or hhd.	40	30
" " " per half pipe or tierce	25	18
" " " per quarter cask or bbl.	10	05
Claret.....per cask	20	15
Gunny bags.....per bale	10	05
India bagging.....	15	10

Sundries.

Boxes, bales, cases, trunks, and other packages, dry goods.....10-50 cents.

Earthen and hardware.....per package 25-50 "

Bar-iron and castings.....per ton 75 "

Railroad iron and pig iron..... 50 "

Hollow ware..... 150 "

Soap, candles, wines, etc.....per box 5 "

Coffee, spices, etc.....per bag 6 "

Gunpowder.....per keg 25 "

Salt.....per sack 8 "

Weight of Grain per Bushel.

Wheat and rye..... 60 lbs.

Corn..... 56 "

Oats..... 32 "

Tares.

Lard, butter, cheese, tallow, stearine, sugar, rice, actual tare.

Coffee in bags..... 2 per cent.

For commerce, etc., of New Orleans, see *Bankers' Magazine*, ii., iii., iv.; *HUNT'S Mer. Mag.*, iv., v., vi., vii., ix., xi., xiii., xv., xxv., etc.; *DE BOW'S Rev.*, ii., 53 (by W. L. HODGE), iii., 39, 235, 112 (by S. J. PETERS), vi., 433, viii., 1, xi., 387, 474, vii., 412, x., 505.

New South Wales. Prior to 1836, official returns exhibit no evidence of any trade between the United States and New South Wales. In that year six American vessels entered the harbor of Sydney with freights valued at \$69,510, and carrying home staples and other colonial produce to the amount of \$92,970. From that period to 1850 but little advance was made either in the import or export trade with that colony; the highest return being that for 1841, which shows the following summary:

Vessels from the United States entered the ports of New South Wales, in 1841, 13; tonnage, 4,754.

TRADE WITH THE UNITED STATES.

	1841.	1852.	1853.
Imports from U. S.....	\$176,410	\$148,450	\$1,098,975
Exports to U. S.....	24,155	25,405	15,140

The principal imports from the United States to New South Wales are: Apparel, bags and sacks, butter and cheese, candles (tallow and sperm), carts and wagons, coffee, preserves, drugs and medicines, salt fish, flour and bread, fruits, furniture, glassware, oats, rice, and barley, hardware and ironmongery, ice, leather manufactures, linens, provisions, spirits (chiefly rum and whisky), stationery and books, sugar, tobacco, woodenware, watches and clocks, and wine. The principal exports to the United States from New South Wales are: Coals and coke, lard, etc. The leading staple of New South Wales is wool; but it can not be imported into the United States advantageously, while it is admitted free into British ports. The total exports of wool from New South Wales during the four years ending with 1853, were 56,984,938 pounds, valued in the colony at \$16,465,320.

Newspapers, publications in numbers, consisting commonly of single sheets, and published at short and stated intervals, conveying intelligence of passing events. It is foreign to the purpose of this work to consider the moral and political effects produced by newspapers; of the extent of their influence there is no doubt, even among those who differ widely as to its effect. Their utility to commerce is, however, unquestionable. The advertisements or notices which they circulate, the variety of facts and information they contain as to the supply and demand of commodities in all quarters of the world, their prices, and the regulations by which they are affected, render newspapers indispensable to commercial men, supersede a great mass of epistolary correspondence, raise merchants in remote places toward an equality, in point of information, with those in the great marts, and wonderfully quicken all the movements of commerce. But newspapers themselves have become an important commercial article.

The first newspaper published in England, which might truly be considered as a vehicle of general in-

formation, was established by Sir Roger L'Estrange, in 1663; it was entitled the *Public Intelligencer*, and continued nearly three years, when it ceased on the appearance of the *Gazette*. A publication, with few claims however to the character of a newspaper, had previously appeared; it was called the *English Mercury*, and came out under the authority of Queen Elizabeth, so early as 1588, the period of the Spanish Armada. An early copy of this paper is dated July 23, in that year. In the reign of James I., 1622, appeared the *London Weekly Courant*, and in the year 1643 (the period of the civil war) were printed a variety of publications, certainly in no respect entitled to the name of newspapers, of which the following were the titles:

England's Memorable Accidents, The Kingdom's Intelligencer, The Diurnal of Certain Passages in Parliament, The Mercurius Aulicus, The Scotch Intelligencer, The Parliament's Scout, The Parliament's Scout's Discovery, or Certain Information, The Mercurius Civicus, or London's Intelligencer, The Country's Complaint, etc., The Weekly Account, Mercurius Britannicus.

A paper called the *London Gazette* was published August 22, 1642. The *London Gazette* of the existing series, was published first at Oxford, the court being there on account of the plague, November 7, 1665, and afterward at London, February 5, 1666. The printing of newspapers and pamphlets was prohibited 31 Charles I., 1680.—SALMON'S *Chron*. Newspapers were first stamped in 1713. Number of the stamps issued in England:

Year.	No.	Year.	No.
1753.....	7,411,757	1825.....	26,950,693
1760.....	9,404,790	1830.....	30,153,741
1774.....	12,300,000	1835.....	32,574,652
1790.....	14,085,689	1840.....	49,093,334
1800.....	16,084,905	1845.....	56,443,977
1810.....	20,172,857	1849.....	76,569,235
1820.....	24,362,186		

The total number of newspapers published in the United Kingdom in 1849 was 603, viz.: 160 in London, 232 in the English provinces, 117 in Ireland, and 94 in Scotland. The number of advertisements inserted in the London newspapers in 1849 was 886,108, paying a gross duty of £66,458 2s.; in the English provincial newspapers, 834,729, yielding to the crown a revenue of £62,604 18s. 6d.; in the Irish papers, 220,524, paying £11,026 4s.; and in the Scotch papers, 240,911, paying in duty £18,075 16s. 6d.

Newspapers, etc., in the United States.—The *Boston News Letter* was established in 1704, which was continued till 1774; the second was the *Boston Gazette*, 1719; the third the *American Weekly Mercury*, at Philadelphia, started one day after the last. First *New York Gazette*, in 1725; first newspaper in the Carolinas, at Charleston, 1731-2; first *Rhode Island Gazette*, at Newport, 1732; first *Virginia Gazette*, at Williamsburg, in 1736. In 1775 there were in all the colonies 37 newspapers; in 1810, in the United States, 358; in 1828, 802; in 1839, 1555, and in 1850, 2526.

Newspapers in France.—The first was the *Gazette de France*, established by Renardot, in 1631, and continued with few interruptions till 1827, when it ceased and another paper assumed its name. The *Moniteur*, commenced in 1789, has been since 1800 the official journal of the government. The *Constitutionnelle* and the *Journal des Debats* have long had the largest circulation. There were 374 newspapers published in France in 1832. See PERIODICAL LITERATURE.

Newspapers, Irish.—The first Irish newspaper was PUE'S *Occurrences*, published in 1700. FAULKNER'S *Journal* was established by George Faulkner, "a man celebrated for the goodness of his heart, and the weakness of his head," in 1728.—*Supplement to Swift*. The oldest of the existing Dublin newspapers is the *Freeman's Journal*, founded by the patriot, Dr. Lucas, about the year 1755.—*Westm. Rev.*, January, 1830. The *Lim-*

erick Chronicle, the oldest of the provincial prints, was established in 1768.—*Idem*.

Notices of Newspapers.—The history of newspapers, and of periodical literature in general, remains to be written; and were the task executed by an individual of competent ability, and with due care, it would be a most interesting and important work. It appears, from the researches of Mr. Chalmers, that the first newspaper published in modern Europe made its appearance at Venice in 1536; but the jealousy of the government would not allow of its being printed; so that, for many years, it was circulated in manuscript! It would seem that newspapers were first issued in England by authority during the alarm occasioned by the approach of the Armada to her shores; in order, as was stated, by giving real information, to allay the general anxiety, and to hinder the dissemination of false and exaggerated statements. From this era, newspapers, of one sort or other, have, with a few intermissions, generally appeared in London, sometimes at regular, and sometimes at irregular intervals. During the civil wars, both parties had their newspapers. The earliest newspaper published in Scotland made its appearance under the auspices of Cromwell in 1652. The *Caledonian Mercury* was, however, the first of the Scotch newspapers of native manufacture; it made its appearance at Edinburgh, under the title of *Mercurius Caledonius*, in 1660; but its publication was soon afterward interrupted. In 1715 a newspaper was, for the first time, attempted in Glasgow.

To Boston belongs the honor of establishing the first newspaper in North America. It was issued in the year 1690. It was deposited in the State Paper Office, in London, and stopped by the government. It was of the size of an ordinary sheet of letter paper. One copy of it alone was known to be in existence, and that it was that shared the luckless fate above-named. The first regular paper that was issued was also of Boston. Its title was the *News Letter*, its date was 1704, and it was printed by John Allen, in Padding Lane. We have seen some of its early numbers, and they are peculiar. Its latest news from England was dated one hundred and twenty days previously, and consisted of a speech of Queen Anne to Parliament. An advertisement informs us that the mail between Boston and New York set out once a fortnight. Negro men, women, and children were advertised for sale, and an urgent appeal appeared in one, calling upon a female who had stolen a piece of fine lace, valued at 14 shillings a yard; and upon another who had conveyed a piece of fine calico from its proper destination, under her riding-hood, to return the same or suffer exposure in the newspapers. For 74 years this paper continued in existence as the leading Tory paper. About these days, the revolutionary struggle drawing near, the *Boston Gazette* was issued at Watertown as the organ of the patriots. When the war broke out, there were 37 newspapers being published in the United States; eight of them were committed to the interests of the British, and five others were brought over to the government side.

Old Papers.—The *Worcester Spy*, published in 1770, is the oldest existing paper of Massachusetts. There are copies extant of the *Albany Journal*, or the *Montgomery, Washington, and Columbia Intelligencer*, printed in 1788. It was issued semi-weekly, at a subscription price of 12 shillings per annum. Its size was about 11 by 13 inches. Charles K. and George Webster & Co. were its publishers. Its leading article is an extract from a letter from Philadelphia, dated February 20, as follows: "On Saturday last, upon the arrival of the news of the ratification of the Federal Constitution by the powerful State of Massachusetts, the bells of Christ Church were rung, and congratulations of joy have appeared in every part of the city for several days." The "latest news from Europe" is made a feature of the sheet; it bears date December

1787, by which it would appear that it took some three months to cross the water.

New York and her Newspapers.—The position which this city sustains, as compared with any other city of the world, in the number and circulation of her journals, can be adjudged by a glance at the following table, which gives the supposed number of newspapers in the world, 1852–56:

Austria.....	10	Belgium.....	65
Africa.....	14	Denmark.....	85
Asia.....	30	Germanic States..	850
Great Britain and		Portugal.....	26
Ireland.....	500	Spain.....	24
Russia and Poly-		United States.....	2,800
nesia.....	50		

Of these, New York alone issues 122 sheets, as follows: secular journals, daily, morning, 8; evening, 6; semi-weekly, 2; weekly, 59; German dailies, 3; weeklies, 8; French daily, 1; Spanish weeklies, 2; Welsh, 3; of religious weeklies, there are 29 sheets. It is difficult to obtain a correct estimate of the present circulation of so many papers. Of the daily papers, at least 250,000 copies must be circulated; while 13 religious weeklies are spread before 150,000 subscribers.

The whole number of newspapers and periodical publications in the United States on the 1st of June, 1852, amounted, according to the official returns, to about 2,800. Of these, 2,494 were fully reported upon,

while the particulars with respect to the others were in part estimated.

From these returns, etc., it appears that the aggregate circulation of papers and other publications was about 5,000,000; and that the entire number of copies printed annually in the United States, amounted to about 422,600,000. The following table shows the number of daily, weekly, monthly, and other issues, with the aggregate circulation of each class:

	No.	Circulation.	No. of copies printed annually
Daily Journals.....	850	750,000	235,000,000
Tri-weekly.....	150	75,000	11,700,000
Semi-weekly.....	125	80,000	8,320,000
Weekly.....	2,000	2,875,000	149,500,000
Semi-monthly.....	50	300,000	7,200,000
Monthly.....	100	900,000	10,800,000
Quarterly.....	25	20,000	80,000
Total.....	2,800	5,000,000	422,600,000

Four hundred and twenty-four journals were issued in the New England States; 876 in the Middle States; 716 in the Southern States; and 784 in the Western States. Of the whole 2,800 publications, about 2,200 were newspapers, properly so called; the residue being scientific, religious, and educational journals. The average circulation of the mere papers was 1,785. There was one publication for every 7,161 free inhabitants in the United States and Territories. The following summary is based on the official returns:

NEWSPAPERS AND PERIODICALS PUBLISHED IN THE UNITED STATES IN 1850.

States & Territories.	Daily.		Tri-weekly and semi-weekly.		Weekly.		Semi-monthly.		Monthly.		Quarterly.		Aggregate.	
	No.	No. copies printed annually.	No.	No. copies printed annually.	No.	No. copies printed annually.	No.	No. copies printed annually.	No.	No. copies printed annually.	No.	No. copies printed annually.	No.	No. copies printed annually.
Alabama.....	6	869,201	5	266,500	48	1,509,040	1	18,000	..	..	..	..	60	2,662,741
Arkansas.....	..	..	..	..	9	377,000	..	..	..	..	..	..	..	..
California.....	4	626,000	..	..	9	135,200	..	..	..	..	..	..	7	761,200
Dist. Columbia.	5	6,149,198	5	1,208,610	8	3,769,428	..	..	..	..	..	..	18	11,127,236
Connecticut.....	7	1,752,900	4	374,400	20	2,117,232	..	..	1	6,000	..	8,500	46	4,267,932
Delaware.....	..	..	1	62,400	7	358,800	..	..	..	..	..	..	10	421,200
Florida.....	..	..	1	81,200	9	288,600	..	..	..	..	..	..	10	819,800
Georgia.....	5	1,086,000	4	176,380	37	2,609,776	6	228,600	..	..	..	..	51	4,070,866
Illinois.....	8	1,120,000	4	214,500	84	3,875,936	3	49,200	7	147,200	1	900	107	5,102,276
Indiana.....	9	1,153,000	4	195,000	95	2,920,736	1	48,000	..	..	..	..	107	4,916,828
Iowa.....	..	..	2	577,200	25	923,000	..	..	2	12,600	..	..	27	1,512,800
Kentucky.....	9	2,243,584	7	1,125,280	38	3,053,024	8	160,950	..	..	..	..	62	6,582,838
Louisiana.....	11	9,347,140	7	376,000	37	1,646,684	..	..	1	144,400	..	..	55	12,416,224
Maine.....	4	964,040	5	302,900	39	2,906,124	..	..	1	30,000	..	..	49	4,203,064
Maryland.....	6	15,806,500	4	499,700	54	3,166,124	1	48,000	3	92,400	..	..	68	19,612,724
Massachusetts.....	22	40,498,444	15	2,421,016	126	20,871,104	3	61,800	29	1,857,200	7	24,000	209	64,200,564
Michigan.....	3	1,282,000	2	62,000	47	1,685,736	8	134,400	..	123,600	..	..	58	8,247,736
Mississippi.....	..	..	4	245,440	46	1,507,064	..	..	..	..	..	..	61	1,732,504
Missouri.....	5	3,830,400	4	273,000	45	4,406,560	..	..	7	185,600	..	..	61	6,195,560
N. Hampshire.....	..	..	..	..	35	3,538,152	1	15,600	2	13,800	..	..	38	3,067,532
New Jersey.....	6	2,175,350	..	..	48	1,900,288	2	23,040	..	..	..	..	4	4,098,678
New York.....	51	69,923,685	21	3,892,460	308	39,205,920	9	1,704,000	106	6,629,808	3	24,600	428	113,885,478
North Carolina.....	..	..	5	414,310	40	1,530,204	6	76,050	..	..	..	..	51	9,020,564
Ohio.....	26	14,285,638	10	1,047,930	201	13,384,204	23	1,781,640	..	..	1	24,000	261	30,473,407
Pennsylvania.....	24	50,416,758	8	176,400	261	27,353,354	19	6,972,000	..	..	2	7,600	310	84,408,672
Rhode Island.....	5	1,768,450	2	25,200	12	968,300	..	..	..	..	..	..	19	2,756,950
South Carolina.....	7	5,070,600	5	549,250	27	1,413,880	5	102,600	..	..	2	9,600	46	7,145,990
Tennessee.....	11	4,407,666	1	266,240	96	2,139,644	..	..	4	127,200	..	..	50	6,940,750
Texas.....	..	..	5	525,400	29	771,524	..	..	..	..	..	..	34	1,296,924
Vermont.....	2	172,150	1	228,800	30	2,142,712	..	..	..	24,000	..	..	35	2,567,662
Virginia.....	15	4,992,350	12	1,416,550	55	2,518,568	3	267,600	1	24,000	1	4,000	87	9,223,068
Wisconsin.....	1	1,063,245	1	198,250	85	1,393,992	..	..	1	18,000	..	..	46	2,665,487
Minnesota Terr.	..	..	..	..	..	..	..	..	..	..	..	..	..	..
N. Mexico.....	..	..	..	..	..	20,800	1	18,000	..	..	..	..	..	88,800
Oregon.....	..	..	..	..	..	58,968	..	..	..	..	..	..	2	58,968
Utah.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total.....	254	235,119,966	146	17,376,816	1,902	153,120,708	95	11,703,480	100	8,887,808	19	103,500	2,526	426,409,978

PUBLICATIONS AND THEIR CIRCULATION IN THE PRINCIPAL CITIES IN 1850.

Cities.	States.	Publications.	Annual circulation.	Average circulation.	Annual circulation to each white inhabitant.
Albany.....	New York	8	16,050,460	2,006,307	321
Baltimore.....	Maryland	81	20,711,100	668,100	147
Boston.....	Massachusetts	113	54,482,644	482,147	404
Charleston.....	South Carolina	12	5,675,500	472,988	284
Chicago.....	Illinois	17	1,886,952	110,997	64
Cincinnati.....	Ohio	39	8,753,200	224,441	73
Louisville.....	Kentucky	23	3,186,688	135,550	88
Mobile.....	Alabama	4	1,002,000	250,500	77
New Orleans.....	Louisiana	13	1,260,360	625,608	126
New York.....	New York	104	78,747,000	757,188	157
St. Louis.....	Missouri	18	4,890,080	271,668	100
Philadelphia.....	Pennsylvania	51	48,457,240	950,142	125

See *Am. Alm.*, 1835, 98, 266; *N. Br. Rev.*, ii., 154, xiii., 86; *N. Am. Rev.*, lvi., 229 (C. C. FELTON); *For. Quar.*, xxx., 197, xxxi., 182, 250; *Lib. Age*, iv., 730; *Westm. Rev.*, x., 216, 466, ii., 194, xii., 69, xxv., 264; *Southern Lit. Mess.*, vii., 690; FRASER, xxxiii., 674, iv., 127, 310, xiii., 620; *Dem. Rev.*, xxiv., 219; *Ed. Rev.*, lxi., 96.

New Style. Ordered to be used in England in 1751; and the next year eleven days were left out of the calendar—the 8d of September, 1752, being reckoned as the 14th—so as to make it agree with the Gregorian Calendar, *which see*, and also article CALENDAR. In the year A.D. 200, there was no difference of styles; but there had arisen a difference of eleven days between the old and the new style, the latter being so much beforehand with the former: so that when a person using the old style dates the 1st of May, those who employ the new, reckon the 12th. From this variation in the computation of time, we may easily account for the difference of many dates concerning historical facts and biographical notices.—M.

New York, one of the United States of America, situated between $40^{\circ} 30'$ and $45^{\circ} 01'$ N. lat., and between $71^{\circ} 50'$ and $79^{\circ} 56'$ W. long., and contains an area of 46,000 square miles. The population in 1790 was 340,120; in 1800, 586,050; in 1810, 959,049; in 1820, 1,372,812; in 1830, 1,913,508; in 1840, 2,428,921; and in 1850, 3,097,394.

Early History of New York State.—The Spaniards comprised the territory of the present State of New York under their great name of Florida, and designated it also on their maps of the sixteenth century particularly as the “Tierra de Stephen Gomez,” or shorter “Tierra de Gomez,” because Gomez (1525) was for a long time the only Spanish navigator who was known to have explored especially these coasts. The English comprised it since 1585 under the name Virginia, and since 1606 under the name of Northern Virginia, or the Northern Colony. Since 1616 they considered it as a part of New England, which name took the place of the old name of Northern Virginia, and went down like this as far south as the fortieth degree of north latitude. The Dutch began soon after the discovery of Hudson (1609) to call it “Nieuw Nederland” (the New Netherlands). This name may already have been in use for some time, but it occurs for the first time in a public document in the year 1614. They also sometimes called it “Nieuw Holland.” It is on maps also sometimes called “New Belgium.” They at first gave to it very extensive boundaries, as far east as Cape Cod, including the whole Barnstable peninsula, and south as far as the Delaware River and beyond it. With these limits we find it represented on many old Dutch maps. The southern limit on the Delaware River remained pretty much unchanged on the Dutch maps. Not so the eastern boundary. On later maps we see this advancing only as far as Nassau Bay, Rhode Island. Since 1630 or 1635 the maps have it only as far as the Connecticut River, where at this time the English had already arrived with their plantations. When, in the year 1664, the English conquered the whole country, it was named the “Province of New York,” in honor of James, Duke of York, brother of Charles II. It lost in the same year a part of its coast by the grant which the Duke of York made to a company of gentlemen who founded the province of New Jersey, between the lower Hudson and the Delaware Bay.—J. G. KOHL.

When the province became, in 1776, a State, the name remained unchanged, and also the limits along the coast.

Physical Features.—This State is divided into three unequal parts, by two great valleys, viz.: 1st. The valley of the Hudson, including the depression in which Lake Champlain is situated, or, more properly, the valleys of the Hudson and Champlain united. 2d. The valleys of the Mohawk, and Oneida Lake, and

Oswego River, united. The eastern division is a long narrow belt, extending from New York island to the head of Lake Champlain. Its eastern limits are the borders of Connecticut, Massachusetts, and Vermont, with a slope westward to the Hudson, traversed longitudinally by several narrow valleys. This division comprehends the western slope of the Taghkanic mountains, which form the *water-shed* that separates the waters flowing into the Hudson, from those which flow into Long Island Sound. The north division of the State is traversed by the Clinton range. There are several subordinate ranges connected with this group. It begins at Little Falls, in the valley of the Mohawk, and pursues a north-east course across the country to Trembleau Point, on the west shore of Lake Champlain. There are numerous lofty peaks which formed a remarkable group, and have been styled the Adirondack mountains. Mount Marcy, the highest of the range, attains to an elevation of 5,467 feet above the sea. This ridge presents the *water-shed* of the region dividing the waters of the Hudson, or those which flow south into the Atlantic, from those which flow into the Gulf of St. Lawrence. The south division is situated between Lake Ontario and the Mohawk, and the Hudson valleys and Pennsylvania. It rises with a gradual ascent until it reaches its maximum height near the southern boundary of the State. The south-eastern part of this division is comprised in three ranges, viz., the Highlands, broken through by the Hudson, the Shawangunk, and the Catskill. There were in this State in 1850, 12,408,964 acres of land improved, and 6,710,120 of unimproved land in farms. Cash value of farms, \$554,656,642, and the value of implements and machinery was \$22,084,926. *Live Stock.*—Horses, 447,014; asses and mules, 963; milch cows, 981,324; working oxen, 178,909; other cattle, 767,406; sheep, 3,453,241; swine, 1,018,252; value of live stock, \$73,570,499.

Agricultural Products, etc.—Wheat, 13,121,498 bushels; rye, 4,148,182; Indian corn, 17,858,400; oats, 26,552,814; peas and beans, 741,546; barley, 3,585,059; buckwheat, 3,183,955; potatoes, 15,368,368; sweet potatoes, 5,629; value of products of the orchard, \$1,761,950; produce of market gardens, \$912,047; pounds of butter made, 79,766,094; of cheese, 40,741,413; maple sugar, 10,357,484; molasses, 56,539 gallons; beeswax and honey, 1,755,830 pounds; wool, 10,071,301 pounds produced; flax, 940,577; silk cocoons, 1,774; hops, 2,536,299 pounds; tobacco, 83,189; hay, 3,728,797 tons; hemp, 4 tons; clover seed, 88,222 bushels; other grass seeds, 96,493; flax seed, 57,963; and were made 9,172 gallons of wine; value of home-made manufactures, \$1,280,333; of slaughtered animals, \$13,573,883.

The principal rivers are the Hudson, 324 miles long, navigable 156 miles to Troy. The Mohawk, 135 miles long, which enters the Hudson a little above Troy; the Genesee, 125 miles long, which enters Lake Ontario, having at Rochester, 5 miles from its mouth, 2 falls of 96 and 75 feet. Black River, which rises near the sources of the Hudson, and flows 120 miles into Lake Ontario; the Saratoga, 65 miles long, entering Lake Champlain at Plattsburg; the Oswegatchie, 100 miles long, flowing into the St. Lawrence; the Oswego, proceeding 40 miles from Oneida Lake into Lake Ontario; the Au Sable, rising in the Adirondack mountains, and having a course of 75 miles to Lake Champlain. The majestic St. Lawrence forms a part of the northern boundary of the State. The head branches of the Susquehanna, the Alleghany, and the Delaware, rise in this State. Besides Lakes Ontario and Erie on the north, and Champlain on the east, which are but partly within it, there are wholly within the State many picturesque sheets of water, viz., Lakes George, Oneida, Skanateles, Oswego, Cayuga, Seneca, Crooked Lake, Canandaigua, and Chautauque. The islands belonging to New York are—Long Island,

120 miles long from west to east, with an average width of about 15 miles, within whose waters on the east are Fisher's, Shelter, Robin's, and some other islands. Staten Island, south-west of the harbor of New York, 18 miles long, and 8 wide. Manhattan Island, on which the city of New York stands, 13½ miles long, and about 1½ wide at an average breadth. Grand Island, in Niagara River, 12 miles long, and from 2 to 7 wide, and extending to within a short distance of the Falls. The harbor of New York is one of the finest in the United States. On the bar at Sandy Hook it has a depth of from 21 to 27 feet. Sag Harbor on the east, and Brooklyn on the west end of Long Island, have good harbors; Sackett's Harbor has a good natural, and Oswego a good artificial harbor on Lake Ontario. Buffalo and Dunkirk are harbors on Lake Erie.

Manufactures.—There were in the State in 1850, 118 cotton factories, with a capital invested of \$5,554,320, employing 3,377 males and 5,499 females, producing 59,532 yards of sheetings, etc., and 5,308,561 pounds of yarn, valued at \$5,019,323; 263 woolen factories, with a capital invested of \$3,944,090, employing 3,500 males and 2,645 females, manufacturing 7,124,600 yards of cloth, etc., valued at \$6,442,869; 28 carpet factories, employing a capital of \$802,175; 29 establishments making pig iron, with a capital invested of \$727,500, employing 994 persons, producing 23,022 tons of pig iron, etc., valued at \$1,067,572; 323 establishments, with a capital of \$4,622,482, employing 5,925 persons, and making 104,588 tons of castings, etc., valued at \$5,921,980; 60 establishments, with a capital of \$1,131,300, employing 1,037 persons, manufacturing 13,636 tons of wrought iron, valued at \$1,423,968; 1,442 flouring and grist mills; 4,599 saw mills; 942 tanneries; 550 printing offices; 458 newspapers, viz., 54 daily, 13 tri-weekly, 13 semi-weekly, 313 weekly, 13 semi-monthly, 25 monthly, and 3 quarterly publications. Capital invested in manufactures, \$99,904,405; value of manufactured articles, \$237,599,361.

The principal places in the State are New York, the metropolis, Albany, the capital, Troy, Brooklyn, Newburgh, Poughkeepsie, Hudson, Saratoga Springs, Plattsburg, Schenectady, Utica, Syracuse, Auburn, Geneva, Rochester, Buffalo, Lockport, Oswego, and Ithaca. There were, January, 1856, 32 railroads, with 2,794 miles of road finished and in operation. There is in this State the greatest extent of canal navigation within any State or country on the face of the earth, forming an aggregate of 787 miles. See CANALS and RAILROADS. There were, January, 1856, 287 banks, and 1 branch, with a paid capital of \$86,890,000.

Canals.—The canals of New York were the chief element of her early prosperity, and we give a short history of them, and their present commercial importance.

From 1814 till 1817, the subject of the canal was warmly discussed in the legislature by the friends and opponents of the internal improvement system; and the act authorizing the construction of the canal was finally passed in 1817, by a vote of 18 to 9 in the Senate. The first contract was made on the 27th of June, 1817, and the 4th of July was celebrated by breaking ground at Rome for the construction of the canal. Buffalo then had a population of less than 2,000. Notwithstanding the vast benefits conferred upon the State by De Witt Clinton in his vigorous efforts to bring about a system of internal improvements, he was removed in 1824 from the office of canal commissioner, by a vote of 21 to 3 in the Senate, and 61 to 34 in the Assembly. In 1825, a report on canals was made, written by Mr. Marcy, afterward governor, in which he said:

"From the views taken by the commissioners, it appears reasonable to indulge the hope that within the space of 10 years the canal debt may be extinguished; and this copious stream of revenue, yielding, according to the most moderate estimates, an annual income of

more than \$1,000,000, may be turned into the treasury, and the government be thereby enabled to remove from the people the burden of taxation, to diffuse the blessings of education in a more abundant manner than at present, and to carry forward this State with increasing progress, in its career of general prosperity."

In 1826, Governor Clinton congratulated the legislature on the completion of the water communication between the lakes of the West and the Atlantic Ocean, affording an "inland navigation unparalleled in the experience of mankind." It was in this year (1826) that the first act for a railroad was passed by the Legislature of New York, being the road from Albany to Schenectady, 16 miles in length. This road was not completed for several years.

In 1827, Governor Clinton called the attention of the legislature to the subject of internal improvements by the general government. The project of the Chesapeake and Ohio Canal was then before Congress, and the aid of the government was given in behalf of that then considered great work. Governor Clinton observed: "It has become a question of great moment, whether the general government has power, with or without the consent of the State governments, to construct canals and roads in their territories, and whether such power, if not already vested, ought not to be granted. * * * I think it due to a sense of duty and a spirit of frankness, to say, that my opinion is equally hostile to its possession or exercise by, or its investment in, the national authorities." See CANALS.

River and Canal Navigation.—The subjoined tables show the date of the opening and closing of the Hudson River and Erie Canal for a period of 15 years, and the number of days they were open each year.

HUDSON RIVER.

River opened.	River closed.	Days open.
1842, February 4	November 23	308
1843, April 13	December 10	242
1844, March 18	" 17	273
1845, February 24	" 8	283
1846, March 18	" 14	275
1847, April 7	" 25	263
1848, March 22	" 27	292
1849, " 19	" 26	286
1850, " 10	" 17	282
1851, February 25	" 14	293
1852, March 28	" 23	270
1853, " 23	" 21	274
1854, " 17	" 8	266
1855, " 27	" 20	268
1856, April 10	" 19	

ERIE CANAL.

Canal opened.	Canal closed.	Days open.
1842, April 20	November 28	222
1843, May 1	" 30	214
1844, April 18	" 26	222
1845, " 15	" 29	223
1846, " 16	" 25	224
1847, May 1	" 30	214
1848, " 1	December 9	223
1849, " 1	" 5	219
1850, April 22	" 11	234
1851, " 15	" 5	235
1852, " 20	" 16	239
1853, " 20	" 20	245
1854, May 1	" 8	217
1855, " 1	" 10	224
1856, " 8	"	

The average cost of railroads has been as follows:

	Total cost.	Per mile.
30 roads in New York.....	\$30,000,000	\$46,344
33 " Massachusetts.....	60,000,000	44,482
12 " the South and West	50,000,000	45,638

The number of railroads, including branches, now in progress in the United States, is 372. The miles in operation are 13,586; the miles in progress, 10,823; and the amount now expended is \$400,000,000—the average cost being \$80,000 per mile. The average cost of the whole 2,579 miles being about \$95,000 per mile. The amount expended on the canals of the United States is about \$150,000,000.

The New York Canals.—The Annual Report of the Canal Auditor of this State, for 1856-7, has been com-

municated to the Senate. The revenue for the past year has been greater and the expenses less than for the year 1855. The following comparative statement shows the difference in the receipts and payments between the two years :

	1855.	1856.
Tolls received.....	\$2,639,792 12	\$2,749,133 40
Payments by superintendents, and to repair-contrators.....	738,781 41	606,932 93
Payments to canal commissioners for repairs.....	82,279 82	62,473 73
Payments to collectors, weigh-masters, and inspectors.....	79,846 49	82,623 83
Refunding tolls, salaries, etc.....	58,834 40	34,693 36
	\$989,792 12	\$786,633 40

The whole amount of tolls received is.....	\$2,748,212
Which amount is composed as follows :	
Toll on boats and passengers.....	193,997
“ products of the forest.....	\$399,656
“ products of animals.....	27,947
“ vegetable food.....	1,262,599
“ other agricultural products.....	3,261
“ manufactures.....	120,462
“ merchandise.....	585,391
“ other articles.....	184,400
	2,554,215
	\$2,748,212

The whole amount of tonnage transported on the canals during the last season of navigation, ascending and descending, was.....\$4,116,082

And is composed as follows :	
Products of the forest.....	1,473,674
Products of animals.....	\$53,826
Vegetable food.....	1,163,594
Other agricultural products.....	4,953
Manufactures.....	1,192,073
Merchandise.....	284,901
Other articles.....	370,758
	789,076
	\$4,116,082

The value of such tonnage is as follows :	
Products of the forest.....	\$10,211,383
Products of animals.....	\$7,456,433
Vegetable food.....	42,596,226
Other agricultural products.....	977,794
Manufactures.....	51,030,453
Merchandise.....	10,308,419
Other articles.....	185,691,816
	11,084,991

Total.....	\$218,327,062
	Tons.

The total amount of freight, or number of tons carried one mile during the last season of navigation, was.....	592,000,603
The total movement of the several classes composing such total tonnage is as follows :	
Products of the forest.....	149,734,516
Products of animals.....	6,755,676
Vegetable food.....	250,425,916
Other agricultural products.....	936,750
Manufactures.....	258,118,341
Merchandise.....	28,409,663
Other articles.....	85,428,183
	70,318,625
Total.....	592,009,663

The whole amount of tonnage received at tide water by way of the Erie Canal from western States and Canada during the last season of navigation, was 1,212,550 tons. The whole amount of tonnage arriving at tide water, the produce of this State, during the same period, was 374,589 tons. The whole number of barrels of flour arriving at tide water through the canals, during the last season of navigation, was.....1,180,509

The whole number of bushels of wheat arriving during the same period, was 11,776,332, which turned into flour, calculating five bushels to the barrel, would make.....2,355,266

Total in barrels.....	3,485,775
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The whole number of bushels of corn arriving at tide water during the same period, was 9,587,148. The total number of new boats registered during the last year, is 364, with a total tonnage of 38,990, making an average tonnage of 107.4.

The number of lockages at Alexander's lock, for the season, was 31,223, and the greatest number of lockages at any one lock, was 37,969, at lock No. 45, Frankfort.

Comparing the season of 1855 with that of 1856, it shows a decrease in revenue of \$66,871, and an increase

in tonnage of 93,465, divided among the different articles, as follows :

	Tons.	Tons.
Products of the forest—decreased.....	59,260	
“ animals.....	14,865	
Other agricultural products.....	525	
Merchandise.....	3,644	
	76,294	
Vegetable food—increased.....	160,729	
Manufactures.....	3,023	
Other articles.....	5,012	
	168,759	

Increase.....	93,465
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The increase in lockages at Alexander's lock is 350.

In flour and wheat comprised in the returns of vegetable food, there has been an increase on tonnage the past year of 112,537 tons, and an increase of tolls of \$160,694. In corn and oats there has been an increase during the same period of 28,669 tons, and an increase in tolls of \$7,691. Under the head of “Products of the forest,” there was an increase in tonnage upon shingles, boards, and scantling, as compared with 1855, of 32,163 tons, and a decreased tonnage upon timber, staves, and wood, of 97,705 tons, and an increase in pot and pearl ashes of 9,615 tons. Under the head of “Other articles,” there was an increase in the tonnage of mineral coal, for the same period, of 77,568 tons, and an increase in sundries of 15,323 tons.

Statement No. 47, appended to the report, shows the tons and description of freight carried on the New York Central and New York and Erie Railroads, ending 30th September, 1853, 1854, 1855, and 1856, and on the New York Canals during the seasons of navigation the same years.

Thus three lines of freight transit, it is well known, take all the carriage which passes through the State between New York and the Hudson River and the West, including a considerable portion of Upper Canada. It may with justice be said they are all of them competing lines of transport for what is termed “through freight,” and two of them are virtually competing lines for both through and way freight.

The ascertained results presented by these tables are interesting, and worthy of much reflection. They not only show the steady and progressive increased carriage and movement by railway, and the steady and progressive decreased carriage and movement by canal, but they also show the description of freight wherein the carriage by railroads exceeds that of the canal.

	Tons Carried.		Total.
	Railroad.	Canal.	
1853.....	991,031	4,257,853	5,248,892
1854.....	1,293,853	4,165,802	5,459,715
1855.....	1,512,121	4,022,816	5,534,788
1856.....	1,719,827	4,116,082	5,835,409

This statement shows an increase of more than 700,000 tons in 4 years by rail, and a loss of 131,771 tons to the canal in the same time.

	Total Movement.		Total.
	Railroad.	Canal.	
1853.....	156,327,872	700,389,933	856,717,805
1854.....	211,976,114	668,359,044	880,635,158
1855.....	250,279,834	619,170,651	869,450,485
1856.....	329,191,724	592,009,603	921,201,327

The total movement by railway in 1853 was not quite one fifth of that by the canals. In 1854, it was nearly one third—nearly one half in 1855, and it was quite three fifths in 1856. At this rate of progression on the part of the railroads, and of loss by the canals, the total movement of freight on those two railroads will be equal to that of the canals in about 3 years from this time, if not sooner.

The aggregate of the total movement has increased on the railroads from 1853 to 1856, 164,483,622, and the loss to the canal has been 108,380,330.

The annexed tables show why it is that with an increased tonnage in 1856 of 93,465 over 1855, the total movement should be 27,171,048 less. This increase in the number of tons carried was on short distances ;

otherwise an increase in the receipts of tolls would have been the result.

But this statement also exhibits the amount of freight earnings on these railroads, and tolls received on the canals, including the tolls on boats and passengers during the above period, together with these total movements. These comparative statements show the rapid and successful progress of the former, and the immobility of the latter:

		Freight and Tolls.	
1853.			
N.Y. Cen. R.R., tons moved 1 mile,	\$54,901,350	1,938,830	
N.Y. and Erie R.R., "	101,626,522	2,637,214	
Canals, "	700,889,938	8,204,718	
Total.....	\$856,417,805	7,580,762	
1854.			
N.Y. Cen. R.R., tons moved 1 mile,	\$51,163,090	2,479,820	
N.Y. and Erie R.R., "	150,803,034	3,369,590	
Canals, "	668,659,044	2,773,566	
Total.....	\$889,635,158	8,622,976	
1855.			
N.Y. Cen. R.R., tons moved 1 mile,	\$99,605,336	3,189,603	
N.Y. and Erie R.R., "	150,673,998	3,653,002	
Canals, "	619,170,651	2,805,077	
Total.....	\$869,450,485	9,647,692	
1856.			
N.Y. Cen. R.R., tons moved 1 mile,	\$145,783,678	4,328,041	
N.Y. and Erie R.R., "	183,458,046	4,545,732	
Canals, "	592,009,603	2,748,212	
Total.....	\$921,251,327	11,622,035	

This statement also shows the total tonnage of freight on these roads for 1855 and 1856 separately from other tabular calculations, from which it appears the increase on through freight in one year was 182,358 tons, and on way 14,847 tons.

The operations of these roads, for the year ending September 30, 1855, were as follows:

Roads.	Through freight.	Way freight.	Total number.	Total movement or mileage.	Tolls at canal rates in 1855.
1855.					
N. Y. & Erie..	Tons. 155,469	Tons. 636,886	Tons. 842,055	150,873,993	\$549,185
N. Y. Central..	156,194	513,879	670,073	99,605,836	487,019
Total.....	311,663	1,200,465	1,512,128	249,279,834	\$936,204
1856.					
N. Y. Central..	253,288	522,824	776,112	145,783,678	\$491,451
N. Y. & Erie..			Not reported		

The New York and Erie Railroad received on through freight in 1855, \$1,461,419 18, equal to \$9 40 per ton, on the quantity transported, and in the same year the New York Central received \$1,289,706 97 on through freight, which gives an average of \$8 25 7-10 per ton on the amount carried.

The comparative tabular statement herewith submitted is a condensed view of the total tonnage and receipts of toll on all the canals on the different descriptions of property carried, for the period of six years:

Year.	Tons carried.	Tolls received.	Av. per ton.
1851.....	3,532,738	\$3,073,992	85-86
1852.....	3,263,449	2,866,385	74-19
1853.....	4,247,858	2,955,697	69-51
1854.....	4,165,869	2,547,433	61-15
1855.....	4,022,617	2,610,430	64-39
1856.....	4,116,082	2,554,215	62-05

The receipts of toll above given are upon the property carried exclusive of the tolls on boats and passengers, and the average must be affected by the rates of toll charged and received, and the distance that property or freight is transported on the canals. The average of 1851 on the tonnage of 1856 would give \$3,542,178 of tolls. The Auditor is satisfied that the rates of toll as arranged in 1851 may be imposed on most of the property transported on the canals without any injury to trade, if the legislature will interpose its constitutional authority to protect the trade of the canals.

The canal debt of 1846, to which the annual Sinking Fund of \$1,700,000 is applicable and constitutionally pledged, was, on the 30th September, 1856, \$13,223,704 33, the annual interest of which, payable quarter yearly, amounts to \$792,193 28, and \$5,739,024 76 of this debt are for loans made upon the credit

of this Sinking Fund to supply the deficiencies which existed in that fund, to pay the debt as it fell due after 1847. Former financial officers of the State have estimated that the Sinking Funds established by article 7, section 1, of the Constitution, would be ample to meet all the charges upon them from year to year, and finally to liquidate the Canal debt, of \$16,944,815 57 outstanding on the 30th of September, 1846, in 18 years and 3 months, with a surplus of \$95,333 48 on the 1st of January, 1865, when it was assumed the whole of the debt would be paid.

CANAL DEBT.—STATEMENT SHOWING THE AMOUNT OF PRINCIPAL AND INTEREST ACTUALLY PAYABLE IN EACH YEAR, TOGETHER WITH THE RESULTS OF THE SINKING FUND, UNDER THE CONSTITUTION, ART. 7, SEC. 1, FROM SEPTEMBER 30TH, 1856; ALSO THE AMOUNT OF SURPLUS ON SEPTEMBER 30TH, OF EACH YEAR, AND THE AMOUNT OF ANNUAL INTEREST ON THE SAME AT FIVE PER CENT. PER ANNUM.

Year.	Principal payable.	Total principal and interest.	Surplus on Sept. 30th, of each year.	Interest on surplus in each year.
1856 surplus	....	....	\$1,259,901	\$62,995
1857.....	....	\$692,193	2,330,708	116,538
1858.....	\$3,058,605	3,718,566	434,672	21,738
1859.....	....	539,268	1,617,148	80,857
1860.....	943,100	1,468,216	1,929,784	96,489
1861.....	2,182,974	2,588,649	1,142,023	57,181
1862.....	900,000	1,253,841	1,641,418	82,070
1863.....	....	828,341	3,095,142	154,757
1864.....	400,000	729,341	4,227,558	211,877
1865.....	1,739,024	2,017,280	4,121,655	206,082
1866.....	....	200,000	4,127,738	206,886
1867.....	....	200,000	4,184,125	206,706
1868.....	....	200,000	4,140,831	207,041
1869.....	....	200,000	4,147,872	207,398
1870.....	....	200,000	4,155,266	207,768
1871.....	....	200,000	4,163,029	208,151
1872.....	....	200,000	4,171,181	208,559
1873.....	....	200,000	4,179,740	208,967
1874, Jan. 1st	4,000,000	4,050,000	181,987	....
Total debt, principal & interest	\$13,223,704	....	Interest on surplus	\$2,594,278
Surplus on Jan. 1st, 1874.....	....	\$18,972,193	....	....
1874, Jan. 1st.....	....	181,987	....	....
1874, Jan. 1st.....	....	\$19,154,180	....	....

The following statement shows the tonnage of all the canals of the State from 1850 to 1855, inclusive, the total movement in the years stated, and the total value of all the property carried on the canals in each year.

Years.	Total tonnage.	Total movement.	Total value of property carried.
1850.....	3,076,617	....	\$156,397,929
1851.....	2,583,733	....	159,981,801
1852.....	3,862,441	602,800,818	196,608,517
1853.....	4,247,858	700,889,938	207,179,570
1854.....	4,165,869	668,659,044	210,284,812
1855.....	4,022,617	619,170,651	204,890,147

The two lines of railway in the State, which, during the season of canal navigation, most effectually and seriously compete with the canals in the transport of freight, are the New York and Erie and the New York Central Railroads. The operations of these lines in the transportation of freight during the years stated below, show a steady and progressive increase.

The largest amount of tolls in any fiscal year was in 1851, when the receipts were \$3,703,999 34; and the per centage of the cost of collection on the gross amount received was \$2 03. This was before the repeal of the laws imposing tolls on freight transported on certain railroads, and the consequent reduction of tolls on the canals, to enable the State to compete for the carrying trade. In 1851 the tonnage of all the canals was 3,582,733. The tonnage of all the canals in 1855, was 4,022,617; 439,884 more than in 1851; while the tolls were only \$2,632,906 11, being \$1,071,093 23 less. The tonnage of 1855, at the rates of toll as they were fixed in 1851, would have yielded about \$4,108,000, or about \$1,536,000 more than were actually received; the very natural and perfectly legitimate results of a policy adopted by the State before it was prepared by the completion of the enlargement to encounter an active and vigorous competition.

Table below shows the amount of the new debt created since 1846, the interest of which is paid by the General Fund; the specific objects for which the several stocks were issued, and the date of redemption of each, followed by a recapitulation of the whole canal debt of the State:

CANAL DEBT.	
6's due 1st July, 1872.....	\$2,250,000
6's " 1st January, 1873.....	1,000,000
6's " 1st July, 1873.....	1,250,000
5's " 1st November, 1873.....	2,250,000
6's " 1st October, 1874.....	2,250,000
Total debt for the enlargement and completion of the canals.....	\$9,000,000
6's due 1st July, 1873.....	1,500,000
5's " 1st January, 1874, to provide for deficiencies to pay the interest and redeem the principal.....	500,000
	\$11,000,000

RECAPITULATION OF THE CANAL DEBT.

To pay the interest and redeem the principal under Article 7, Section 1, of the Constitution.....	\$13,228,704 33
To pay the interest and redeem the principal under Article 7, Section 3, of the Constitution.....	11,000,000 00
The interest paid by the General Fund.....	442,536 49

Total debt 1st January, 1857..... \$24,666,289 82

Of the debt paying interest there was held on the 30th September, 1856:

On the United States' account.....	\$18,992,289 82
On foreign account.....	3,424,000 00

Total canal debt to 30th September, 1856..... \$22,416,289 82

The interest on the debt is a fraction over 5.51 per cent.

On the 1st of July, 1853, there will be redeemed by the Sinking Fund under section one, all the five per cent. stocks then falling due, say.....	\$3,053,605 34
The new debt will probably be increased by a resort to the credit of the Sinking Fund under § 3, on the 30th September, 1853.....	813,839 44

Decrease in aggregate of canal debt..... \$2,239,765 90

If the surplus of the canal revenues during the current fiscal year shall not be sufficient to meet the whole annual contribution of \$350,000 to the General Fund Debt Sinking Fund, the deficiency should be made up from the receipts from taxes transferred to the Canal Fund during the year.

The premiums on loans constitute quite an important item of receipts to the State.

PREMIUMS ON LOANS.

The premiums received and paid into the treasury on loans made since the 1st of January, 1854, have been as stated below:

On loan of June 22, 1854, of \$1,000,000.....	\$175,706 25
" Aug. 31, " 1,250,000.....	167,246 52
" Feb. 22, 1855, of 1,000,000.....	131,380 00
" June 21, " 1,250,000.....	234,500 00
" June 20, " 1,500,000 C. R. O.....	259,405 00
" Oct. 24, " 1,250,000.....	204,511 50
On loans to supply deficiencies in Sinking Funds, December 13, 1855 (5 per cent.).....	4,500,000
On E. and C. loan, March 25, 1856.....	1,000,000
	170 709 00
Aggregate to September 30, 1856.....	\$1,375,439 52
On the 18th October, 1856, a loan of \$1,250,000 for E. and C. was made at a premium of.....	171,336 50
Total of premiums.....	\$1,546,826 02

OF THE COST FOR ENLARGEMENT AND COMPLETION.

The late State Engineer and Surveyor, Hon. John T. Clark, in his report to the Legislature in 1853, estimated the cost of completing all the canals, after the 31st of December, 1853, including 10 per cent. for contingencies, the cost of engineering and land damages, at.....	\$13,131,503 74
To this cost he applied the constitutional loans, under § 3, article 7.....	9,000,000 00
And estimated a deficiency of.....	\$4,131,503 74
which is a pretty large addition to any estimate here-	

before given by the engineers of the total cost of enlargement and completion.

Trade and Tonnage of the Canals.—From the tables furnished the Auditor of the Canal Department we compile the annexed statement of the trade and tonnage of the canals for the year 1856. The tables, obtained from the same source, of the movement for the years 1854 and 1855, are also published, for the purpose of giving a comparison in both value and quantity with the business of 1856. The statement will be found of much interest.

It will be found that in the products of the forest the Report of 1856, compared with that of 1855, presents an increase in the articles of furs and peltry, timber and ashes, while in the other articles there is a large decrease, both in value and quantity. Comparing the same products with those of 1854, the increase is in the articles of furs, shingles, and ashes, both as to value and quantity.

Under the head of agriculture the receipts of 1856 show a large increase in some important articles, such as pork, wheat, rye, corn meal, barley, oats, peas and beans, potatoes, dried fruit and hops. In other articles, under the same head, there is a large deficiency; such as beef, bacon, cheese, butter, wool, lard, etc. The products under the same head, compared with those of 1854, show a different exhibit from those of 1855. There is a large deficiency in pork, beef, bacon, lard, wool, corn, corn meal, and clover seed; while in the articles of cheese, butter, hides, wheat, rye, barley, oats, bran, and ship-stuff, peas and beans, potatoes, dried fruit, and flax seed, there is an increase.

The first constitution of New York was adopted by the Provincial Congress, April 20th, 1777, was ratified by the State Legislature July 26th, 1788, and was somewhat amended in 1801. On the third Tuesday of June, 1821, a convention called by the Legislature met at Albany, and having made a revision of the constitution, the same was ratified by the people in December following. The third and present constitution was adopted in convention at Albany, October 9th, 1846, was ratified by the people on the ensuing 2d November, and went into operation January 1, 1847. Among the provisions of the existing constitution are these:—A sinking fund to pay the State Canal Debt shall be thus formed: from the surplus revenues of the State canals from June 1, 1846, to June 1, 1855, \$1,300,000, annually; from June 1, 1855, thenceforward, \$1,700,000, annually, including \$300,000 then to be borrowed until the debt is wholly paid. After thus appropriating there shall be annually set apart \$350,000 out of the surplus canal revenues from June 1, 1846, until the canal debt is paid; and after said payment, then \$1,500,000 annually, which appropriations shall form a sinking fund to pay the general fund debt of the State. After thus appropriating, \$200,000 or less shall be annually paid from the surplus canal revenues to the State treasury for general State expenses. And the remainder of the surplus canal revenues shall be applied to the completion of the canals. If the above sinking funds are insufficient to satisfy the creditors of the State, equitable taxes shall be laid. * * * The credit of the State shall not be loaned to any individual corporation. To meet casual deficits, the State may contract debts not exceeding \$1,000,000. Other debts may be contracted if submitted by the Legislature to the people, with provisions for payment by direct taxation, and ratified by the people. * * * Corporations are to be formed under general laws, except those for municipal purposes. Municipal corporations are to be restricted by the Legislature in their power of taxation and contracting debts. Stockholders in banks are individually responsible for the debts of their corporation to the amount of their shares of stock. * * The capitals of the common school literature and United States deposit funds are inviolate.

The aggregate statement shows an increase in the down tonnage in 1856 over 1855 of 200,844 tons, and a decrease in value of \$2,674,537.

In respect to the upward movement, there is an increase of tonnage in 1856 over 1855 of 115,846 tons, and in value of \$80,687,844.

STATEMENT SHOWING THE TOTAL QUANTITY AND ESTIMATED VALUE OF EACH ARTICLE WHICH CAME TO THE HUDSON RIVER ON ALL THE CANALS, DURING THE YEARS 1854, 1855, AND 1856.

Articles.	1854.		1855.		1856.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
THE FOREST.						
Fur and peltry.....lbs.	67,840	\$85,837	45,718	\$16,827	90,000	\$117,910
<i>Products of wood.</i>						
Boards and scantling.....ft.	522,478,355	8,315,426	421,776,759	7,694,769	889,680,400	6,460,647
Shingles.....M.	25,896	124,674	71,888	283,808	67,160	216,784
Timber.....cu. ft.	4,456,089	927,958	3,189,446	646,392	8,891,700	680,559
Staves.....lbs.	182,061,491	882,820	199,787,285	889,115	165,566,000	744,595
Wood.....cords	16,270	88,245	10,199	58,580	9,804	49,070
Ashes, pot and pearl.....bbls.	26,026	959,549	12,075	862,250	60,647	2,177,370
AGRICULTURE.						
<i>Products of animals.</i>						
Pork.....bbls.	141,846	\$1,729,926	60,422	\$1,408,234	81,018	\$1,709,427
Beef....."	59,068	524,681	57,183	658,783	47,080	822,101
Bacon.....lbs.	18,326,806	1,648,298	9,519,657	951,411	6,868,000	686,497
Cheese....."	5,675,169	618,405	9,507,123	950,422	6,152,000	558,565
Butter....."	2,354,198	568,016	4,241,085	855,292	3,462,000	726,497
Hides....."	201,976	81,234	451,232	96,552	514,000	112,194
Wool....."	3,129,887	1,091,835	4,824,945	1,493,566	2,328,400	942,862
Lard, tallow, and lard oil...."	16,808,210	1,718,738	9,458,468	972,686	6,726,000	807,205
<i>Vegetable food.</i>						
Flour.....bbls.	1,249,458	11,434,507	1,290,149	12,685,082	1,120,509	8,581,804
Wheat.....bush.	3,523,794	7,047,570	5,426,285	11,502,977	11,766,332	20,517,169
Rye....."	225,362	278,770	777,584	971,874	1,285,535	1,092,716
Corn....."	12,876,434	10,648,806	9,348,776	9,126,671	9,587,714	6,281,909
Corn meal.....bbls.	178,417	774,292	2,343	11,221	14,851	32,486
Barley.....bush.	1,949,279	2,183,158	1,674,429	2,216,479	2,182,532	2,499,425
Oats....."	5,353,121	2,676,567	4,507,982	2,276,912	6,060,812	2,485,516
Bran and ship stuff.....lbs.	17,014,526	191,222	44,086,652	440,367	40,952,000	364,948
Peas and beans.....bush.	170,745	250,621	90,723	222,786	1,146,266	654,895
Potatoes....."	626,489	407,182	689,043	480,248	870,738	487,826
Dried fruit.....lbs.	608,481	50,359	823,410	81,963	788,000	73,799
<i>All other agricultural products.</i>						
Cotton.....lbs.	738,812	71,949	96,874	10,846	184,000	20,074
Unmanufactured tobacco...."	6,624,056	1,191,496	2,344,842	812,750	1,166,000	233,149
Hemp....."	2,267,924	156,756	443,823	82,207	74,000	5,588
Clover and grass seed....."	943,013	84,235	592,434	83,237	548,000	76,773
Flax seed....."	181,851	4,587	426,352	18,742	588,000	23,494
Hops....."	914,013	822,699	260,473	50,104	876,000	87,807
MANUFACTURES.						
Domestic spirits.....galls.	2,088,721	778,865	1,829,832	549,142	3,759,150	817,080
Oil meal and cake.....lbs.	18,622,755	385,879	11,143,467	242,189	10,650,000	170,425
Leather....."	6,217,273	1,292,365	7,453,919	1,903,579	4,678,000	1,936,200
Furniture....."	770,941	77,094	72,440	124,124	716,000	71,647
Bar and pig lead....."	805,778	58,581	2,780,819	194,622	506,000	87,918
Pig iron....."	11,915,564	182,709	81,668,238	558,322	58,496,000	792,412
Bloom and bar iron....."	18,676,715	461,103	15,060,440	423,250	12,238,000	393,392
Castings and iron ware....."	1,766,878	60,024	1,512,256	49,958	2,134,000	85,242
Domestic woolsens....."	805,572	271,166	320,248	77,706	842,000	324,615
" cottons....."	1,810,575	373,155	1,106,198	116,454	1,682,000	395,668
" salt....."	8,805,087	64,186	6,065,004	87,900	3,726,000	18,628
Foreign salt....."	1,248,490	80,936	57,300	391	210,000	1,054
Merchandise....."	31,488,000	5,816,528	33,112,000	6,899,959	27,146,000	5,297,738
OTHER ARTICLES.						
Live cattle, hogs and sheep lbs.	167,520	\$5,026	125,600	\$6,336	816,000	\$12,623
Stone, lime and clay....."	137,511,277	902,008	156,877,258	1,029,728	113,760,000	167,549
Gypsum....."	15,199,939	30,400	6,877,245	27,510	1,822,000	2,644
Mineral coal....."	111,171,940	461,510	26,065,040	107,496	54,158,000	185,397
Copper ore....."	8,575,190	798,190	232,618	57,586	9,816,000	419,609
Sundries....."	201,934,314	4,038,686	149,420,905	5,739,528	43,262,000	8,497,701

STATEMENT SHOWING THE AGGREGATE IN TONS AND THE AGGREGATE VALUE OF THE PROPERTY WHICH CAME TO THE HUDSON RIVER ON ALL THE CANALS, DURING THE YEARS 1854, 1855, AND 1856, UNDER THE DIVISIONS AS SPECIFIED IN THE ABOVE TABLE.

Value.	1854.		1855.		1856.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
The forest.....	1,132,921	\$11,518,509	884,658	\$10,698,493	858,771	\$10,446,880
Agriculture.....	728,540	44,626,405	737,632	48,057,269	1,023,417	49,822,312
Manufactures.....	49,129	4,081,003	45,273	4,284,619	50,454	4,484,271
Merchandise.....	15,774	5,816,528	16,556	6,889,959	14,073	5,297,738
Other articles.....	234,732	6,235,820	188,511	7,080,941	176,754	4,235,523
Total.....	2,155,146	\$71,728,265	1,922,625	\$76,961,271	2,123,469	\$74,286,734

STATEMENT SHOWING THE AGGREGATE QUANTITY AND VALUE OF THE PROPERTY WHICH WENT UP THE CANALS DURING THE YEARS 1855 AND 1856.

	1855.	1856.
Tons.....	635,597	650,943
Value.....	\$118,443,868	\$184,181,707

STATEMENT SHOWING THE AGGREGATE QUANTITY AND VALUE OF THE PROPERTY LEFT BY AND WENT UP THE CANALS DURING THE YEARS 1855 AND 1856.

	1855.	1856.	Increase.
Tons.....	2,690,748	2,774,412	83,669
Value.....	\$190,405,184	\$209,418,441	\$18,013,807

FOREIGN COMMERCE OF THE STATE OF NEW YORK, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Tonnage cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821.....	\$7,896,605	\$5,264,818	\$13,160,918	\$23,629,246	153,174	10,720	118,750	130,416
1822.....	10,957,167	6,113,315	17,100,482	35,445,628	185,666	17,784	.....	.....
1823.....	11,862,995	7,675,995	19,688,990	29,421,849	192,521	23,558	.....	.....
1824.....	13,528,654	9,968,480	22,897,134	36,118,723	222,271	18,142	.....	.....
1825.....	20,651,553	14,607,708	35,259,261	49,639,174	255,873	19,851	.....	.....
1826.....	11,496,719	10,451,072	21,947,791	38,115,680	214,664	21,865	.....	.....
1827.....	13,920,627	9,915,510	23,834,187	38,719,644	289,968	33,875	.....	.....
1828.....	12,862,015	10,415,634	22,777,649	41,927,792	217,118	42,373	.....	.....
1829.....	12,036,561	8,082,450	20,119,011	34,743,807	197,674	32,555	.....	.....
1830.....	13,618,278	6,079,705	19,697,983	35,624,070	229,341	36,574	.....	.....
Total....	\$127,561,179	\$37,972,177	\$215,583,356	\$368,379,563	2,135,270	256,592	.....	.....
Sept. 30, 1831.....	\$15,726,118	\$9,809,026	\$25,535,144	\$57,077,417	254,381	72,444	130,982	169,906
1832.....	15,057,250	10,434,695	26,000,945	53,214,402	242,749	101,967	.....	.....
1833.....	15,411,296	9,988,821	25,399,117	55,918,449	384,175	153,566	.....	.....
1834.....	13,849,469	11,662,545	25,512,014	73,188,594	361,606	238,650	.....	.....
1835.....	21,707,367	8,687,397	30,345,264	88,191,805	559,855	343,078	.....	.....
1836.....	19,816,520	9,104,118	28,920,638	118,253,416	477,524	355,591	.....	.....
1837.....	16,083,969	11,254,450	27,338,419	79,301,722	433,008	404,784	.....	.....
1838.....	16,432,438	6,576,083	23,008,471	68,453,206	515,789	328,763	.....	.....
1839.....	23,296,995	9,971,104	33,268,099	99,832,438	569,736	380,666	.....	.....
1840.....	22,776,609	11,587,471	34,264,080	60,440,750	518,202	343,114	.....	.....
Total....	\$180,058,526	\$99,529,665	\$279,588,191	\$758,921,699	4,346,975	2,672,623	.....	.....
Sept. 30, 1841.....	\$24,279,608	\$8,860,225	\$33,139,833	\$75,713,426	600,307	365,241	237,957	248,696
1842.....	20,739,286	6,387,492	27,576,773	57,375,604	556,989	340,520	.....	.....
9 mo. 1843.....	13,443,284	3,819,430	16,762,664	31,856,540	381,281	174,374	.....	.....
June 30, 1844.....	26,009,177	6,852,363	32,861,540	65,079,516	973,813	414,625	.....	.....
1845.....	25,929,904	10,245,394	36,175,298	70,909,055	926,280	414,688	.....	.....
1846.....	29,585,566	7,949,547	36,985,413	74,254,288	1,120,944	425,942	.....	.....
1847.....	44,816,480	5,027,883	49,844,363	84,167,352	1,040,340	488,755	.....	.....
1848.....	38,771,209	14,579,943	53,351,157	94,525,141	1,004,816	705,373	.....	.....
1849.....	36,738,215	9,224,885	45,963,100	92,567,369	1,358,643	784,514	.....	.....
1850.....	41,502,800	11,209,989	52,712,789	111,123,524	1,411,557	787,539	.....	.....
Total....	\$301,815,779	\$83,507,156	\$385,322,935	\$757,571,840	9,379,470	4,851,571	.....	.....
June 30, 1851.....	\$68,104,542	\$17,902,477	\$86,007,019	\$141,546,598	1,588,813	678,819	518,575	522,439
1852.....	74,042,531	13,441,375	87,484,456	132,329,306	1,570,927	906,798	.....	.....
1853.....	66,080,355	12,175,335	78,206,290	173,270,999	1,959,902	1,084,742	.....	.....
1854.....	105,551,740	16,982,306	122,534,646	195,427,983	1,918,817	1,085,154	.....	.....
1855.....	96,414,308	17,816,430	113,731,238	164,776,511	1,861,632	1,140,197	.....	.....
1856.....	109,345,509	9,262,991	119,111,500	210,162,454	2,136,877	1,355,577	.....	.....

HOMANS Foreign Commerce of the United States.

For New York Canals, see *North Am. Rev.*, xiv., 230, xxix., 500, xi., 129, xiv., 543. For Trade, Commerce, Debts, etc., of New York, see *HUNT'S Mer. Mag.*, xviii., 243, xxiii., 610, xxiv., xxv. (by A. C. FLAGG); *Banker's Magazine*, vii., viii., ix., x., xi. Mineral Resources, see *N. Y. Rev.*, iv., 71, v., 477, viii., 103; *Am. Jo. Science*, xxxix., 95, xli., 73, xlii., 227, xlv., 143, xlviii., 296, i. (N. S.), 43, iii., 57, 164.

As our limits prevent our giving full statistics of many important elements of commerce, we refer to these subjects under their proper heads. For particular information, see articles EMIGRATION, TONNAGE, NEW YORK CITY, BANKING, COMMERCE, TARIFF, SHIPPING, RAILROADS, CANALS, and UNITED STATES.

New York, the capital of the State of that name, and the commercial metropolis of the United States, on the southern extremity of Manhattan Island, at the point of confluence of the Hudson River, which separates Manhattan from New Jersey, with East River, which separates it from Long Island, in lat. 40° 42' N., and long. 74° 8' W. New York Bay, or inner harbor, is one of the most capacious and finest in the world; it is completely land-locked, and affords the best anchorage. The entrance to the bay through the Narrows is extremely beautiful. On each side, the shore, though wooded down to the water's edge, is thickly studded with farms, villages, and country seats. At the upper end are seen the spires of the city; and in the distance the bold precipitous banks of the Hudson. From New York to the bar between Sandy Hook Point and Schreyer's Island (the division between the outer bay or harbor and the Atlantic) is about 17 miles. Fortifications have been erected at the Narrows, Governor's Island, and other places, for the defense of the city and shipping.

Manhattan was first discovered and explored by Hendrick Hudson in 1609. Hudson ascended the

river which now bears his name as far as the present site of Albany. The ship in which he made the voyage from Holland was of about 80 tons burden, and called the *Half Moon*. In 1610 a ship was sent by the Amsterdam merchants to trade with Indians for furs, etc. In 1613 a small fort was erected, and four houses were built, under the superintendence of Hendrick Corstiaensen, who explored the bay and the several inlets, creeks, etc. But no permanent settlement seems to have been made until about 1625, on the south point of the island. After the formation of the Dutch West India Company, they took immediate measures for establishing a permanent colony. Under their fostering care, bonwerries, or farms, were soon taken up, a substantial fort erected, and the dwellings of the colonists clustered around it. In 1652 it was incorporated under the name of New Amsterdam, and was governed by 2 burgomasters, 5 schepens, and a schout or sheriff, and continued in their possession until 1664, when it was taken by the English, and the name changed to New York. In 1673 it was retaken by the Dutch, and called New Orange, but they held possession only one year, when it was again occupied by the English, and continued in their possession until the period of the Revolution. The assessors' valuation of property in the city, in 1688, was about \$320,000. In 1690 a congress of the commissioners of the several colonies was held at New York. In 1694 there were 60 ships, 25 sloops, and 40 boats, belonging to the city. In 1696 Trinity Church was built. This building was burned in 1776. In 1725 the first newspaper was published in this State.

In 1699 it contained 6000 inhabitants. In 1774, previously to the commencement of the War of Independence, the population amounted to 22,750. During the war the population continued stationary; but since 1783 its increase had been quite extraordinary. In 1790 the population amounted to 33,131; in 1800, to 60,489; in 1820, to 123,706; in 1830, to above 213,000;

in 1840, to 812,710; and in 1850, to 515,507. This, however, is exclusive of the population of Brooklyn, which, in 1850, amounted to 96,838, and is as much a part of New York as Birkenhead is of Liverpool. Originally the houses were mostly of wood, and the streets narrow and confined. In these particulars, however, a vast improvement has taken place during the last half century; most part of the old houses having been pulled down and rebuilt with brick. The new streets, which are broad, and intersect each other at right angles, are well paved and lighted. Broadway, the principal street, is one of the largest and finest in the world. Many of the public buildings are commodious and elegant. The pools, that were formerly abundant in the city and its vicinity, have been completely filled up; a measure that has done much to improve the health of the population. In respect of cleanliness, however, New York, though much improved, is still rather deficient. Formerly there was hardly such a thing as a sink or common sewer in the whole city; the night soil and filth were collected in the pits, of which there was one in every house, and being conveyed to the nearest quays, were thrown into the water; and as these were made of timber, with many projections, a great deal of filth was retained about them, producing, in hot weather, an abominable stench. But in these respects a great amendment has been effected; and the deficiency of water, under which the city formerly labored, has been completely obviated by the construction of the Croton Aqueduct, about 40½ miles in length, a work worthy of being ranked with the noblest of the old Roman aqueducts.

New York is indebted, for her wonderful increase, to her admirable situation, which has rendered her the greatest emporium of the New World. The rise of the tide is about 6 feet, and even at ebb there are 21 feet water on the bar; and the water in the outer and inner bays, and in the river, is so deep that ships of the largest burden lie close to the quays, and may proceed to a great distance up the river. The navigation of the bay is rarely impeded by ice. The great strength of the tide, and the vicinity of the ocean, keep it generally open, even when the Chesapeake and Delaware Bays are frozen over. The influence of the tides is felt in the Hudson as far as Troy, 160 miles above New York, affording peculiar facilities for its navigation. Those natural advantages have been vastly extended by a system of canals, which has connected the Hudson not merely with Lake Ontario and Lake Erie, but with the Ohio River, and consequently with the Mississippi and the Gulf of Mexico! So prodigious a command of internal navigation is not enjoyed by any other city, with the exception of New Orleans; but the readier access to the port of New York, the great salubrity of the climate, and her situation, will secure her hereafter the preponderance.

New York Harbor.—In April, 1857, Professor Bache, of the United States' Coast Survey, furnished the Life Saving Association with his *Sailing Directions for Sandy Hook and its Approaches from Sea*, of which 5000 copies have been printed in pamphlet form. A portion of these has been placed in the hands of the dealers in nautical instruments in the following ports for gratuitous distribution to captains of vessels, namely, New York, Portland, Me., Portsmouth, N. H., Boston, Mass., Philadelphia, Baltimore, Savannah, Mobile, New Orleans, Norfolk, Charleston, and a supply of these pamphlets, for the like purpose, has been forwarded to the United States' consuls in Cork, Dublin, Belfast, Bristol, Cardiff, Hull, Sunderland, Portsmouth, Southampton, Glasgow, Dundee, Liverpool, London, Havre, Marseilles, Antwerp, Bremen, Hamburg, Amsterdam, Rotterdam, and Havana.

Range Lights from East End of Gedney's Channel, between Sandy Hook and Flynn's Knoll.—Two fixed lights located near Point Comfort, New Jersey. The front

light will be exhibited from a lantern on the keeper's dwelling, which is located near the beach, and painted white, with the top of the lantern black. The rear light is located three quarters of a mile distant from the front one, and will be exhibited from a tower painted white, with the head of it and lantern black. The keeper's dwelling is north of it and painted white. The front light is 40, and the rear one 76 feet above the mean level of the sea, and should be seen, under ordinary state of the atmosphere, outside the bar. During the day the front building can be readily recognized from other buildings in the vicinity by the lantern on its centre, and the rear one by the lantern of the tower being projected on the sky above the trees.

Main Ship Channel Range Lights.—Two fixed lights located on the New Jersey shore, west of Highlands of Navesink. The front light will be exhibited from a tower near the beach, painted with 2 white and 1 red horizontal bands, and the roof of the lantern also of the latter color. The keeper's dwelling is west of the tower, and painted white. The rear light is located on the north side of Chappel Hill, 1½ miles distant from the front light, and will be exhibited from a lantern on the keeper's dwelling. The dwelling is painted white, and the top of the lantern red. The front light is 60, and the rear one 224 feet above the mean level of the sea, and both should be seen, under ordinary state of the atmosphere, the length of the range line. During the day they can be readily recognized by the shape and colors of the towers of the front light, and by the lantern of the keeper's dwelling, and isolated portions of the rear one. It is about 1 mile east of Pigeon Hill.

Swash Channel Range Lights.—Two fixed lights located on Staten Island, New York. The front light will be exhibited from a tower near the site of the "Old Elm Tree" Beacon, painted with 2 white and 1 red horizontal bands, and the roof of the lantern also of the latter color. The keeper's dwelling is south of the tower, and painted white. The rear light is located on a hill, near New Dorp, about 1½ miles from the front light, and will be exhibited from a lantern on the keeper's dwelling. The dwelling is painted white, and the top of the lantern red. The front light is 59 feet, and the rear light 189 feet above the mean level of the sea; and both should be seen, under ordinary state of the atmosphere, well outside of the bar at Sandy Hook. During the day they can be readily recognized by the shape of the tower, and colors of the front light, and by the lantern on the dwelling, and isolated position of the rear one.

Sailing Directions.—Masters of vessels intending to enter by Gedney's Channel around the south-west Spit Buoy, should run on a north-west half west course from the light-vessel for the black and white perpendicular-striped Nun Buoy at the outside of Gedney's Channel, and from it west by north through the channel, keeping between the buoys, until the range lights near Point Comfort, New Jersey, are in one, when haul up for them, and continue upon the range until the two main channel lights are brought in range, which will also be shown by the main light at Sandy Hook, being a little open to the southward of the West Beacon. From this point the Main Ship Channel range will take them up clear of the "West Bank" and Craven's Shoal. Masters of vessels intending to pass through the Swash Channel, can bring the lights in range outside the bar, and run for them, until the Red Can Buoy, No. 8 (which marks the upper middle), is passed, or until the Main Ship Channel range is on, when haul up on that range until clear of the "West Bank." Vessels drawing more than 17 feet should not be taken through this channel on the range line at low water. A foot more water may be carried through this channel, after crossing the bar, by keeping a little to starboard, and opening the front light

clear of the rear one. The Swash Channel range line indicates, by the most recent survey, 18 feet at low water.

There are 57 banks in the city of New York, with an aggregate capital of \$60,000,000, 8 marine insurance companies, and 60 fire insurance companies, with an aggregate capital of \$20,000,000; besides 8 life insurance companies. There are 16 savings' banks, and 15 markets.

COMPARATIVE VALUE OF REAL AND PERSONAL ESTATE OF THE CITY AND COUNTY OF NEW YORK, AND AMOUNTS RAISED BY TAX, FROM THE YEAR 1844 TO 1856.

Year.	Real estate.	Personal estate.	Taxes.
1844.....	\$171,937,591	\$64,789,552	\$1,988,818
1845.....	177,207,990	62,787,527	2,096,191
1846.....	188,480,584	61,471,470	2,526,146
1847.....	187,315,886	59,837,918	2,551,776
1848.....	193,029,076	61,164,447	2,715,510
1849.....	197,741,919	55,455,224	3,005,762
1850.....	207,142,576	73,919,240	3,230,085
1851.....	227,015,856	93,095,001	2,924,455
1852.....	253,278,884	93,490,042	3,830,511
1853.....	294,637,296	113,994,137	5,066,698
1854.....	380,800,396	131,721,898	4,845,886
1855.....	386,975,866	150,022,812	5,843,822
1856.....	340,972,098	170,774,393	7,075,425

Manufactures.—The manufactures of New York absorb a large amount of capital. The amount employed in 1850 was \$34,232,822, and the value of articles manufactured was \$105,218,308. The number of establishments was 3387, employing 53,703 males, and 29,917 females.

RETURNS OF THE PRODUCTIVE ESTABLISHMENTS OF THE CITY OF NEW YORK.—CENSUS OF 1850.

Wards.	No. of manufacturing establs.	Capital invested.	No. of hands employed.	Annual products.
First.....	137	\$1,013,560	9,707	\$3,906,387
Second.....	851	12,672,995	35,704	31,310,642
Third.....	9	607,000	660	1,801,700
Fourth.....	189	1,688,800	2,395	4,885,211
Fifth.....	88	1,227,562	2,146	4,473,214
Sixth.....	156	1,125,880	4,040	3,822,191
Seventh.....	422	3,493,275	5,947	9,641,038
Eighth.....	238	561,890	2,735	4,080,434
Ninth.....	189	793,800	2,444	2,833,180
Tenth.....	96	807,700	1,035	1,678,422
Eleventh.....	149	2,051,850	4,434	20,056,409
Twelfth.....	19	341,550	420	520,500
Thirteenth.....	172	299,110	1,231	2,073,628
Fourteenth.....	72	965,700	1,560	1,546,927
Fifteenth.....	93	1,045,550	1,176	1,376,818
Sixteenth.....	129	3,280,880	2,763	4,368,175
Seventeenth.....	145	892,400	1,885	2,579,312
Eighteenth.....	199	1,227,780	2,613	2,920,760
Nineteenth.....	94	334,600	670	1,293,560
Total.....	3,387	\$34,232,822	53,703	\$105,218,308

The Croton aqueduct commences at the Croton River, 5 miles from the Hudson, in Westchester county. The dam is 250 feet long, 70 feet wide at the bottom, and 7 at the top, and 40 feet high, built of stone and cement. It creates a pond 5 miles long, covering a surface of 400 acres, and containing 500,000,000 gallons of water. From the dam the aqueduct proceeds; sometimes tunneling through solid rocks, crossing valleys by embankments, and brooks by culverts, until it reaches Harlem River, a distance of 33 miles. It is built of stone, brick, and cement, arched over and under, 6 feet 3 inches wide at bottom, 7 feet 8 inches at top of the side walls, and 8 feet 5 inches high; has a descent of 13½ inches per mile, and will discharge 60,000,000 of gallons every 24 hours. It crosses the Harlem River on a magnificent bridge of stone, 1450 feet long, with 14 piers; 8 of them bearing arches of 80 feet span, and 7 others of 50 feet span, 114 feet above tide-water at the top. The receiving reservoir at Eighty-sixth-street, 38 miles from the Croton dam, covers 35 acres, and holds 150,000,000 of gallons. The distributing reservoir, on Murray's Hill, at Fortieth-street, covers 4 acres, and is constructed of stone and cement, 45 feet high above the street, and holds 20,000,000 of gallons. Thence the water is distributed over the city in iron pipes, laid so deep under ground

as to be secure from frost. The whole cost of the work has been about \$13,000,000. The water is of the purest kind of river water. There are laid below the distributing reservoir in Fortieth-street, more than 200 miles of pipe, from 6 to 36 inches in diameter. See **AQUEDUCTS**. There are not more than four cities in Europe larger than New York, viz., London, Paris, Constantinople, and St. Petersburg.

STATEMENT SHOWING THE AMOUNT OF TAXES, AND OBJECTS FOR WHICH THEY WERE LEVIED, IN THE CITY AND COUNTY OF NEW YORK, FOR THE YEARS 1850, 1852, 1854, AND 1856.

Heads of accounts.	1850.	1852.	1854.	1856.
	Dollars.	Dollars.	Dollars.	Dollars.
Aims-house.....	400,000	390,000	427,000	925,000
Aqueduct repairs.....	20,000	30,000	22,000	35,000
" construction.....	8,000	.....	.....	.....
Battery enlargement.....	.....	20,000	25,000	.....
Board of health.....	10,000	10,000	10,000	40,000
City Inspector's depart.....	.....	50,000	75,500	8,315
Coroners' fees.....	10,000	12,000	16,000	18,000
Cleaning docks and slips.....	8,000	10,000	6,000	6,000
County contingencies.....	100,000	120,000	120,000	70,000
Common Council, pay of members.....	.....	.....	81,388	36,000
Contingent expenses of Common Council.....	10,000	25,000	10,000	7,500
Docks & slips (new work).....	80,000	.....	166,000	100,000
" repairs.....	45,000	.....	50,000	20,000
Donations.....	15,000	15,000	5,000	10,000
Election expenses.....	8,000	12,000	28,000	20,000
Errors and delinquencies.....	3,000	3,000	5,000	5,000
Fire department.....	40,000	70,000	55,000	81,000
Int. on revenue bonds.....	90,000	75,000	130,000	220,000
" assessment bonds.....	.....	.....	.....	60,000
Intestate estates.....	3,000	3,000	3,000	3,000
Lands and places.....	5,000	15,000	15,000	16,500
Lands purchased for assessments.....	25,000	30,000	.....	.....
Markets.....	5,000	7,000	3,000	7,000
Mayorality fees.....	125	150	150	150
Officers' fees.....	30,000	35,000	35,000	20,000
Police and fire telegraph.....	.....	.....	.....	5,000
Printing.....	26,000	45,000	75,000	85,000
Repairs and supplies.....	50,000	60,000	135,000	182,000
Rents.....	2,000	8,000	8,500	20,000
Real estate.....	15,000	30,000	25,000	25,000
" expenses.....	10,000	50,000	30,000	50,000
Roads and avenues.....	30,000	40,000	50,000	50,000
" 8th avenue.....	.....	7,500	15,000	.....
Stationery.....	9,000	20,000	20,000	18,000
Sunken vessels (remov'g).....	.....	2,000	2,000	2,000
Sewers (rep'r'g & clean'g).....	10,000	12,000	15,000	24,000
Salaries.....	200,000	225,000	260,000	369,200
Statistical tables C. A. department.....	.....	.....	1,500	1,500
Water pipes and laying.....	140,000	.....	128,000	165,700
Cleaning streets.....	.....	310,000	140,000	259,224
Street exp'n's & rep'ts.....	200,000	.....	250,000	60,000
Com. schools (for State).....	8,144	185,641	74,742	126,117
" (for City).....	267,969	502,315	663,814	1,023,854
Commissioners of Record.....	.....	.....	.....	150,000
Building loan stock, Nos. 2 and 3.....	50,000	50,000	50,000	50,000
Indexing records, Co. offices.....	.....	.....	5,654	.....
Judges Supreme Court.....	.....	.....	3,375	4,500
Lighting lamp district.....	185,000	200,000	321,405	396,367
N. Y. S. Lunatic Asylum.....	127	362	467	800
" Juvenile.....	.....	.....	4,882	40,000
" Asyl. for Idiots.....	.....	.....	.....	120
Institution for Blind.....	720	720	2,080	2,240
" for Deaf & Dumb.....	2,030	2,960	2,640	2,700
Police.....	492,000	540,000	872,715	825,500
Public education stock.....	.....	.....	12,449	12,357
State mill tax.....	143,043	175,553	310,225	608,826
Washington sq. iron railing stock.....	5,000	5,000	.....	.....
Water loan interest.....	186,689	.....	.....	.....
Arreages of prev. years.....	280,941	18,833	123,770	415,938
Blasting Diamond Reef.....	.....	.....	.....	35,500
Repairing County jail.....	.....	.....	.....	5,000
Monument, Major-General Worth.....	.....	.....	.....	23,500
Grooving Broadway.....	.....	.....	.....	50,000
Paving Bowery and Chatham-street.....	.....	.....	.....	75,000
Grading 10th avenue.....	.....	.....	.....	18,000
Ward maps & surveys for Tax Commis's.....	.....	.....	.....	10,000
Surg. depart'm't of police.....	.....	.....	.....	5,000
Central park interest.....	.....	.....	.....	162,422
Society for relief of juvenile delinquents.....	.....	.....	.....	4,000
Total tax levied.....	3,230,180	3,378,335	4,841,256	7,075,426

EXPORTS FROM NEW YORK TO FOREIGN PORTS FOR THE SEVERAL MONTHS OF THE FISCAL YEAR ENDING JUNE 30TH, 1857.

Months.	Domestic merchandise.	Foreign merchandise, dutiable.	Foreign merchandise, free.	Total merchandise.	Specie.	Total exports.
July.....1856	\$6,901,272	\$108,617	\$22,428	\$7,032,312	\$7,771,901	\$14,804,213
August.....	5,612,828	211,998	83,242	5,913,068	8,202,058	9,115,116
September.....	7,045,202	509,752	67,825	7,622,279	8,734,547	11,860,826
October.....	6,129,887	180,577	71,981	6,382,345	4,996,060	11,329,005
November.....	7,541,595	202,093	55,062	7,798,550	2,955,899	10,755,189
December.....	8,246,468	467,501	184,148	8,897,112	1,779,151	10,676,293
January.....1857	4,543,842	185,408	151,920	4,884,170	1,807,946	6,702,116
February.....	5,899,202	363,573	175,706	5,998,786	1,581,726	7,770,512
March.....	7,904,481	628,080	483,380	9,017,591	2,174,965	11,192,556
April.....	5,162,160	914,143	195,642	5,671,945	3,354,805	8,026,750
May.....	6,046,648	294,839	169,451	6,510,938	5,789,266	12,300,199
June.....	5,895,819	512,949	782,028	6,689,799	7,989,854	14,679,148
Total, 1856-57.....	\$75,928,842	\$3,382,290	\$2,398,908	\$82,259,975	\$46,942,243	\$128,102,218
" 1855-56.....	75,026,244	3,207,710	1,752,804	79,986,758	22,580,991	102,567,749
" 1854-55.....	52,602,406	5,636,783	4,084,387	62,323,581	38,058,384	100,381,915
" 1853-54.....	66,321,095	5,163,816	1,889,973	72,324,824	84,304,241	107,129,065

The heavy warehousing of goods during the past three months, to secure the benefit of the new tariff, will not escape observation. The import of merchandise is more than \$3,000,000 less than in the corresponding three months of 1856, but a nearly equal total import is made up of specie and bullion.

The annexed statement exhibits the value of certain articles imported into and exported from this port during the year 1856, compared with 1855:

COMMERCE OF THE PORT OF NEW YORK.
VALUE OF IMPORTS AND EXPORTS.

	1855.	1856.
IMPORTS.		
Cigars.....	\$1,869,167	\$2,070,928
Coffee.....	5,718,351	6,565,216
Hardware and cutlery.....	4,169,452	2,956,000
Hides.....	4,892,588	6,975,000
Lead.....	1,454,768	2,081,730
Liquor.....	1,809,856	2,662,000
Molasses.....	820,680	1,317,242
Railroad iron.....	440,769	8,076,059
Steel and iron.....	4,492,204	6,512,000
Sugar.....	7,340,046	14,585,965
Tin.....	4,481,879	4,022,918
Tea.....	2,940,475	4,106,375
Tobacco.....	651,453	805,852
Matches.....	3,820,184	2,684,536
Wines.....	1,414,081	2,000,000
Dry goods.....	65,446,452	92,206,952
EXPORTS.		
Cotton.....	16,520,010	10,358,182
Flour.....	10,762,574	14,981,928
Wheat.....	5,686,571	15,800,042
Corn.....	5,795,999	2,948,900
Rye.....	585,975	385,946
Beef.....	1,543,295	896,979
Pork.....	832,842	2,170,809
Hams, bacon and shoulders.....	1,480,451	2,568,194
Butter.....	188,609	76,937
Cheese.....	836,695	385,268
Lard.....	1,457,007	1,404,237
Sugar.....	549,883	170,533
Tea.....	652,894	198,500
Coffee.....	1,885,592	481,273
Rice.....	329,668	711,066
Tobacco.....	2,430,753	2,236,243
Naval stores.....	2,996,580	1,496,369
Sperm oil.....	1,503,961	892,104
Oilcake.....	496,556	805,762
Whalcbone.....	693,693	1,001,670
India rubber goods.....	1,695,763	200,000
Furs and skins.....	248,784	267,994

EXPORTS FROM NEW YORK TO FOREIGN PORTS, FOR THE LAST QUARTER OF THE FISCAL YEARS ENDING JUNE 30TH, 1855, 1856, AND 1857.

	1855.	1856.	1857.
Domestic merchandise.....	\$13,378,540	\$19,066,095	\$16,584,115
Foreign mdsce., dutiable.....	1,857,362	899,588	1,121,531
" " free.....	892,028	284,668	927,770
Total merchandise.....	\$15,627,930	\$20,250,346	\$18,633,416
Specie.....	12,495,692	8,236,279	17,083,425
Total.....	\$28,123,622	\$28,986,619	\$35,716,841

The figures above given for the last three months, although presenting many points of comparison with the same time in 1856, show little or nothing more, in comparison with those of 1855, than a steady increase, except perhaps, in specie, in which the increase is relatively large.

VALUE OF ARTICLES OF MERCHANDISE, OF DOMESTIC GROWTH AND MANUFACTURE, EXPORTED FROM NEW YORK, IN THE YEAR ENDING DECEMBER 31, 1855.

Articles.	Quantity.	Value.
Alcohol.....gallons	23,170	\$15,383
Apples.....barrels	2,460	9,275
Ashes, pot and pearl.....tons	8,395	489,739
Bacon.....lbs.	17,224,923	1,521,263
Bark, oak.....		88,646
Beef, salt.....barrels	25,062	1,370,880
Beef, salt.....tierces	37,046	
Beeswax.....lbs.	157,400	42,989
Biscuit or shipbread.....bbls.&kegs	55,379	214,701
Bricks, common.....		19,068
Butter.....lbs.	1,083,070	220,397
Candles.....	1,706,036	320,696
Cheese.....	6,128,960	654,889
Clover seed.....		17,781
Coal, anthracite & bituminous, tons	16,266	91,404
Copper ore, pig, pipe & sheet.....		547,651
Cordage & cables.....lbs.	986,000	127,565
Corn, shelled.....bush.	3,806,989	8,311,245
Corn meal.....bbls.	58,185	297,149
Cotton.....bales	278,674	12,057,905
Cotton goods, printed or colored.....		149,353
" uncolored.....		1,378,429
Earthenware.....		8,341
Flour.....bbls.	990,568	9,018,673
Ginseng.....lbs.	72,740	88,376
Hemp, common.....	60,400	6,546
Hides.....No.	27,764	117,782
Hogs, live.....	4	85
Hops.....lbs.	1,592,256	419,520
Horses.....No.	110	20,080
Iron cast'gs & oth. manufs. of iron		1,250,450
Lard.....lbs.	8,694,730	963,798
Leather.....	914,757	156,759
Lumber, pine, hemlock, poplar, oak, maple, black walnut and cherry.....	29,478	685,174
Molasses.....gals.	33,240	8,464
Oil, lard.....	90,756	76,454
" linseed.....	25,687	23,646
Onions.....		21,950
Paint, mineral.....		68,188
Pork.....tierces	2,997	2,517,165
" bbls.	148,004	
Potatoes, common.....	22,590	50,111
Rice.....tierces	13,628	612,466
" bbls.	11,591	
Rosin.....	505,950	1,214,574
Rum.....gals.	1,414,255	684,584
Rye.....bush.	650,000	824,385
Rye meal.....bbls.	20,100	183,381
Sheep and lambs.....No.	1,781	11,817
Snuff.....lbs.	14,380	1,424
Spirits of turpentine.....gals.	1,619,649	776,359
Staves and heading.....M.	19,512	1,824,596
Sugar cane heading.....lbs.	577,685	85,734
Tallow.....lbs.	1,964,718	239,680
Tar and pitch.....bbls.	60,467	192,408
Tobacco, leaf.....hhd.	6,568	1,080,515
" strips.....bales	8,514	
" stems.....cases	5,244	
" chewing.....lbs.	5,426,211	924,106
Vinegar.....gals.	25,825	8,281
Wheat.....bush.	8,455,284	6,952,398
Whisky.....gals.	55,826	86,514
Total.....		\$53,756,387

Large as was the export of specie for the fiscal year, it is less than \$9,000,000 in excess of 1854-55. The export of domestic produce is a trifle larger than last year, with prices averaging about the same—cotton and provisions being higher, and breadstuffs lower.

IMPORTS INTO THE PORT OF NEW YORK FROM FOREIGN PORTS FOR THE SEVERAL MONTHS OF THE FISCAL YEAR ENDING
JUNE 30, 1857.

Months.	Dutiable goods.	Free goods.	Total for consumption.	Ware-housed.	Total mdse. entered.	Specie and bullion.	Total import.	Withdrawn from warehouse.	Total put on market.
July.....1856	\$19,288,585	\$1,280,834	\$20,569,739	\$4,917,669	\$25,457,408	\$288,918	\$25,726,326	\$2,187,337	\$22,757,076
August.....	18,375,996	1,808,790	19,679,776	4,186,716	23,816,492	103,173	23,919,665	2,534,732	22,214,508
September.....	10,984,435	1,026,208	11,960,643	3,264,622	15,225,265	84,097	15,309,362	3,457,564	15,418,207
October.....	9,932,001	961,781	10,593,782	2,836,781	13,780,563	95,029	13,825,592	3,273,982	14,167,764
November.....	9,730,429	1,079,524	10,809,953	3,818,842	14,128,795	321,750	14,450,545	1,725,544	12,535,497
December.....	7,930,499	1,141,628	9,072,127	2,696,241	11,768,368	286,876	12,015,244	1,625,650	10,697,777
January.....1857	15,800,094	850,923	16,150,957	1,969,266	15,120,223	856,509	19,006,732	2,673,755	18,247,112
February.....	18,508,918	2,447,539	20,956,752	3,543,998	24,500,743	1,023,711	25,524,459	2,501,696	23,458,448
March.....	12,250,457	2,898,379	14,588,836	5,473,327	20,067,163	1,061,383	21,128,496	2,639,228	17,228,059
April.....	11,155,530	955,428	12,110,958	3,168,142	20,279,100	989,218	21,218,318	2,287,815	14,308,273
May.....	5,451,191	1,674,810	7,126,001	10,508,421	17,634,422	1,070,838	18,705,265	2,262,173	9,388,174
June.....	2,471,723	957,366	3,429,089	11,540,136	14,969,225	369,901	15,339,126	781,099	4,210,188
Total, 1856-57.	\$141,380,083	\$16,018,530	\$157,348,613	\$62,379,159	\$219,727,772	\$6,441,848	\$226,169,120	\$27,950,070	\$185,298,638
" 1855-56.	150,088,122	17,432,102	167,520,224	29,508,426	197,028,650	1,126,097	198,154,747	21,994,180	189,454,354
" 1854-55.	107,029,210	14,230,259	121,259,469	32,022,396	153,281,856	1,153,661	154,505,526	23,501,421	144,860,887
" 1853-54.	147,929,241	12,791,055	160,720,296	27,417,160	188,137,456	2,937,048	191,074,504	19,876,445	180,596,741

It will be seen from the above that the value of goods put upon the market falls short of the total value of the import of merchandise, about \$34,500,000, and we have good reason to set down the value of goods in bond July 1, 1856, at \$10,000,000 at least, making the total value of goods in bond July 1, 1857, about \$45,000,000, which is \$6,000,000 or \$7,000,000 greater than was to have been expected from such reports as we have had from time to time. We must not forget to place to the credit of the year, an importation of specie and bullion of \$6,500,000 against a little more than \$1,000,000 the previous year. The total import of merchandise is \$22,000,000 in excess of the previous year, and it is not a flattering fact, that we have been importing most freely, when it was evident that stocks were accumulating. The merchant can not devote a few hours more profitably, than in a careful scrutiny of the above tables.

The extent to which goods have been warehoused, caused the cash receipts at the custom-house to fall below those of last year, as is shown in the following: CASH DUTIES RECEIVED AT THIS PORT DURING THE FISCAL YEAR ENDING JUNE 30TH, 1857, COMPARED WITH THE TWO PREVIOUS YEARS.

Months.	1854-55.	1855-56.	1856-57.
July.....	\$2,045,745	\$3,787,842	\$5,441,544
August.....	2,214,629	4,200,764	5,283,899
September.....	3,439,493	3,543,379	3,702,135
October.....	2,402,715	3,329,195	3,891,231
November.....	1,751,023	2,171,708	2,774,846
December.....	1,805,720	2,934,942	2,981,970
January.....	2,560,083	3,683,655	4,537,378
February.....	2,665,165	3,576,919	5,117,250
March.....	2,363,055	4,352,107	3,752,185
April.....	1,994,711	3,913,825	3,801,607
May.....	2,400,433	3,457,154	1,907,290
June.....	2,316,465	3,527,425	677,811
Total.....	\$30,658,872	\$42,628,430	\$42,273,446

The final result of this expansion, if continued, will be the loss of credit, and, as a consequence, a reduction—not, however, until we shall have endured all the penalties incident to bankruptcy. With the realization of the present prospect, good crops, and the continued development of the manufactures of our country, we can expect prosperity, if we can only avoid the evil of excessive consumption, and, as a consequence, importation of foreign manufactures. We have prepared a statement showing the exports of France, Great Britain, and the United States for a period extending from 1847 to 1856, inclusive. This statement enables us to compare the increase in exports, and consequently in wealth, of the three principal maritime countries in the world. With regard to the increase of wealth, a country is in a similar position to an individual. The exports of one are equivalent to the income of the other; and the imports of one, on the other hand, are equivalent to the expenses of the other. In the case of this country, the *ad valorem* tariff prevents us from obtaining a correct valuation of the imports, in order to obtain the exact difference, or, in other words, the increase of wealth,

through the foreign commerce of the country. We may, however, judge in a measure from the *character* of the imports of the probable gain of wealth. If they are luxuries instead of necessities, or manufactures that could be home-made, instead of the products foreign to our soil and climate, we may justly put that nation down on the extravagant list. And this is the position of the United States. In the period of 10 years below given, the increase of exports to the United States has been equal to 107 per cent.; the increase of imports has been (for the same period) equal to 114 per cent. Showing that even with our enormous productive powers, and the great wants of Europe, our exports have not kept pace with our demand for luxuries. We are apt to congratulate ourselves on the unequalled growth of our country, and its commerce. Of the former we have reason; but of the latter, the figures do not prove our statements. In the last 10 years the exports of the United States have increased 107 per cent, while the increase in the exports of France for the same period is equal to 130 per cent.; and the increase in the exports of Great Britain for the same period is equal to 93 per cent.

Statement showing, separately, the total exports of domestic produce of France, Great Britain, and the United States for the past 10 years:

Year.	France.	Great Britain.	United States.
1847	\$140,000,000	\$293,000,000	\$158,000,000
1848	135,000,000	263,000,000	154,000,000
1849	135,000,000	315,000,000	145,000,000
1850	211,000,000	359,000,000	152,000,000
1851	233,000,000	370,000,000	218,000,000
1852	305,000,000	393,000,000	210,000,000
1853	245,000,000	493,000,000	281,000,000
1854	280,000,000	453,000,000	273,000,000
1855	308,000,000	475,000,000	275,000,000
1856	325,000,000*	575,000,000	326,000,000

* Estimated.

The exports of a country are the best exponent of its commercial prosperity, and in a measure it is in a direct ratio. For although the profit which is made on the articles exported may vary according as they are the natural products of the soil, or manufactures, the raw material of which is the growth of another country, yet there are other allowances to be made which compensate for this difference. It is evident, therefore, that any financial troubles we may have must be the result of our extravagant imports. These we have shown to have increased more rapidly than our exports, even with the valuation of our imports by an *ad valorem* tariff. The correction to be applied, if we wish to continue prosperous, is self-evident; and this correction will, under our present course, become ere long a necessity. A nation's balance-sheet is equivalent to the relation of receipts and expenditures with an individual; and national bankruptcy will surely follow when the imports, for a long series of years, are greater than the exports.

The exports of domestic cottons from the port of New York to foreign ports, for three years past, has been as follows:

Exported to.	1854. Packages.	1855. Packages.	1856. Packages.
Mexico.....	1,718	2,972	4,597
Dutch West Indies.....	806	937	151
Danish West Indies.....	8	6	10
Swedish West Indies.....	147	294	427
British West Indies.....	908	499	880
Spanish West Indies.....	69	1,143	151
San Domingo.....	208	411	228
British North America.....	54	16	25
New Granada.....	112	181	949
Brazil.....	2,632	2,764	3,756
Venezuela.....	988	1,094	335
Argentine Republic.....	1,445	468	590
Central America.....	48	495	190
West coast of South America.....	809	1,152	158
Honduras.....	276	401	160
Africa.....	1,007	1,394	1,874
Australia.....	529	1,908	2,060
East Indies and China.....	12,496	11,929	17,674
All others.....	550	251	267
Total.....	24,280	27,585	34,782

Maritime Advancement.—We doubt whether the progress of this country as a maritime power, and of this city as a commercial emporium, can be more clearly demonstrated than in the subjoined simple tables; the first showing the tonnage of the shipping that entered this port from foreign ports, for a number of years, commencing with 1821:

Years.	Home.	Foreign.	Total Tonnage.
1821.....	\$155,798	\$16,240	\$171,968
1825.....	259,525	20,655	280,180
1830.....	255,691	25,821	281,512
1835.....	373,465	90,999	464,464
1840.....	409,458	118,186	527,598
1845.....	472,492	140,858	613,350
1846.....	496,761	185,404	682,165
1847.....	605,433	833,537	939,020
1848.....	657,795	867,821	1,025,116
1849.....	734,009	414,096	1,148,105
1850.....	807,580	441,757	1,249,337
1851.....	1,144,485	479,569	1,624,052
1852.....	1,231,951	478,087	1,709,988
1853.....	1,821,674	491,581	1,813,255
1854.....	1,442,278	477,085	1,919,313
1855.....	1,810,257	202,000	1,512,257

The increase in the total tonnage from 1821 to 1851, thirty years, was nearly ten-fold. The increase in American tonnage during the same period, was more than seven-fold. The increase in foreign tonnage was nearly thirty-fold—about 2,900 per cent. This explains, more clearly than any other fact, the cause of the growing interest felt by European governments in the affairs of this country. The great falling off in the foreign tonnage in 1854, in comparison with several years immediately preceding, was doubtless mainly in consequence of the Eastern war, which employed, not only the Cunard steamers running to this port, but a vast amount of British shipping of all descriptions, as

VESSELS BUILT AT THE PORT OF NEW YORK, INCLUDING THE SHIP-YARDS OF BROOKLYN, WILLIAMSBURG, AND GREENPOINT.

Class.	Launched in the years						On the stocks at the close of the years					
	1854.		1855.		1856.		1854.		1855.		1856.	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
Steamships.....	19	24,600	4	11,100	15	18,900	13	9,200	9	9,000	6	7,450
Oth. steam vess.	28	5,967	4	2,200	5	1,900	1	500	2	1,150	3	2,750
Ships.....	30	89,880	6	9,180	11	12,550	6	8,200	6	8,150	4	2,150
Barks and brigs.	15	6,151	10	4,651	12	6,800	2	1,000	4	2,300	3	650
Schooners, etc.,	21	5,292	18	8,785	13	2,820	4	1,133	3	1,120	..	....
Total.....	108	81,820	37	29,867	56	42,470	16	20,038	17	21,720	16	18,000

We give two tables, arranged from the report on Commerce and Navigation, showing the complete commerce of the port of New York, and specifying the destination of all vessels when outward bound, or the country from whence they arrived when inward bound; also showing their nationality. This table enables us to see at a glance the distribution of the commerce of New York, and gives a clear exhibit of our relations to other countries in regard to favorable or unfavorable tariffs, and shows some very curious statistics. In our trade to England, four fifths of the tonnage belongs to the United States, showing that we have a fair field for enterprise; while to the

transports. The inactivity in freights hence was also potent in influence. There is no reason to doubt that, with the return of peace, the foreign shipping entering this port yearly, will equal, if not surpass in tonnage, any former year.

The above table shows only the extent of the trade of this city with foreign ports. The coasting trade since 1847 is shown, partially, in the following. But it must be remembered, that coasting vessels to or from ports north of the northern boundary of Georgia, are not compelled to enter or clear, unless distilled spirits are of the cargo. It will at once be seen that this exhibit of the trade of this city coastwise is far from being complete. The same fact will also explain the disparity between the tonnage entered and cleared:

Years.	Entered.	Cleared.
1848.....	402,143	805,993
1849.....	424,976	895,589
1850.....	489,396	1,020,070
1851.....	455,542	1,214,922
1852.....	497,540	1,378,762
1853.....	507,531	1,310,697
1854.....	543,432	1,499,968
1855.....	614,045	1,378,889

But the increase in tonnage is not alone remarkable. It is a common observation that the largest ships of 20 years ago did not exceed in tonnage the ordinary coasters of the present day. Then, a ship of 700 or 800 tons was a wonderful achievement of capital and mechanism. Now, ships of more than 2,000 tons have ceased to be regarded as out of the ordinary course. The following is a statement of the number of vessels, foreign and American, that entered this port in the years indicated, their total and average tonnage. The statement of the entries for 1855, shows a diminution in the average tonnage of foreign vessels, to below that of 1840; which makes it quite clear that the diminished tonnage of the year was, as we have said, caused mainly by the use of a great number of large ships for purposes incident to the war between the Allies and Russia. From 1835 to 1854, the American tonnage increased about four-fold, but the number of ships increased only about 70 per cent., the average tonnage about 117 per cent., exceeding the average foreign tonnage about 60 per cent.

Years.	American.			Foreign.		
	No. of vessels.	Total tonnage.	Average tonnage.	No. of vessels.	Total tonnage.	Average tonnage.
1835.....	1,544	373,465	245	471	90,999	193
1840.....	1,447	409,458	280	470	118,186	253
1845.....	1,484	472,492	319	526	140,858	267
1850.....	1,892	807,580	427	1,451	441,757	304
1854.....	2,636	1,442,278	547	1,411	477,085	333
1855.....	2,437	1,310,257	527	904	202,000	228

British North American possessions we have less than one fourth, showing that we are inferior in enterprise to our neighbors, or they have some tariff advantage. We absorb four fifths of the carrying trade to France, while to the northern European countries we have but an equal amount. The carrying trade to South America goes almost entirely in American bottoms. The Cuba trade is 95 per cent. in American vessels, while to Portugal only about one third; showing that the tariff is in favor of that country. To Hamburg we have less than one fifth; which is probably owing partly to more economy practiced by the Dutch, and lower wages.

STATEMENT EXHIBITING THE NUMBER AND TONNAGE OF AMERICAN AND FOREIGN VESSELS WHICH ENTERED INTO THE DISTRICT OF NEW YORK, AND THE COUNTRIES FROM WHICH THEY ARRIVED, DURING THE FISCAL YEAR ENDING JUNE 30TH, 1856.

Arrived from	American vessels.		Foreign vessels.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.
Russia.....	1	503	..	..	1	503
Sweden&Norw'y	5	1,486	8	2,371	13	3,857
Swed. W. Indies	5	656	..	..	5	656
Danish W. Indies	19	8,490	9	892	16	8,502
Hamburg.....	8	4,540	41	24,910	49	29,450
Bremen.....	19	26,768	82	44,816	101	71,569
Other Ger. ports	..	..	1	203	1	203
Holland.....	14	8,961	29	9,490	43	18,451
Dutch W. Indies	16	8,247	5	744	21	8,991
Dutch E. Indies.	6	2,368	..	..	6	2,368
Belgium.....	29	21,512	1	626	30	22,138
Scotland.....	432	515,468	85	60,844	517	576,812
Ireland.....	31	17,657	18	11,764	49	29,421
Gibraltar.....	4	2,227	2	849	6	8,076
Malta.....	1	789	2	862	6	1,151
Canada.....	1	245	..	..	1	245
Other B. N. A. pos.	45	8,671	310	41,810	355	49,981
British W. Indies	107	19,745	123	17,263	230	37,008
British Honduras	14	8,448	..	..	14	8,448
British Guiana.	17	8,988	2	870	19	4,858
Br. poss. in Africa	13	2,981	3	493	16	3,424
British Australia	1	298	..	..	1	298
British E. Indies	16	11,932	8	1,328	19	18,810
France on Atlan.	119	122,360	24	12,692	143	135,052
France on Med.	35	16,600	4	1,640	39	18,240
Fr. N. Amer. pos.	..	..	10	1,196	10	1,196
Fr. West Indies.	1	200	..	..	1	200
Spain on Atlantic	12	3,464	8	1,999	20	5,463
Spain on Medit.	41	11,618	19	8,917	60	15,535
Canary Islands..	5	988	1	189	6	1,177
Philippine Isls..	12	12,918	1	1,060	13	13,978
Cuba.....	689	243,500	39	8,591	728	252,391
Porto Rico.....	100	19,444	18	7,243	143	26,687
Portugal.....	26	8,737	24	5,627	50	14,864
Madeira.....	..	..	2	284	2	284
Cape de Verd....	9	1,849	..	..	9	1,849
Azores.....	2	391	..	..	2	391
Sardinia.....	4	2,941	9	2,607	15	5,548
Tuscany.....	19	9,365	10	3,356	29	12,724
Papal States....	1	358	..	..	1	358
Two Sicilies....	48	16,064	32	8,479	80	24,543
Austria.....	4	1,505	4	2,234	8	3,739
Turkey in Asia..	3	1,256	2	873	5	1,629
Egypt.....	..	..	3	1,081	3	1,081
Oth. ports Africa	22	4,858	..	..	22	4,858
Hayti.....	132	23,215	20	3,358	152	27,056
San Domingo...	2	308	5	359	7	662
Mexico.....	37	9,638	5	736	42	10,374
Central Republic	32	81,174	2	402	34	31,576
New Granada....	72	53,310	3	741	75	59,051
Venezuela.....	61	16,501	22	4,669	83	21,170
Brazil.....	110	31,453	26	6,939	136	87,522
Uruguay.....	4	928	..	..	4	928
Buenos Ayres...	28	8,954	2	866	30	9,310
Chili.....	1	321	..	..	1	321
Peru.....	7	5,021	1	212	8	5,233
Sandwich Islands	4	4,393	..	..	4	4,393
China.....	55	51,913	9	1,086	57	53,004
Total.....	2,496	1,381,726	1,038	299,938	3,524	1,681,559

The greater increase of the commerce of New York over the other cities, is shown by the tables from the annual report on commerce and navigation. The tonnage built during the year ending June 30, 1856, in all the States, was 469,393 tons, the leading States ranging as follows:

States.	Ships.	Brigs.	Schooners.	Sloop and canal boats.	Steamers.	Total.	Tons.
Maine.....	156	70	84	4	4	316	149,907-88
Massachusetts.	84	10	85	1	4	184	90,884-88
New York.....	24	7	87	161	27	306	76,301-12
All others.....	88	17	843	313	186	947	162,361-00
Total.....	306	103	549	479	221	1,703	469,393-78

Maine, it appears from this, builds an amount of tonnage nearly as large as Massachusetts and New York together, and also nearly as large an amount as all the other States of the Union, omitting Massachusetts and New York; so that there is built on the coast of Maine almost one third of the aggregate tonnage of the Union. Probably, leaving out of view steamships, canal boats, and river craft, Maine builds fully one half of the tonnage of the Union.

Taking the leading ship-owning States, we have the following result as to tonnage owned:

	June 30, 1856.	June 30, 1855.	Tons.
New York.....	1,508,808	1,464,216	Inc. 44,587
Massachusetts..	891,860	979,205	Dec. 87,345
Maine.....	780,170	806,599	Dec. 26,429
Total.....	3,180,838	3,250,020	
		8,180,338	

Decrease in the year 1855..... 69,637

The following table shows the relative amount of tonnage owned in the large ports which have over 50,000 tons registered at the custom-house of the district:

Ports.	June 30, 1856.	June 30, 1855.
	Tons.	Tons.
New York.....	1,223,096	1,223,234
Boston.....	521,117	546,263
Philadelphia...	197,228	294,806
Baltimore.....	158,344	183,108
Bath.....	193,320	175,258
New Orleans...	163,308	200,536
Waldoborough..	155,873	148,896
New Bedford...	153,000	169,986
Portland.....	136,154	137,317
Buffalo.....	98,929	76,952
Chicago.....	67,407	50,972
Cleveland.....	59,919	51,578
Detroit.....	58,688	65,058
Belfast.....	70,162	70,762
Barnstable.....	63,136	80,615
Charleston.....	59,128	56,419
San Francisco..	80,750	87,842
Cuyahoga.....	60,916	....

The most remarkable decline is that shown in Philadelphia. New York exhibits the greatest increase of tonnage, according to these returns.

Of tonnage employed in steam navigation, New York stands at the head by a large amount. The figures are as follows:

	Tons.
New York State.....	155,736
New Orleans.....	51,751
St. Louis.....	83,745
Pittsburg.....	87,505

RATES OF COMMISSIONS RECOMMENDED BY THE CHAMBER OF COMMERCE, TO BE CHARGED WHERE NO EXPRESS AGREEMENT TO THE CONTRARY EXISTS.

Banking.

On purchase of stocks, bonds, and all kinds of securities, including the drawing of bills for the payment of same..... 1 per cent.

On sale of stocks, bonds, and all kinds of securities, including remittances in bills and guaranty..... 1 "

On purchase of sale of specie and bullion..... 1 "

Remittances in bills of exchange..... 1 "

Remittances in bills of exchange, with guaranty. 1 "

Drawing or endorsing bills of exchange..... 1 "

Collecting dividends on stocks, bonds, or other securities..... 1 "

Collecting interest on bonds and mortgages.... 1 "

Receiving and paying moneys on which no other commission is received..... 1 "

Procuring acceptance of bills of exchange payable in foreign countries..... 1 "

On issuing letters of credit to travelers, exclusive of foreign bankers' charge..... 1 "

Where bills of exchange are remitted for collection, and returned under protest for the non-acceptance, or non-payment, the same commissions are to be charged as though they were duly accepted and paid.

General Business.

For sales of foreign merchandise..... 5 "

On domestic merchandise..... 2 1/2 "

Guaranty..... 2 1/2 "

On purchase and shipment of merchandise, on cost and charges, with funds in bond..... 2 1/2 "

Collecting delayed and litigated accounts..... 5 "

Effecting marine insurance, on amount insured. 1 "

No amount to be charged for effecting insurance on property consigned.

Landing and re-shipping goods from vessels in distress, on value of invoice..... 2 1/2 "

Landing and re-shipping, on specie and bullion. 1 "

Receiving and forwarding merchandise entered at custom-house, on invoice value 1 per cent., and on expenses incurred..... 2 1/2 "

On consignments of merchandise withdrawn of re-shipped, full commissions are to be charged, to the extent of advances or responsibilities in-

General Business.

curring, and one half commission on the residue of the value.

On giving bonds that passengers will not become a burden on the city, on the amount of the bonds..... 2½ per cent.

The risk of loss by robbery, fire (unless insurance be ordered), theft, popular tumult, and all other unavoidable occurrences, is in all cases to be borne by the owners of the goods, provided due diligence has been exercised in the care of them.

Shipping.

On purchase or sale of vessels..... 2½ "

Disbursements and outfit of vessels..... 2½ "

Procuring freight and passengers for Europe, East Indies, and in American vessels..... 2½ "

Do. do. in foreign vessels..... 5 "

Do. do. coastwise..... 5 "

Collecting freight..... 2½ "

Collecting insurance losses of all kinds..... 2½ "

Chartering vessels, on amount of freight, actual or estimated, to be considered as due when the charter-parties are signed..... 2½ "

But no charter to be considered binding till a memorandum, or one of the copies of the charter has been signed.

On giving bonds for vessels under attachment in litigated cases, on amount of liability..... 2½ "

The foregoing commissions to be exclusive of brokerage, and every charge actually incurred.

Nicaragua, San Juan de. A sea-port town at the mouth of the river of the same name, State of Costa Rica, on the west shore of the Caribbean Sea, lat. 10° 55' N., long. 83° 43' W. The port is excellent, and is considered the best on this part of the coast. Till lately, the town was quite inconsiderable, and consisted of little else than a cluster of huts; but latterly it has no doubt been improved.

This place has risen into importance from its being at the western extremity of a proposed line of water communication between the Caribbean Sea and the Pacific Ocean. This line is to consist partly of the River San Juan, flowing from the Lake of Nicaragua east to the sea at San Juan, partly of the lake, and partly of a canal to be constructed from the latter to the Pacific Ocean. This project has been often mooted; but the discovery of the extraordinary mineral riches of California, and the consequent emigration to and intercourse with that country, have given it an incomparably greater interest than it formerly possessed. The country appears to present greater facilities for effecting this great work, than any other part of Central America, except the Isthmus of Darien or Panama. The River San Juan, about 90 miles in length, is said to have been occasionally navigable throughout its entire course for sea-going vessels, till the Spaniards, to protect themselves from the attacks of the buccaneers, sunk vessels loaded with stone in its bed. In consequence of the interruption thus given to the stream, a considerable portion of the water was carried off by a new channel called the Rio Colorado.—CHEVALIER, *L'Isthme de Panama*, etc., p. 84. The San Juan is still, however, navigated, though with much difficulty, in the rainy season, by steamers and other vessels drawing little water.

The lake itself has deep water throughout, and is adapted for ships of the largest burden. The distance between its south-western shore and the Gulf of Papagayo, on the Pacific, is only 29,880 yards, or 15½ miles; and though the intervening country be laid down in many maps as mountainous, the greatest actual height of any part of it above the level of the lake is only 19 feet; at least, such is the result given by a series of 347 levels, about 100 yards apart, taken in 1781.—THOMPSON'S *Guatemala*, *Append.*, pp. 512-520. The surface of the lake is 128 feet 3 inches (English) above the level of the Pacific; an ascent which might be overcome by a succession of locks. The difference in the level of the two oceans, formerly supposed to be so serious an obstacle to the undertaking, is said by Humboldt not to exceed 20, or, at most, 22 feet. (*Nouv. Espagne*, i., 223, ed. 1825.) At its western extremity,

the Lake of Nicaragua is connected by a small river, the Tipitapa, with the Lake of Leon or Managua. The latter, 55 miles in length by nearly 80 in breadth, is also said to have deep water throughout. And the plan which appears to be at present preferred is, to make the channel uniting these two lakes navigable, and to excavate a canal from the latter to the port of Realejo, on the Pacific. Mr. Squier, late *chargé des affaires* of the United States at Nicaragua, has published the following statements in regard to this route.

Length of the route by Lake Nicaragua, etc., across the American Continent, from the Atlantic to the Pacific Oceans: River San Juan, 90 miles; Lake Nicaragua, necessary to be traversed, 110 miles; River Tipitapa, 18 miles; Lake Managua or Leon, 55 miles; from Lake Managua to Realejo, 40 miles; total, 303 miles. Height of the various lakes to be passed, and the elevations of land: height of Lake Licaragua, 147 feet 9 inches above Atlantic, 128 feet 3 inches above Pacific; height of Lake Managua, 176 feet 5 inches above Atlantic, 156 feet 11 inches above Pacific; highest point of land to be passed, 231 feet 11 inches above Atlantic, 212 feet 5 inches above Pacific.

The River San Juan reaches the ocean by several mouths. The divergence takes place about 20 miles from the sea, forming a low delta, penetrated by numerous canals, or, as they are called on the lower Mississippi, *bayous*, and *lagunas*. The principal branch is the Colorado, which carries off at least two thirds of the water of the river, and which empties into the ocean some 10 or 15 miles to the southward of the port. There is an almost impassable bar at the entrance, which would preclude the ascent of vessels, even if the depth of water above permitted of their proceeding after it was passed. The little steamer *Orus*, nevertheless, after repeated trials, succeeded in passing. There is another small channel called the *Tauvo*, which reaches the sea midway between the port and the mouth of the Colorado. The branch emptying into the harbor, the one through which the ascending and descending boats pass, carries off only about one third of the water of the river. It, too, has a bar at the mouth, *i. e.*, at its point of debouchure into the harbor, upon which, at low tide, there are but three or four feet of water. This passed, the bed of the river is wide, and studded with low islands; but excepting in the channel, which is narrow and crooked, the water is very shallow. It has been suggested that the Colorado branch might be dammed, and a greater column of water thrown into the other, or San Juan branch. But the suggestion can only be made by those who are wholly unacquainted with the subject. Allowing it to be possible to build a dam, the stream would probably find a new channel to the sea; or, if it took the direction of the harbor, fill it up during the first rainy season with sand, or at once destroy the sandy barriers which now protect and form it. It can not be made navigable for ships or vessels of any kind, except of the lightest draught, by any practicable system of improvements. The boats used upon the river for carrying freight and passengers are exaggerated canoes, called *bongos*. Some are hollowed from a single tree, but the better varieties are built, with some degree of skill, from the timber of the *cedro*, a very light and durable kind of wood, which grows abundantly about the lakes. The largest of these carry from 8 to 10 tons, and draw 2 or 3 feet of water when loaded. They are long, and rather deep and narrow, and have, when fully manned, from 8 to 12 oarsmen, who drive the boats by means of long sweeps and setting-poles. Sails are seldom, if ever, used, except upon the lake. The masts are unshipped and left at the head of the river in descending, and resumed again in returning. These boats have a small space near the stern called the "*chopa*," covered with a board roof, a thatch of palm leaves, or with hides, which is assigned to the passengers. The rest of the boat is open, and the oarsmen, or, as they call

themselves *marineros* (sailors), are without protection, and sleep upon their benches at night, covered only with their blankets, and with the gunwale of the boat for a common pillow. The captain, or *patron*, is the steersman, and occupies a narrow deck at the stern, called the *pineta*, upon which he also sleeps, coiling himself up in a knot, if the boat is small and the *pineta* narrow. The freight, if liable to damage from exposure, is covered with raw hides, which, between sun and rain, soon diffuse an odor very unlike the perfumes which are said to load the breezes of Araby the Blest. The usual freightage from San Juan to Granada—a distance of 160 or 170 miles—is from 30 to 50 cents per cwt.; if the articles are bulky, it is more. The boatmen are paid from seven to eight dollars the trip, down from Grenada and back, which usually occupies from twenty to thirty days, although with proper management it might be made in less time. Time, however, in these regions is not regarded as of much importance, and every thing is done very leisurely.

Nicaragua, a Republic of Central America. It extends from lat. 10° 45' to 13° 20' N., at the Bay of Conchagua, on the Pacific Ocean, long. 83° 40' to 87° 40' W.; having west the Pacific Ocean, east the Caribbean Sea, and part of the so-called Mosquito territory, north the State of Honduras and San Salvador, and South Costa Rica. Area about 49,000 square miles. The Republic is divided into five Departments, each of which has several judicial districts, as follows:

Departments.	Pop.	Districts.
Meridional	20,000	Rivas or Nicaragua.
Oriental	95,000	Acayapa or Chontales, Granada, Masaga, and Managua.
Occidental	90,000	Leon and Chinandega.
Septentrional of Matagalpa ..	40,000	Matagalpa.
Septentrional of Segovia ..	12,000	Segovia.
Total	247,000	

The population here given is the results arrived at, in round numbers, by a census attempted in 1846. It was only partially successful, as the people supposed it preliminary to some military conscription, or new tax. The principal towns of the State, with their estimated population, are as follows:

Leon (the capital), including Subtiava ..	25,000	Puebla Nueva	2,900
Chinandega	11,000	Nagorote	1,800
Chinandego Viejo	8,000	Souci	2,500
Realajo	1,000	Managua	12,000
Chichigalpa	2,800	Massaya	15,000
Posulteiga	900	Granada	10,000
Telica	1,000	Nicaragua	8,000
Somotillo	2,000	Segovia	8,000
Villa Nueva	1,000	Matagalpa	2,000

It is a singular fact that the females greatly exceed the males in number. In the Department Occidental, according to the census, the proportions were as *three to two*! The civilized Indians, and those of Spanish and negro stocks crossed with them, constitute the mass of the population. The individuals of pure European extraction constitute but a small part of the whole, and are more than equaled in number by those of pure negro blood. The entire population may be divided as follows: Whites, 20,000; negroes, 15,000; Indians, 80,000; mixed, 130,000.—Total, 250,000. Most of these live in towns, many of them going two, four, and six miles daily to labor in the fields, starting before day and returning at night. The plantations, “*haciendas*,” “*hattos*,” “*ranchos*,” and “*chacras*,” are scattered pretty equally over the country, and are reached by paths so obscure as almost wholly to escape the notice of travelers, who, passing through what appears to be a continual forest from one town to another, are liable to fall into the error of supposing the country almost wholly uninhabited. Their dwellings are usually of canes, thatched with palm, many of them open at the sides, and with no other floor but the bare earth, the occupation of which is stoutly contested by pigs, calves, fowls, and children. These fragile structures, so equal- ble and mild is the climate, are adequate to such pro-

tection as the natives are accustomed to consider necessary. Some of them are more pretending, and have the canes plastered over and whitewashed, with tile roofs, and other improvements; and there are a few, belonging to large proprietors, which are exceedingly neat and comfortable, approaching nearer our ideas of habitations for human beings. A large part of the dwellings in the towns are much of the same character. The residences of the better classes, however, are built of adobes, are of one story, and inclose large courts, which are entered under archways, often constructed with great beauty. The court-yard has generally a number of shade trees, usually orange, making the corridors, upon which all the rooms open, exceedingly pleasant.

In October, 1855, Walker, an adventurer from California, landed in Nicaragua with a force of one hundred and fifty men, and being favored by part of the inhabitants, succeeded in effecting a revolution. From this time until 1857 he held possession of the country, though with varied success, against all forces brought against him. In 1857, his expected reinforcements from the United States failing to arrive, he was forced to retreat, and with an almost total loss of his army, and finally had to accept the offer of the United States sloop *St. Mary* to convey himself and command to the United States.

Unfortunately, agriculture is at a very low ebb, and but a small portion of this valuable land is made available. The productions are indigo, of which from 800 to 1000 zeroons are manufactured yearly; sugar, coffee, cacao, and cotton—the last of superior quality, and formerly raised in large quantities; Indian corn, rice, beans, and plantains, the staple food of the people, are raised in abundance; wheat, also, is grown in the mountainous and cooler parts of the country. Fruits, of various kinds, are plentiful, including excellent oranges and lemons. One of the principal sources of wealth consists in cattle, of which there are great numbers in all parts, particularly in the districts on the eastern side of the lake, where extensive and excellent pasturage is met with. The chief exports of the State are indigo, Nicaragua wood, and hides. The executive has the title of Supreme Director, with two counselors, a legislative chamber and senate. From the reports of the Minister of Finance, it was estimated that the receipts into the State Treasury for the year ending 30th June, 1851, would amount to \$122,682, and the expenses to \$173,646, leaving a deficit of \$50,964. This, added to the standing debt of the State, \$523,905, makes a total debt of \$574,869.

Commerce with the United States.—On the 19th day of April, 1850, a treaty was concluded between the United States and Great Britain, in respect to a proposed ship-canal between the Atlantic and the Pacific, by which both governments stipulate and declare that “neither the one nor the other will ever obtain or maintain for itself any exclusive control over the said ship-canal.” The 8th article further stipulates that the two governments shall “extend their protection, by treaty stipulations, to any other practicable communications, whether by canal or railway, across the isthmus which connects North and South America, and especially to the inter-oceanic communications, should the same prove to be practicable, whether by canal or railway, which are now proposed to be established by the way of Tehuantepec or Panama.” This treaty contains other stipulations relative to the Mosquito coast, Central America generally, etc., but nothing of commercial interest. General information respecting the Central American States is exceedingly limited; though, both for its productions and its geographical position, the country is one of great interest and importance. It abounds in all the precious and useful minerals, and produces almost spontaneously the varied and luxuriant staples of the tropics. It has been termed the portage or stepping-stone between

the commerce of Europe and Eastern Asia, and between the Atlantic and the Pacific possessions of the United States; and on this account is now the scene of active operations for facilitating its transit. Of the many routes by which the passage is deemed practicable, that by the way of the Rio San Juan and Lakes Nicaragua and Leon is said to be the most so; and here, therefore, the great inter-oceanic canal may, it is thought, be eventually constructed. The routes vary in length from 133 to 279 miles. By these routes, in comparison with the older ones, the distance from New York to Canton will be reduced from 17,100 to 12,600 miles; to Calcutta, from 15,000 to 14,000; and to Singapore, from 15,800 to 13,000; while from England to those places the distance will be materially increased. "In a commercial point of view, therefore," says a late statistical publication, from which these facts are gleaned, "England can care but little about the canal as proposed, since without it her advantages are much superior to those of the United States in the Asiatic trade."

The trade with the United States has been decreasing for a number of years, as is shown by the following:

	Exports to United States.	Imports from United States.
Total trade from 1830 to 1840...	\$2,037,000.	\$2,600,000
" " " 1840 to 1850...	1,265,000...	964,000

Nicaragua, or Peach Wood (Ger. *Nicaragaholz*, *Blutholz*; Du. *Bloedhout*; Fr. *Bois de Sang*, *Bois de Nicaragua*; It. *Legno sanguigno*; Sp. *Palo de sangre*; Port. *Pao sanguinho*), a tree of the same genus (*Cesalpinia*) as the Brazil and sapan wood; but the species has not been exactly ascertained. It grows principally in the vicinity of the lake of Nicaragua, whence its name. It is said by Dr. Bancroft to be almost as red and heavy as the true Brazil wood, but it does not commonly afford more than a third part, in quantity, of the color of the latter; and even this is rather less durable and less beautiful, though dyed with the same mordants. Nicaragua, or peach woods, differ greatly in their quality as well as price; one sort being so deficient in coloring matter that six pounds of it will only dye as much wool or cloth as one pound of Brazil-wood, while another variety of it will produce nearly half the effect of an equal quantity of Brazil-wood, and will sell proportionally dear.—BANCROFT on *Colors*, vol. ii.

Nickel, a scarce metal, which occurs always in combination with other metals, from which it is exceedingly difficult to separate it. When pure, it is of a fine white color resembling silver. It is rather softer than iron; its specific gravity, when cast, is 8.279; when hammered, 8.932. It is malleable, and may without difficulty be hammered into plates not exceeding one hundredth part of an inch in thickness. It is attracted by the magnet, and is not altered by exposure to the air, nor by being kept under water. It is employed in potteries, and in the manufacture of porcelain.—THOMSON'S *Chemistry*. The cobalt ores are commonly employed in the extraction of nickel, and they are now treated by the method of Wöhler to effect the separation of the two metals. The arsenic is expelled by roasting the powdered *speise*, first by itself, next with the addition of charcoal powder, till the garlic smell be no longer perceived. The residuum is to be mixed with three parts of sulphur and one of potash, melted in a crucible with a gentle heat, and the product being edulcorated with water, leaves a power of metallic lustre, which is a sulphuret of nickel free from arsenic; while the arsenic associated with the sulphur, and combined with the resulting sulphuret of potassium, remains dissolved. Should any arsenic still be found in the sulphuret, as may happen if the first roasting heat was too great, the above process must be repeated. The sulphuret must be finally washed, dissolved in concentrated sulphuric acid, with the addition of a little nitric, the metal must be precipitated by a carbonated alkali, and the carbonate reduced with charcoal. Nickel forms twelve per cent. of the new cent authorized by Congress in 1857.

Since the manufacture of German silver or Argentin became an object of commercial importance, a great deal of attention has been bestowed upon nickel by mineralogists, chemists, and nickel-workers, and its extraction from its ores has been undertaken upon a considerable scale. It is sparingly found, and in comparatively few localities, and even in those it is usually associated with cobalt. In consequence of its rarity it is generally classed among the precious metals. It is, when pure, almost as white as silver, and both ductile and malleable, either when hot or cold. It may be made into mariners' compasses, being susceptible of magnetism. It does not oxidize or rust by contact with air, and only melts, when pure, at an intense heat. It makes other metals harder and brittle when alloyed with them. The nickel used for alloys is usually obtained from what the Germans call Kuffer Nickel or Copper Nickel, which is an arseniuret or compound of arsenic with nickel, which is hard and has a metallic lustre of a coppered color inclining to brown or gray, and displaying all the hues of the rainbow. It contains 56 parts of arsenic and 44 of nickel, when pure, but usually contains a little iron, lead, sulphur, and antimony.

The Chinese probably first made use of nickel; their *white copper*, or pack-fong, contains about 32 nickel, 40 copper, 25 zinc, and 3 iron; but the proportions vary more or less. The composition known as British plate is an alloy of nickel, the ores from which the Birmingham people extract it being imported principally from Norway and Hungary. In Saxony they produce twenty thousand pounds of nickel a year, and in Prussia about nine thousand pounds. In Germany they make it into German silver, and in this country our Mint is busily engaged in making it into money.

Nickel is obtained at Chatham, in Connecticut; also in Missouri, in the chrome mines of Maryland and Pennsylvania, and in Lancaster County, Pennsylvania.

Nile (*Nilus*), a great river of East Africa, formed by the union of the *Bahr-el-Abiad* (White River) and the *Bahr-el-Azrek* (Blue River). The first, which is regarded as the true Nile, is supposed to rise on the eastern edge of the table-land of East Africa, about lat. 2° S., long. 34° E., but its source is unknown. Expeditions sent by the Pacha of Egypt in 1840–2 traced it to lat. 4° 42' N., in long. 30° 58' E. Here the navigation was interrupted by a ledge of rock; it flows generally north, with a width of from one to two miles, and joins the *Bahr-el-Azrek* at Khartum, in Nubia (lat. 15° 37' N.). The second rises in Abyssinia, in lat. 10° 59' 25" N., long. 36° 55' 39" E. It flows north 55 miles, when it enters Lake Dembeah on the southwest; emerging from the lake on the southeast, it flows in the form of a curve, first south, then west and north-west, traversing in its course several mountain chains, and descending by numerous falls into the plains of Nubia, where it passes Sennaar. Its confluence with the *Bahr-el-Abiad* forms the Nile, which from this point flows northeast, north, and northwest past Halfay, Shendy, and Berber to lat. 19° 20', where it turns to the southwest, forming a wide curve called the Great Bend. In lat. 18° it again turns northward, and continues in a northerly direction past Dongola, Girgeh, Siout, and Cairo to its mouth, near Assouan; and from the junction of its head streams to its delta its basin is formed by two parallel chains of mountains, which in some places close upon it and form rapids, and in others open up and leave fine plains between them and the river. It forms the first cataract (in ascending) near Essouan, lat. 24° 10' N., the second being in lat. 21° 52' 20" N., and the third in lat. 19° 40' N. Its banks are generally elevated in Nubia; they are less so in Middle Egypt, and absolutely flat in the Delta. From Essouan to the sea the average fall is two inches to a mile, and its mean velocity is about three miles an hour. Its length from supposed source, following its bends to the sea, is about 3000 miles (direct distance 2300 miles).

The delta of the Nile commences in lat. $30^{\circ} 7' N.$, where its waters spread out into numerous streams in the form of a triangle, extending at its base on the Mediterranean over a space of 120 miles; the two principal mouths are the west, or Rosetta branch, and the east, or Damietta branch. The others are the Bourlos and Dibe mouths. The system of the Nile is an anomaly among rivers; in ascending its course no affluent is met with for 1400 miles, the first being the Atbara in Nubia, which joins it on the right, 27 miles south of Berber. It is the only great tropical river which, by its periodical inundations, fertilizes a country surrounded throughout a great part of its course by sandy deserts. The waters begin to rise in June, and they subside in September. —See EGYPT. From time immemorial the Egyptians have made use of canals for the purpose of extending the inundations. The rise of the Nile appears due to the periodical rains which fall in the tropical regions of Africa from June to September. In Upper Egypt the swelling of the river amounts to about 30 feet, and at Cairo to 24 feet, perpendicular.

Ning-po, a city of China, province of Che-kiang, and one of the five ports recently opened to foreign trade, on the Takia, or Ning-po River, the mouth of which is directly opposite Chusan, 95 miles east-southeast of Hang-chow-foo, on a tongue of land at the influx of an affluent into the river, here crossed by a bridge of boats; lat. $29^{\circ} 54' N.$, long. $121^{\circ} 32' 30'' E.$ Population estimated at between 200,000 and 300,000. The city, six miles in circumference, inclosed by walls 25 feet in height, and entered by six gates, is surrounded by a fine plain covered with villages and water-courses. It has well-supplied shops, a temple of large size, hexagonal tower 150 feet high; a missionary hospital, opened in 1843; an active trade in junk-building, and a large manufacture of silks for export to Japan. It has been reported that about 670 junks come to it annually from Shang-tung and Leao-tong with oil, provisions, fruits, caps, cordage, horns, drugs, rice, and silk; 560 from Fo-kien and Hai-nan with sugar, alum, pepper, black tea, indigo, salt, rice, and dye-woods; from Canton and the Straits some vessels; and from the interior about 4000 small craft yearly; the total imports being estimated at \$7,650,000 annually. It exports large quantities of wood and charcoal to Shang-hai, the trade of which port it has crippled, from being by several days nearer to the green-tea districts. It was taken by the British, without resistance, in 1841, when was captured a ponderous bell, now in the British Museum.

Nitric Acid, Aquafortis (Fr., *Acide Nitrique*; Germ., *Salpetersäure*), exists, in combination with the bases potash, soda, lime, magnesia, in both the mineral and vegetable kingdoms. This acid is never found insulated. It was distilled from saltpetre so long ago as the 18th century by igniting that salt, mixed with copperas or clay, in a retort. Nitric acid is generated when a mixture of oxygen and nitrogen gases, confined over water or an alkaline solution, has a series of electrical explosions passed through it. In this way the salubrious atmosphere may be converted into corrosive aquafortis. When a little hydrogen is introduced into the mixed gases, standing over water, the chemical agency of the electricity becomes more intense, and the acid is more rapidly formed from its elements, with the production of some nitrate of ammonia.

Noble, an ancient money of account, containing six shillings and eightpence sterling, or in United States currency equivalent to one dollar and sixty cents.

North America lies between the 16th degree of north latitude and the Arctic Ocean. It is more irregular in form than South America, but of greater uniform breadth, larger in area, and more deeply indented with gulfs, bays, and inlets. Two extensive elevations or mountain ridges extend near and parallel, the one to its east and the other to its west coast. Between these is a vast plain, the largest in the world, stretching from the Gulf of Mexico to the Arctic

Ocean. In this plain are situated the great lakes of North America, and through it flow the rivers Mississippi, the Mackenzie, and the St. Lawrence, the one forming a southern, the other a northern, and the third an eastern drain for its superfluous waters. Its coast indentations and inlets are Baffin's Bay and Hudson's Bay on the north; the Gulf of St. Lawrence on the east coast; the Gulf of Mexico on the south; the Gulfs of California and Georgia, and Cook's Inlet, on the west. The coast of North America is very extensive, extending in an irregular line from Davis's Strait to the Florida Channel about 4800 miles, and from the latter along the inland sea to Tehuantepec about 3000. The whole length on the Pacific side to Behring's Strait is about 10,000 miles. The extent of the north and northeast shores can not probably be less than 8000 miles. The entire extent will thus be 22,800 miles. The most remarkable physical characteristics of North America are its sandy deserts, treeless steppes, and prairies; the first stretch along the base of the Rocky Mountains to the 41st degree of north latitude, having an average breadth of 200 to 500 miles. The steppes form another cheerless and extensive region in the northern part of the continent. The prairies or savannas, peculiar characteristics of North America, are chiefly in the Mississippi Valley. They consist of extensive and generally irregular tracts without trees, covered in the spring with bright verdure, intermingled with fragrant flowers. A vast extent is also occupied by forests, comprising probably not less than 600,000 square miles.

Mountains.—Of these there are four principal systems in North America: the Oregon or Rocky Mountains—a continuation of the Andes—the Sierra Nevada or Snowy Mountains of California, merging in its passage northward into the coast range, and the Alleghenies or Appalachian range, extending northeast parallel with the coast. The Rocky Mountain range is a continuation of the Andes, forming the elevated tableland passing centrally through Mexico; thence trending north, divide the waters entering the Pacific and Atlantic Oceans, and continue to the Arctic coast. Several peaks rise above the line of perpetual snows. The Sierra Nevada of California and coast range extend nearly parallel with the Rocky Mountain range, and are connected with the latter by several transverse ridges. The Alleghany range stretches along the eastern portion of the continent. It rises in the gently undulating ridge dividing the waters of the Tennessee from those flowing into the Mississippi and the Gulf of Mexico, and trending across the country in the same general direction from southwest to the northeast, terminates in the headland of Gaspé.

Rivers and Lakes.—The principal rivers are the Mississippi, with its affluent the Missouri, and the St. Lawrence. The first is the largest river in North America, and one of the greatest on the earth, occupying, with its tributaries, the whole of the southern portion of the great central basin of North America. It has its origin in the junction of streams formed on the eastern declivity of the Rocky Mountains, between lat. 42° and $50^{\circ} N.$, and enters into the sea in the Gulf of Mexico in lat. $29^{\circ} N.$ Its whole course, which is from north to south, is calculated to exceed 4400 miles. The St. Lawrence rises under the name of the St. Louis, in lat. $47^{\circ} 45' N.$, long. $93^{\circ} W.$; entering Lake Superior, it flows a southeast and a northeast course, and enters the Gulf of St. Lawrence at Cape Gaspé, where it has expanded to one hundred miles in width. The Mackenzie issues from the Great Slave Lake, from which it flows nearly due north, and enters the Arctic Sea, lat. $69^{\circ} 10' N.$ In the number and magnitude of its lakes North America is unequalled. They form one of its most noted features, and in conjunction with its rivers present a medium of commercial intercourse wholly unsurpassed. The principal are Lakes Superior, Michigan, Huron, Erie, and Onta-

rio, which together cover an area of 100,000 square miles. Following the chain of lakes which crosses the country in a northwestern direction, there occur Lakes Winnipeg, Woolaston, Deer Lake, Athabasca, Great Slave Lake, and Great Bear Lake. The Great Salt Lake in Utah, and Mono Lake and Lake Chapala in Mexico. There are, besides these, many smaller yet considerable bodies of water, viz., St. Clair, midway between Lakes Huron and Erie; the Lake of the Woods, between Lakes Superior and Winnipeg; Nepissing, Simcoe, Champlain, and many others of lesser magnitude.

Islands.—In the Atlantic Ocean the principal are Newfoundland, Anticosti, Prince Edward Island, and Cape Breton, all lying at the embouchure of the St. Lawrence; Nantucket, Long Island; the Bahama Islands, off the coast of the Carolinas; and the Columbian Archipelago, comprising the islands of Cuba, Hayti, Jamaica, Porto Rico, Santa Cruz, Antigua, Guadalupe, Martinique, St. Lucia, Barbadoes, St. Vincent, Tobago, Trinidad, and other small islands. On the northwest coast the principal are the California group; Vancouver, Queen Charlotte, Prince of Wales, Sitka, and Admiralty Islands; and on the extreme northwest the Aleutian group. In the Arctic Ocean there are a vast number of islands of which but little is yet known.

Geology, Mineralogy, etc.—A remarkable analogy exists in the structure of the land in North America and Central and Northern Europe. Gneiss, mica, schist, and granite prevail in wide areas in the Alleghanies, on the Atlantic slope and the northern latitude of the American continent, and in the high and middle latitudes the silurian strata extend over 2000 miles. Crystalline and Silurian rocks form the substratum of Mexico, for the most part covered with Plutonic and volcanic formations and secondary limestone. The Rocky Mountains are mostly silurian, except the eastern ridge, which is of stratified crystalline rocks, amygdaloid, and ancient volcanic productions. The coast range has the same character, with immense tracts of volcanic rocks, both ancient and modern, especially obsidian. In North America volcanic action is entirely confined to the coast and high land along the Pacific. The principal minerals are gold, silver, copper, iron, lead, and coal. The first three are found in greatest abundance in Mexico, where there are nearly 3000 mines of gold and silver alone. Since 1848 the great field for gold gathering has been California, where large quantities have been obtained, and both silver and quicksilver have been found to abound. The silver supplied by the Mexican veins is extracted from a great variety of minerals, pure or native silver being of comparatively rare occurrence. The principal deposits of gold in the United States besides California occur in the primary rocks of the southeastern declivity

of the Alleghanies. The coal-fields are of prodigious extent, the Appalachian stretching without interruption 720 miles, with a maximum breadth of 280, and occupying an area of 63,000 square miles. The Pittsburg seam, ten feet thick, exposed on the banks of the Monongahela, extends horizontally 225 miles in length and 100 in breadth, and covers an area of 14,000 square miles. Besides the coal-fields named, there are various others of great extent in different parts of North America, including New Brunswick, Nova Scotia, and Vancouver Island. Iron is also extensively worked. Salt is widely diffused throughout the continent.

Climate.—The predominating character of the climate of North America is intense cold, although in some parts an oppressive heat prevails during a portion of the summer. Above the 50th degree of latitude the cold is so severe as to render the country all but uninhabitable, while frosts occasionally occur as low down as the 30th degree of latitude. In winter a keen and piercing northwest wind prevails throughout all North America, adding greatly to the rigor of the northern climate, and carrying its chilling influence into the more southerly regions. The transitions from cold to hot, or from winter to summer, are very sudden, especially in Canada. Among the causes of a lower temperature than obtains in Western Europe may be mentioned the small portion of the continent lying in the torrid zone, the Rocky Mountain range, and also the Sierra Nevada mountains near the Pacific Ocean, prevent the warm winds from the Pacific penetrating the interior; the great expansion of the land north and northeast, and the almost level plain in those directions, allow full scope for the piercing Arctic blasts. The narrowness of the Gulf Stream, and the prevailing winds taking the same general course, carry away from this continent the hot circumambient air, a source of warmth to Western Europe; and the cold polar oceanic current brings down the icebergs of Spitzbergen and Greenland to the shores of Labrador and Newfoundland.

The territorial limits of the United States include that portion of the continent of North America, extending from the Atlantic to the Pacific Ocean, which is bounded by the British possessions on the north, and by the Gulf of Mexico and the Mexican Republic on the South.

The superficial area of the Union, according to a computation made by the Topographical Bureau at the close of 1853, and subsequently reviewed and amended, amounted on the first of January, 1854, to two millions nine hundred and thirty-six thousand, one hundred and sixty-six square miles, being somewhat more than one third of the area of the continent of North America.

AREA OF NORTH AMERICA, EXCLUSIVE OF THE WEST INDIES.

Territory.		Square Miles.	Square Miles.
United States, as ascertained by the Topographical Bureau			2,936,166
British America	{ New Britain*	2,598,837	
	{ Upper and Lower Canada†	346,860	
	{ Nova Scotia, New Brunswick, Cape Breton, &c.	104,701	
Mexico			8,050,398
Central America			1,058,534
Russian America‡			208,651
Danish America (Greenland)§			394,000
			380,000
Total square miles			8,002,949||

* According to Balbi's estimate of the area of North America. Another estimate gives New Britain but 1,800,000 square miles.

† M'Culloch. The late Canadian census gives 242,482 square miles as the area over which jurisdiction is actually extended.

‡ Guibert gives 982,500 kilometres carrés, or 371,611 square miles.

§ Greenland, from present information, would appear to be a trilateral island, 1500 miles long and 600 miles in its greatest breadth. Its area, therefore, can not be greater than we state above. Guibert gives the area of Danish America 3861 square miles, and M'Culloch only 170, meaning only that portion which has been explored.

|| The area of the continent of North America is variously estimated by geographers at from five to seven millions of square miles. Guyot ("Earth and Man") estimates it at 5,472,000, and that of Europe at 2,688,000, exclusively of islands.

The treaty of 1854 with Mexico settles the boundaries of the two republics as follows: "Retaining the same dividing-line between the two Californias as al-

ready defined and established according to the 5th article of the treaty of Guadalupe Hidalgo, the limits between the two Republics shall be as follows: Begin-

ning in the Gulf of Mexico, three leagues from land, opposite the mouth of the Rio Grande, as provided in the 5th article of the treaty of Guadalupe Hidalgo; thence, as defined in the said article, up the middle of that river to the point where the parallel of 31° 47' north latitude crosses the same; thence due west one hundred miles; thence south to the parallel of 31° 20' north latitude; thence along the said parallel of 31° 20' to the 11th meridian of longitude west of Greenwich; thence in a straight line to a point on the Colorado River, twenty English miles below the junction of the Gila and Colorado Rivers; thence up the middle of the said River Colorado, until it intersects the present line between the United States and Mexico."

For early history, etc., of North America, see *New England Magazine*, vii. 169; *Christian Review*, xiv. 610; *North American Review*, lxxiii. 210 (F. BOWEN).

North Carolina lies between 33° 50' and 36° 30' N. lat., and between 75° 45' and 84° W. long. from Greenwich, and between 6° 20' W., and 1° 33' E. long. from Washington. Area, 45,500 square miles. Population in 1790, 893,754; in 1800, 478,103; in 1810, 555,500; in 1820, 638,829; in 1830, 738,470; in 1840, 753,419; and in 1850, 868,903.

Physical Features, etc.—Along the entire coast of this State there is a ridge of sand separated from the main land in some places by narrow, and in other places by broad sounds and bays. The passages or inlets through it are shallow and dangerous, Ocracoke Inlet being the only one through which vessels pass. Capes Hatteras and Lookout are projecting points in this belt, and off them, particularly the former, is the most dangerous navigation on the coast of the United States. Cape Fear is on an island off the mouth of Cape Fear River. For 60 or 80 miles from the shore the country is level, the streams sluggish, and there are many swamps and marshes. The soil is sandy and poor, excepting on the margins of the streams, where

it is frequently very fertile. The natural growth of this region is mostly the pitch-pine. This tree affords tar, pitch, turpentine, and lumber, which constitute an important part of the exports of the State. In the swamps rice of a fine quality is raised. Back of the flat country, and extending to the lower falls of the rivers, is a belt of land about 40 miles wide, of a moderately uneven surface; a sandy soil, and of which the pitch-pine is the prevailing natural growth.

Throughout the State Indian corn is raised, and in some parts considerable cotton. In the low country, grapes, plums, blackberries, and strawberries grow spontaneously; and on the intervals canes grow luxuriantly, the leaves of which continuing green during winter furnish food for cattle. In the elevated country, oak, walnut, lime, and cherry trees of a large growth abound. Principal minerals coal, iron, and gold. It is the only State in the Union where every article enumerated in the census is produced.

Rivers.—The principal rivers are the Chowan, 400 miles long, navigable for small vessels 30 miles; Roanoke, Pamlico, navigable for 30 miles; Tar, Neuse, Cape Fear, the largest river in the State, 280 miles long, with eleven feet of water to Wilmington; the Yadkin, which forms a part of the Great Pedee in South Carolina.

The principal places in the State are, Raleigh the capital, Newbern, Wilmington, Fayetteville, Edenton, Elizabeth City, Beaufort, and Charlotte. On January 1st, 1850, there were three railroads, with 631 miles of track finished and in operation. Exports, 1852, valued at \$576,397. Imports, same year, \$300,488. Tonnage of the State, 1853, 56,875 tons. The first permanent settlement in this State was on the eastern bank of the Chowan River, about 1660, by emigrants, who, in consequence of religious persecution, fled from Nansemond, Virginia. The constitution of the United States was adopted in convention November 27th, 1789. Years, 193; days, 75.

COMMERCE OF THE STATE OF NORTH CAROLINA (SHOWING ALSO THE DISTRICT TONNAGE IN 1821, 1831, 1841, AND 1851) FROM OCT. 1, 1820, TO JULY 1, 1850.

Years ending	Exports.			Imports.	Tonnage Cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821.....	\$400,944	....	\$400,944	\$200,673	37,343	109	13,376	19,693
1822.....	585,951	....	585,951	258,761	30,360	1,208	....	....
1823.....	482,417	....	482,417	183,958	24,716	968	....	....
1824.....	588,733	....	588,733	465,836	40,440	4,447	....	....
1825.....	553,390	....	553,390	311,308	41,189	3,454	....	....
1826.....	581,740	....	581,740	367,545	48,688	3,568	....	....
1827.....	447,086	2151	449,237	276,791	36,683	3,164	....	....
1828.....	592,498	1249	593,747	268,615	44,060	1,352	....	....
1829.....	564,506	....	564,506	283,347	51,942	1,612	....	....
1830.....	308,550	733	309,333	221,992	36,592	1,772	....	....
Total....	\$5,125,815	\$4183	\$5,129,998	\$2,538,826	391,963	21,554	....	....
Sept. 30, 1831.....	\$340,973	\$167	\$341,140	\$196,356	30,450	1,990	16,277	11,360
1832.....	338,246	3795	342,041	215,184	26,272	3,412	....	....
1833.....	432,986	49	433,035	198,768	37,604	4,925	....	....
1834.....	471,406	....	471,406	222,472	36,041	4,488	....	....
1835.....	319,827	....	319,827	241,991	32,542	3,273	....	....
1836.....	428,415	1436	429,851	197,116	31,864	5,068	....	....
1837.....	548,876	2919	551,795	271,623	38,585	4,645	....	....
1838.....	544,952	271	545,223	290,405	20,544	3,496	....	....
1839.....	426,934	992	427,926	229,233	43,545	7,595	....	....
1840.....	387,484	....	387,484	252,532	38,130	3,029	....	....
Total....	\$4,239,599	\$9629	\$4,249,228	\$2,515,660	355,577	43,126	....	....
Sept. 30, 1841.....	\$383,056	....	\$383,056	\$220,360	39,828	3,184	10,922	17,623
1842.....	344,650	....	344,650	187,494	38,118	2,598	....	....
9 mos., 1843.....	171,039	....	171,039	110,976	30,411	1,292	....	....
June 30, 1844.....	298,401	....	298,401	209,142	35,476	4,068	....	....
1845.....	379,960	....	379,960	230,470	39,757	5,170	....	....
1846.....	414,398	....	414,398	242,859	38,471	3,791	....	....
1847.....	284,919	....	284,919	142,384	51,387	2,449	....	....
1848.....	340,028	....	340,028	195,814	37,383	4,322	....	....
1849.....	270,076	....	270,076	113,146	26,039	3,880	....	....
1850.....	416,501	....	416,501	323,632	30,739	11,403	....	....
Total....	\$3,303,088	....	\$3,303,088	\$1,976,247	347,600	42,247	....	....
June 30, 1851.....	\$426,748	\$4347	\$431,095	\$206,981	28,420	13,963	12,799	32,983
1852.....	572,276	4123	576,399	300,438	40,038	13,061	....	....
1853.....	314,142	....	314,142	271,233	29,292	9,611	....	....
1854.....	391,897	....	391,897	312,683	25,581	5,251	....	....
1855.....	433,818	....	433,818	243,083	30,729	4,918	....	....
1856.....	376,174	....	376,174	274,960	27,574	4,237	....	....

* Nine months to June 30, and fiscal year begins July 1, 1843.

Principal Ports.—Beaufort, at the mouth of Newport River, is famous as possessing the finest harbor on the southern Atlantic sea-board. It will be the eastern terminus of the Atlantic and North Carolina railroad, which, when built, will open to its commerce an immense interior region, hitherto isolated from the coast. The impediment in the growth of this place up to this time has been in the want of internal facilities for commerce. The tonnage of Beaufort, in 1856, was 1991 tons. Wilmington, city, port of entry, situated on the left bank of Cape Fear River, just below the confluence of the northeast and northwest branches, about thirty-five miles from the sea. It is well situated for trade, but the location is accounted unhealthy. The harbor admits vessels of 800 tons, but the entrance has a dangerous shoal. Opposite the town are two islands, dividing the river into three channels. They afford the finest rice-fields in the State. In 1819, two hundred buildings were destroyed by fire, a loss of \$1,000,000. The tonnage in 1856 was 21,420 tons.—See *North American Review*, xxiv. 168; xii. 216 (J. SPARKS); *American Journal of Science*, xiii. 336; *Southern Review*, i. 235; DE BOW'S *Review*, ii. 30, 105.

Northwest Passage. The attempt to discover a northwest passage was made by a Portuguese named Cortereal, about A.D. 1500. It was attempted by the English in 1553; and the project was greatly encouraged by Queen Elizabeth in 1585, in which year a company was associated in London, and was called the "Fellowship for the Discovery of the Northwest Passage." From 1745 until 1818, Parliament offered £20,000 for this discovery. In 1818, the reward was modified by proposing that £5000 should be paid when either 110°, 120°, or 130° W. long. should be passed: one of which payments was made to Sir E. Parry. For their labors in the voyages enumerated in the *list below*, Parry, Franklin, Ross, Back, and Richardson, were knighted. The honor of completing the northwest passage is due to Captain McClure, who sailed in the *Investigator* in company with Commodore Collinson in the *Enterprise*, in search of Sir John Franklin, January 20, 1850. On September 6 he discovered high land, which he named Baring's Land; on the 9th other land, which he named after Prince Albert; on the 30th the ship was frozen in. Entertaining a strong conviction that the waters in which the *Investigator* then lay communicated with Barrow's Straits, he set out on October 21, with a few men in a sledge, to test his views. On October 26 he reached Point Russel (73° 31' N. lat. 114° 14' W. long.), where from an elevation of 600 feet he saw Parry or Melville Sound beneath them. The strait connecting the Pacific and Atlantic Oceans he named after the Prince of Wales. The *Investigator* was the first ship which traversed the Polar Sea from Behring's Straits to Baring Island. Intelligence of this discovery was brought to England by Commodore Inglefield, and the admiralty chart was published October 14, 1853. Captain McClure returned to England September, 1854. On June 19, 1855, a select committee of the House of Commons was appointed, on the motion of Mr. W. Mackinnon, to consider the claims of McClure and his companions. Sir G. Back, Sir James Ross, Sir R. T. Murchison, and Captains McClure, Kellett, and Collinson, were examined. The report was received July 20, in which the committee recommend that £5000 be paid to Captain McClure, and £5000 be distributed between the officers and crew.

1553. Sir Hugh Willoughby's expedition to find a northwest passage to China, sailed from the Thames, May 20.

1576. Sir Martin Frobisher's attempt to find a northwest passage to China.

1585. Captain Davis's expedition to find a northwest passage.

1594. Barentz's expedition.

1602. Weymouth and Knight's.

1610. Hudson's voyages; the last undertaken (see *Hudson's Bay*.)

1612. Sir Thomas Button's

1616. Baffin's.—See *Baffin's Bay*.

1631. Foxe's expedition.

[A number of enterprises undertaken by various countries followed.]

1742. Middleton's expedition.

1746. Moore's and Smith's.

1769. Hearne's land expedition.

1773. Captain Phipps, afterward lord Mulgrave, his expedition.

1776. Captain Cook in the *Resolution* and *Discovery*, July.

1793. Mackenzie's expedition.

1790. Captain Duncan's voyage.

1795. The *Discovery*, Captain Vancouver, returned from a voyage of survey and discovery on the northwest coast of America, September 24.

1815. Lieutenant Kotzebue's expedition, October.

1818. Captain Buchan's and Lieutenant Franklin's expedition in the *Dorothea* and *Trent*.

1818. Captain Ross and Lieutenant Parry, in the *Isabella* and *Alexander*.

1819. Lieutenants Parry and Liddon, in the *Hecla* and *Griper*, May 4.

1820. They return to Leith, November 3.

1821. Captains Parry and Lyon, in the *Fury* and *Hecla*, May 8.

1824. Captain Parry's third expedition with the *Hecla*, May 8.

1825. Captains Franklin and Lyon, after having attempted a land expedition, again sail from Liverpool, Feb. 16.

1827. Captain Parry, again in the *Hecla*, sails from Deptford, March 25.

1827. And returns, October 6.

1828. Captain Ross arrived at Hull, on his return from his arctic expedition, after an absence of four years, and when all hope of his return had been nearly abandoned, October 18.

1835. Captain Back and his companions arrived at Liverpool from their perilous Arctic Land Expedition, after having visited the Great Fish River, and examined its course to the Polar Sea, September 8.

1836. Captain Back sailed from Chatham in command of His Majesty's ship *Terror*, on an exploring adventure to Wager River. [Captain Back, in the month of December, 1835, was awarded, by the Geographical Society, the king's annual premium for his polar discoveries and enterprise, June 21.]

1839. Dease and Simpson traverse the intervening space between the discoveries of Ross and Parry, and establish that there is a northwest passage, October.

1845. Sir John Franklin and Captain Crozier, in the *Erebus* and *Terror*, leave England, May 24.

1849. Captain Ross returned from an unsuccessful expedition in search of Franklin.

1850. Another expedition (one sent out by Lady Franklin) in search of Sir John Franklin, consisting of two vessels, sailed from England, April-May.

1850. Still another, consisting of two vessels, the *Advance* and *Rescue*, liberally purchased for the purpose by Henry Grinnell, a New York merchant, and manned at Government cost from the United States navy, under command of Lieutenant De Haven, sailed from New York, May.

1850. Commanders Collinson and McClure, in the *Enterprise* and *Investigator*, sailed eastward in search of Sir John Franklin, January 20.

1850. Northwest Passage discovered by McClure, October 26.

1853. The second American Arctic Expedition left New York in search of Sir John Franklin, and for the purposes of science, May 31.

1855. McClure returned to England in October, 1854, and Collinson in May.

—See *American Journal of Science*, x. 138 (ISAAC LEA); *North American Review*, lxi. 1. (FORBE); HUNT'S *Merchant's Magazine*, iii. 52; *Edinburgh Review*, xxx. i. xlviii. 423; *American Quarterly*, iii. 505; *Quarterly Review*, xvi. 145, xxi. 213, xxv. 175, xxx. 231, lvi. 1.

Norway, kingdom of (Swed. *Nörrige*, Ger. *Norwegen*), a country of Northern Europe, united to the crown of Sweden, and forming the northwestern part of the Scandinavian peninsula, capital Christiana. It extends from Cape Lindesnae, lat. 57° 57' 8", to the North Cape, lat. 71° 10' 3" N., and between long. 4° 50' and 31° 15' E. The mountains of Norway contain rich minerals; but, from the difficulty of transport and the want of fuel, mining industry is but little developed. The only mines in operation are those of silver, copper, iron, cobalt, and chrome. The chief product is iron,

the mines of which are situated mostly in the Gulf of Christiania; the silver mine of Kongsberg is at present one of the richest in Europe, and, next to the copper mine of Roraas, the most important in the kingdom.

Manufactures, properly so called, scarcely exist in Norway. Brandy distilleries and saw-mills are the only extensive branches of industry; next to these are forges and metal foundries, the produce of which is exported in a raw state, except what is used in the manufacture of arms at Königsberg, and in the manufactures of iron ware and nails. The manufacture of cloth, linen, and cotton, as well as the preparation of skins and leather, are almost entirely domestic. The other manufactures comprise those of glass, paper, oil, gunpowder, soap, tobacco, and sugar refining. The principal forests are in the interior; the timber is felled in autumn and winter, and is conveyed over the snow to the coast. Holland is now the chief market for Norwegian timber. Fish is exported from all the towns on the west coast, but Bergen is the chief entrepôt. The most important branches of this trade are dried fish and salted herrings. The export of mineral products is less than might be expected, from the number of mines; the principal are iron, copper, and silver. The chief imports are salt, grain, and colonial produce. Commerce in the interior of the country is greatly impeded for want of means of communication; none of the rivers are navigable except near their mouths. Good roads exist only between the towns of the south coast and the principal valleys in Nordland and Finmark; the usual communication is by sea. Among the numerous islands on the west coast, there are violent and irregular currents, which render the coast navigation dangerous. Among these is the celebrated *Maelstrom*, or *Moskenes-Strom*, the danger from which has been greatly exaggerated, since it can at nearly all times be passed over even by open boats. Regular communications have successively been established between the principal towns of the coast from Christiania to Hammerfest, and steam vessels ply in the Gulf of Christiania, and on the lakes of Miösen and Tyrfjord. Norway has a national discount bank, established 1817, which has the exclusive right of issuing paper money.

COMMERCE OF NORWAY IN 1853.

Countries.	Entered.		Cleared.	
	Vessels.	Commercial Tons.*	Vessels.	Commercial Tons.
Sweden	569	8,772	872	16,984
Russia	663	11,768	805	17,271
Prussia	291	5,564	345	6,531
Mecklenberg	6	157	10	205
Lubeck	4	191	4	57
Denmark	3,578	47,497	3,503	46,247
Altona	128	3,621	57	1,667
Hamburg	88	3,613	19	565
Bremen	107	3,303	92	1,751
Oldenburg	66	1,655	28	616
Hanover	249	5,566	254	5,703
Netherlands	1,010	62,980	1,010	63,064
Belgium	51	2,666	61	2,168
Great Britain	2,077	180,244	1,848	126,900
France	941	58,673	1,193	74,771
Spain	72	4,160	128	5,512
Portugal	149	9,367	4	220
Gibraltar	4	...	1	35
Rardinia	4	307	2	73
Roman States .....	...	...	1	49
The Two Sicilies	6	883	10	553
Austria .....	...	...	3	153
Turkey	5	372	4	198
Brit. Am. Colonies .....	...	...	57	9,691
U. S. of America	3	617	11	1,261
Cuba .....	...	213	4	242
West Indies .....	...	...	5	179
Brazil	5	565	3	222
Australia .....	...	...	2	198
Trinidad	1	176	...	...
Java	2	304	...	...
Baltic Sea .....	...	...	29	1,571
Ports northwest	26	763	38	1,045
Ports southwest .....	...	...	57	3,964
Total	10,106	364,094	10,450	389,668
Of which loaded	4,247	101,605	9,989	363,799
were in ballast	5,859	262,489	461	25,863

* Lasts = two tons.

Owing to the difficulty of transport, all the seats of industry, and the only towns, are on the coast, and chiefly on the Gulf of Christiania. Ship-building is actively carried on in the ports. In the Middle Ages, the commerce of Norway consisted exclusively in the exportation of fish, and this is still the most important article of trade. Next to this is the export of timber, which was commenced by the Dutch in the sixteenth century; and, lastly, the products of the mines and metal forges. The timber exported annually amounts to 200,000 lastes, value 1,685,000 specie dollars.

Norway possesses nearly the same natural advantages as Sweden. The inhabitants are chiefly employed in the breeding of horses, sheep, goats, and the reindeer; cultivating small farms, fishing, mining, and such other occupations as a country rich in its forests and minerals, and enjoying a favorable position for commerce, usually affords. Historians represent the ancient navigation and trade of Norway as being in a highly flourishing condition, especially when its towns, in the twelfth century, joined the Hanseatic League. As early as 1217, England concluded a treaty (the first she ever made with a foreign power) with Norway, stipulating an entire reciprocity of trade between the two countries. The trade of Norway has always consisted of the interchange of the produce of her forests, of her copper and iron mines, and of her fisheries, for such articles as she required from foreign countries. The principal sea-ports are Bergen, Trondheim, Christiania, Hammerfest, and its outport Wardæhuus. Denmark occupies the first rank in the foreign trade of Norway. So much of its trade passes through the ports of this country, particularly Altona, that Denmark may be justly considered the commercial entrepôt of Norway. Its commercial relations with nearly all the countries of Europe are conducted through these ports; and it was not until during the recent troubles in the duchies of Denmark that Norway manifested any disposition to export direct from the producing country. The maritime industry of the Norwegians constitutes the commercial bond which unites them with Denmark. Sweden, on the other hand, being separated from the more populous and industrious divisions of Norway by mountainous and sterile territories, necessarily confines her commercial relations with the sister kingdom to the southern frontier or the coast; and, as their principal productions are generally similar, these relations are not susceptible of any great development.

The Hanse Towns have long been the principal entrepôts for the commercial movements of the north of Europe. The relations of Hamburg with Norway are, even at this day, considerable; but for the past few years they have been stationary, with rather a decreasing tendency. With England, on the other hand, the trade of Norway is becoming more important every year. This is mainly owing to the liberal commercial system of the former country, under which Norway is enabled to compete with British colonial possessions, in America, in supplying the British markets with the varied productions of her forests. France and Holland chiefly import into the markets of Norway colonial or raw produce; but neither of these countries find, in Norwegian markets, a profitable exchange for their manufactures: Holland, because she has but few; and France, for the reason that her works of art and taste are too costly, and perhaps not very well adapted to meet the wants of a people whose cold and inhospitable climate, as well as their maritime occupations, would seem to demand the coarser qualities of manufactures. From official documents recently published, it appears that in 1848 the population of Norway was 1,200,000 souls; their merchant marine counted 3400 vessels, measuring an aggregate of 240,000 tons, and employing 16,500 persons as officers and crews. This would give to Norway one vessel for every 352 inhabitants, and make every seventy-third subject a sailor. At the

same period, the total merchant marine of France consisted of 14,235 vessels, measuring an aggregate of 670,000 tons.

With the United States the trade of Norway is chiefly indirect. Tobacco and cotton are the principal articles of American produce which enter into the consumption and manufactures of the Norwegians. The restrictive character of the tariff of Norway, however, like that of her sister kingdom, and the fallacious principles on which her fiscal and commercial legislation has been so long maintained, must ever prove an insuperable obstacle to the expansion of her foreign trade, and the consequent development of her vast internal resources. So long as Norway adheres to the now generally obsolete idea that the best way to raise revenue and relieve the land-owner is to levy high duties on all goods imported into the country, so long will her relations with foreign countries be limited to the exchange of such articles of necessity as can not be elsewhere procured. The decline which her iron trade has experienced during the few years past, both in England and the United States, will necessarily compel the government of Sweden and Norway to look for a market in France; and it is understood that the latter government is not averse to such amelioration of her tariff as will open her markets to this great staple of Sweden and Norway, by a material reduction of her present seventy per cent. duty on iron. The only equivalent, however, which could satisfy France for so liberal a concession would be a total change in the Swedish and Norwegian tariffs, by which her own manufactures could enter the ports of the united kingdom, and find a profitable as well as a ready market. Nor could such a change in any manner have an injurious effect upon the manufacturing industry of either of these countries, as the great demand would be for such heavy and coarse manufactures as are most needed in so northern a latitude, and which never have been, and perhaps never will be, successfully manufactured in Sweden or Norway—at least, to any extent approximating the great consumption of the kingdom. Such a result would extend its benefits to other countries besides France; and if, in addition to a remodification of the Swedish and Norwegian tariffs in respect of manufactures, the present exorbitant cent-per-cent. duties on American tobacco were liberally reduced, the trade between the United States and Sweden and Norway would be materially benefited, and exports and imports, direct between the two countries, largely augmented.

The Norwegian tariff differs, in many essential particulars, from that of Sweden. Its range is considerably lower, and, owing to this fact, and to the advantages resulting from different weights, it will be found (for instance) that tobacco blades may be imported into Norway at a rate nearly 33.3 per cent. less than into Sweden. The oppressive system of fictitious valuation, in practice in the Swedish custom-houses, is unknown in the sister kingdom; and, besides, greater consideration is shown to the poorer inhabitants of remote provinces. At Brødø and Tronsø, in the northern part of Norway, many articles are admitted at half rates of duty; and at Hammerfest and other remote ports the duty is altogether remitted. This consideration is not shown to the inhabitants of far-off provinces in Sweden; indeed, in districts no farther off than Dalecarlia many necessities of life, which the country can not supply to them, must be purchased, if at all, by the poorer peasantry, with the additional costs of inland transportation and the coast navigation of the Gulf of Bothnia. The tariff now in operation came in force on January 1, 1855, and will expire on the 31st December, 1857. The duties on tobacco have been raised nearly to the level of those of Sweden. The latter, upon tobacco blades, is still one cent per pound higher. The augmentation of the duty on this staple of the United States was, doubtless, designed as an additional argument in any negotiations which might be proposed by the government of

Sweden and Norway relative to the iron duties of the United States.

The following brief summary is presented of the new tariff. It will show the duties levied on certain American produce by the old and new Norwegian tariffs:

Tobacco.—(Stem and blade), raised from 5 to 6 skillings per lb. The skilling is nearly equivalent to one cent.

Rice.—Unchanged; namely, 80 skillings per barrel (in husk), or 1½ skillings per lb., without husk or ground.

Cotton.—Raw, unchanged; one-half skilling per pound.

Maize, unground.—Lowered from 72 skillings to 16 skillings per toende (barrel of nearly four bushels).

Maize, ground.—Lowered from 16 skillings to 7½ skillings per lispund (17.6 lbs. avoirdupois).

Wheat.—Unchanged; 72 skillings per barrel (toende).

Flour.—16 skillings per lispund.

The principal ports of Norway are Christiana, Bergen, and Hammerfest, or Alten Hammerfest, the chief port of Finmark. Christiana is a deep sea-port, having at all seasons from six to seven fathoms depth of water close to the quay. It is the capital of Norway, and has some few fabrics of woolen, glass, hardware, soap, leather, cordage, tobacco, etc. The deals of this port have ever been celebrated. Its trade has flourished as far back as 1792, in which year the number of ships arrived was 521, of which 518 cleared with cargoes of deals. Bergen has a safe and deep harbor close to the town, but a pilot is necessary for vessels entering or departing, on account of the numerous rocks. It has a few manufactories of tobacco and earthen-ware, several rope-works and distilleries, ship-yards, forges, and other establishments of ordinary handicraft. Its fisheries, however, are its chief resource, and its foreign trade is principally confined to Hamburg. Hammerfest has an extensive trade, chiefly with England, through the port of Hamburg. Its exports are copper, dried stock-fish, salted fish, fish-oil, rein-deer skins, buckskins, walrus hides and teeth, feathers, fox and other skins, etc. Finmark has always enjoyed a high degree of commercial prosperity. Its revenues exceed its expenditures by upward of two millions of dollars. Its chief wealth depends upon its fisheries, a source of remunerative industry that never fails. For centuries back, observes Macgregor, not a single example can be given of a total failure. The value of these fisheries may be estimated from the fact that in five years, ending with 1844, the produce of cod, seth, and halibut was about 500,000 tons, and 20,000 barrels of oil, independently of what was taken by the Russians.

Coarse cottons and woolens are well adapted for the markets of Norway, more especially of Finmark; but the commercial privileges reserved to Russia, by treaty, have hitherto secured to that power the monopoly of this trade. Her linens, raven's-duck, and various other manufactures, are admitted free into Finmark; while duties, varying from 50 to 100 per cent. on the cost price, are interposed on similar manufactures of other foreign countries.

Woolens and cottons admitted even at a moderate duty, American and British manufactures of that description would soon supersede the almost general use of Russian fabrics.

The present condition of the trade of Norway may be gathered from the following summary: Number of vessels from all countries entered in 1850, 8542, measuring in the aggregate 1,174,501 tons; of these there were Norwegian, 5818 vessels, of 881,320 tons. From the United States there arrived but nine vessels—seven carrying 2654 tons of merchandise, and two being in ballast—all under the Norwegian flag. The principal countries of departure of nearly all the others were England, Holland, and Prussia.

During the same year, there cleared from Norwegian ports 8479 vessels, measuring 1,182,332 tons. Of these

there were destined for the United States 31 vessels, floating 13,178 tons of merchandise; 30 being under the Norwegian flag, and one being foreign. From these figures, it will be seen that there arrived from Norway in the United States 31 vessels, carrying 13,178 tons of Norwegian products, against nine cleared from the United States for Norway with American products to the amount of 2654 tons; or a difference of 22 vessels and 10,524 tons of merchandise against the United States in the direct trade with Norway. The restrictive tariff regulations of the latter country will readily account for this great inequality. In 1850, Norway imported upward of 1,700,000 lbs. of cotton. In 1852, the total importation of cotton amounted in value to 1,927,560 francs; viz.: from Great Britain, 1,071,200 francs; from the United States, 650,700 francs; from other places, 205,660 francs; making a total of 1,927,560 francs, or \$266,236 40. In 1850, there were imported into Norway 3,000,000 lbs. of tobacco, 8,000,000 lbs. of sugar, 6,500,000 lbs. of coffee. During the same year the effective merchant marine of Norway consisted of—

Vessels of	Number of Vessels.	Tons.	Crews.
Under 28 tons	816	13,232	1,766
From 28 tons to 71	1301	50,292	4,286
From 71 tons to 177 ...	617	66,671	3,475
From 177 tons to 354 ..	489	128,379	3,975
From 354 tons and over	475	235,677	5,535
Total in 1850	3698	573,301	19,087
Total in 1853	2427	212,242	12,935
Total in 1855	2272	150,918	11,270

For the comparative statement of the commerce of the United States with Sweden and Norway, exhibiting the value of exports to and imports from each country, and the tonnage of American and of Swedish and Norwegian vessels arriving from and departing to each country, during the years designated, see SWEDEN.—*Edinburgh Review*, lxxv. 21, xxiii. 145, xxiii. 79; *Westminster Review*, xxvii. 164; *North British Review*, ix. 39; *Quarterly Review*, ii. 104; *Fraser*, xxiii. 478; *American Quarterly Register*, xiv. 119 (Rev. Dr. BAIRD); *Hunt's Merchant's Magazine*, xvi. 138.

Notaries Public. The origin of that class of public officers now called notaries public may be traced as far back as the ancient Roman Republic, although their functions now are different. We find, at the time of the Republic, *scribes* and *librarii*, who were public secretaries. The private secretaries were called *exceptores*, and also *notarii*, if they were short-hand writers, which service was frequently performed by slaves. The public secretaries were those whom the authorities of state appointed and paid to assist them in their duties of office, and they appear to have corresponded to our present actuaries and secretaries. It does not appear, however, that legal documents were drawn up by public functionaries resembling our notaries public. During the Empire the public secretaries increased both in number and importance. They appear to have been secretaries working in the cabinet of the Emperor, in distinct departments, and they had an overseer, called *magister scriniarum*. Distinct, however, from these persons were those who may be compared to our present notaries public, and who were called *tabelliones*. It seems that what even at the present day may be seen in Italian cities was already customary in the early days of ancient Rome; namely, that in the public market-place, or forum, scribes offered their services to persons who wanted to have letters written or documents drawn up.

This class of persons were called *tabelliones forenses*, or *personæ publicæ*. They occupied themselves with drawing up legal instruments and documents, and other writings (*libelli*) or statements, to be presented to the courts of law, or other authorities of state. It appears, from a "constitution" of Diocletian, that a tariff of fees was established for them. The number of *tabelliones* constantly increased. They then formed them-

selves into a guild or corporation (*schola*), under a presiding officer called *primicerius*. The state authorities began, more and more, to exercise surveillance over them, which even went so far that the magistrates determined whether a person should be admitted into, or an unworthy person be removed from, this guild of *tabelliones*. These persons prepared all kinds of legal documents and papers, but they still carried on their business in the public market-place. It was soon found necessary, for judicial purposes, to define by law what should be the requisites of such notarial acts and writings to make them legal evidence. It had become a usage, in important matters, to have witnesses also attest the papers drawn up by these public scribes or *tabelliones*, and it was finally required by law that three witnesses should attest a document, in case the principals could write, and five witnesses if the parties could not write. It was, moreover, required that the notary (*tabellio*) should be present in person at the drawing up of the document, and also affix his signature and the date of execution.

During the Empire another class of officers, called *tabularii*, came up in the cities. Their functions resembled somewhat our archivaries and auditors. They also made out certain documents, and these bore sometimes the names both of a *tabellio* and a *tabularius*; but at a later period both names are used as synonymous. Under the Frankish kings Roman institutions were imitated. In the imperial bureaux the emperors needed and employed persons for drawing up documents and countersigning them. These officers were called *referendarii*, *cancellarii*, and *notarii*. The chief of these officers was called *archinotarius* or *summus notarius*, but at a later period *cancellarius*, as a more honorable title. The Frankish kings, as early as the year 803, appointed these officers, and issued laws to prevent the abuse of their power. It became later the sole prerogative of the kings to appoint these notaries, but by degrees the Popes of Rome also assumed the same right; and we find in documents notaries named who were appointed by princes and bishops, and even by cloisters. The legal powers of notaries during the Middle Ages, and their condition as a distinct class of officers, are distinctly seen in the Italian cities. They acted either by authority of the Emperor or that of the Pope, and were engaged for drawing all the various legal documents, and especially last wills and testaments, which were received in all the courts of law as full proof. They were formed into a guild, called *collegium*, and had their own prefects, called *consules*. A candidate for admission into this college had to undergo an examination. Minute and strict rules for the drawing up of instruments, and their attestation, were prescribed. The study of notarial functions was reduced to rules, and notarial schools were established in many cities.

Notaries came to be regarded at an early period as a kind of judges (*judex chartularius*), and a practice grew up among them of inserting in bonds, or other documents of indebtedness, a power for the creditor of taking out execution, by application to the court, in case of non-fulfillment of the contract, which laid the foundation of the so-called "executory process," which prevails still in the Civil Law countries, and which corresponds somewhat to the warrant of attorney to confess judgment in the English law. We shall see that the foreign law on bills of exchange on the Continent of Europe gives this right of "executory process" to the creditor of these mercantile instruments, and thus strengthens the security of the creditor.

France.—In France the notaries have always played an important part in her judicial institutions, and they do so still. The king regarded it as his prerogative to appoint them, but the popes also arrogated this power, and the lords of provinces (*seigneurs*) assumed it likewise. They were regarded there as *juge ordinaire*, and inserted in their documents this executory power or

summary execution (*exécution parée*). The basis of the present rights and duties of notaries in France was laid by the law of 1791, which recognized no longer any royal notaries, but only *notaries public*, appointed by the general government. The law of the eleventh year of the Republic recognized them as public officers, appointed for the purpose of drawing up all papers and contracts which, either according to express laws or the will of parties, are to have the effect of public documents, and of fixing the dates thereof, of holding in safe-keeping these acts, and of making out copies of them for the use of the parties concerned. All documents made out in the presence of two notaries, or of one notary and two witnesses, and attested by them, receive full credence in all the courts of law, and are executory throughout the land. The original (*minute*) of the act remains in the hands of the notary, and copies are allowed to be given only to the interested parties, unless specially empowered by the courts. The law points out many cases in which the presence of a notary and his attestation of instruments are essential; e. g., with testaments, donations, marriage contracts, protests, etc. In most cases it is left to the choice of parties to employ a notary in the making out of instruments and documents. But the courts often appoint them, to undertake the part of mediator in some judicial proceedings; for instance, in cases of divorce, or in making out inventories, or in dividing and distributing property and estates, or in taking and making up accounts, like the Masters in Chancery in English law. The notaries are appointed for life, and can be removed only by a judicial decision. By their official position they become the advisers in families and the *confidants* of them. They become the mediators in disputes between the parties, and particularly in regulating and settling estates, and in the distribution of property.

The law of the seventh year of the Republic requires that all acts and documents made out by notaries be registered within ten days, the fees for which are very high. Hence it often happens that the notary must advance the money for the registration, and this obliges him to have sums of money always at his disposal. Thus notaries have gradually come to deal in money affairs in general, by loaning and investing money, and procuring money for borrowers. Hence it is that persons of property intrust their money and property to the hands of notaries, as being the fittest persons to invest it safely and advantageously. The great influence which they thereby must acquire in families and in all classes of society is manifest; and this great power could not but lead to great abuses. An ordinance of 1843 prohibited notaries, under heavy penalties, from entering into stock speculations, from acting as money-brokers, from investing money intrusted to them in their own names, etc. The requisites for becoming a notary in France are, that the candidate be a French citizen, twenty-five years of age, and that he has served as clerk with a notary for six years. But no man without property can expect to obtain a place as notary, because he is obliged to buy, often for an enormous price (which in Paris often amounts to from 200,000 to 300,000 francs, in smaller towns to 100,000 francs, and in small communes to 10,000 francs), from a notary who is about to retire, or from the heirs of a deceased notary, a study-room or office (*étude*), with the acts and documents belonging to it; for without such an office the mere appointment of notary is of little value. There are also established by law in France notarial chambers, which consist of a number of deputies, chosen by the notaries, who regulate the discipline among them, decide on the admission of candidates, adjust disputes which may arise among themselves, and hear and decide on the complaints of third persons against notaries, and the punishments of delinquent notaries.

Italy.—In Italy the French system of notaries has

been followed in its main features. In Germany, however, the notaries occupy but a subordinate position in most states, and it has been now almost generally established by law that only persons who have studied law for several years can be appointed as notaries.

England.—In England, notaries were known as public officers before the Norman Conquest, and at a very early period they were employed to attest and authenticate instruments of moment and solemnity. But whatever their duties and functions may have been in former times, at present they are described to be, by Richard Brooke, in his treatise on the office of a notary public of England, as follows: "In England a notary is a public officer of the civil and canon law, who derives his faculty or authority to practice from the Court of Faculties of the Archbishop of Canterbury, in London, the chief officer of which is the Master of the Faculties, to whom applications are made for the admission, or removal under any special circumstances, of notaries. In the Institutes of the Laws of England the Court of Faculties is stated to be 'a court, although it holdeth no plea of controversy (like the Court of Audience next before). It belongeth to the archbishop, and his officer is called *Magister ad Facultates*.'" The functions and powers of a notary in England are, to draw and prepare deeds relating to real and personal property, to note and protest bills of exchange, to prepare acts of honor, to authenticate and certify examined copies of documents, to prepare and attest instruments going abroad, to receive the affidavits or declarations of mariners and masters of ships, and to draw up their protests, and to solemnize all other notarial acts. "The expression *notarial act*," says Mr. Brooke, "is one which has a technical meaning, and it seems generally considered to signify the act of authenticating or certifying some document or circumstance by a written instrument, under the signature and official seal of a notary, or of authenticating or certifying as a notary some fact or circumstance by a written instrument, under his signature only." The English notaries have always considered themselves entitled to administer oaths, affidavits, and affirmations, as within the powers and functions of a notary; and the act of 5th and 6th William IV. has placed it beyond dispute. The requisitions for admission to the Faculty of Notaries in England are, an apprenticeship or clerkship of five years with a notary, a certificate from two notaries certifying to the candidate's skill and probity, and that he is a proper person to become a notary. Upon due proof of these facts, the Master of Faculties will admit him upon his taking the prescribed oaths, which are the oath of allegiance, the oath of supremacy, the oath of due service under the articles of clerkship and for the faithful exercise of the office of notary. A notary is liable to be struck off the Roll of Faculties for any malpractice or misconduct in his office, on a complaint made to the Master of the Faculties, and supported by affidavit or other proof.

United States.—In the United States the duties and functions of notaries resemble those of the same officers in England. They are appointed by the respective governors of the States for a limited number of years, or during good behavior, and derive their powers by the statute laws of the States; and in cases where these laws do not specify their powers—as, for instance, in Massachusetts—it must be presumed that all the powers which, by general usage, the custom of merchants, and law of nations are generally exercised by these officers, are also vested in them. We may state their general and customary functions to be, to demand acceptance and payment of foreign and inland bills of exchange and promissory notes, and to protest the same for non-acceptance and non-payment; to note and draw up ship protests, and all other protests which are customary according to the usage of merchants; and to exercise such other powers and duties as by the law of nations, and according to commercial usage, or

by the laws of any other state, government, or country, may be performed by notaries public. But although notaries public are generally considered as accredited officers in other countries, and affidavits sworn before and instruments authenticated by them are received in evidence in foreign courts, it is required by foreign courts that the consuls of the respective foreign states in which the document is to be used certify to the fact that the person whose signature and seal are affixed is a notary public duly appointed. This is, however, not necessary in a protest for the non-acceptance or non-payment of a bill of exchange. The laws of the different States of the Union, in some instances, give some peculiar powers to their notaries, and hence the laws of each State must be consulted in regard to them. The principal functions of an American notary are, to protest bills of exchange and promissory notes on their being dishonored, and, as a part of this function, to present and demand payment of these mercantile instruments. Although the notaries with us generally give notice of the dishonor of bills and notes to antecedent parties, it is not their duty to do so, unless made so by statute, or they undertake so to do as a part of their duty; and then they are liable for any negligence in the discharge of this duty.—See *Manual for Notaries*, 8vo. pp. 220, New York, 1857.

Notes, Promissory. See BANKING and BANKS.

Nova Scotia (Fr. *Acadia*), a British province, forming a peninsula, connected with the main land by an isthmus only 8 miles broad, having the Bay of Fundy on the one side, and Northumberland Strait on the other. It lies, including Cape Breton Island, between lat. 43° 25' and 46° N., and long. 59° 45' and 66° 30' W., and is bounded north by Northumberland Strait, which separates it from Prince Edward Island, northeast by the Gut of Canseau, flowing between it and the island of Cape Breton (which forms a part of the government of Nova Scotia), south and southeast by the Atlantic Ocean, west by the Bay of Fundy, and northwest by New Brunswick. Area, 18,746 square miles.

Its southeast coast is remarkable for the number and capacity of its harbors, there being no fewer than twelve ports capable of receiving ships of the line, and fourteen of sufficient depth for merchantmen, between Halifax and Cape Canseau, a distance of not more than 110 miles. The surface of Nova Scotia seldom rises to a height exceeding 600 feet above the level of the sea. A ridge of high land extends through the peninsula in a direction east to west, and, with less prominent hills and undulations, gives a pleasing variety to the scenery. The principal rivers of the province are the Annapolis and Shubenacadie; the latter rises in Grand Lake, Halifax County, and, after a rapid and circuitous course of over 50 miles, enters Cobequid Bay; by means of a canal this river forms a navigable communication from Halifax harbor to the Bay of Fundy. It is navigable for some distance. The rise and fall of the tide at the mouth is about 50 feet. The Annapolis, after a course of 75 miles, in which it receives the waters of Moose and Bear rivers, enters Annapolis Bay. It is navigable for large vessels 20 miles above Annapolis. At Pictou, the East, West, and Middle rivers, all three navigable for large vessels, enter the harbor. The Avon receives the waters of the St. Croix, Kennebec, and several others, and empties itself into the Bay of Mines; it is navigable to Windsor. The La Have, Mersey, and Medway; the Shelburne (which forms the fine harbor of that name); the Clyde, one of the most beautiful streams of Nova Scotia; the Tusket and its numerous tributaries; the St. Mary, which, at its embouchure, forms the fine harbor of St. Mary; the Maccan, Nappau, and Gaspereau; the Musquedoboit, Sale, and Jordan; these form but a few of numerous streams of Nova Scotia. The tide rises with astonishing rapidity in the Bay of Mines to the height of 75 feet, while on the south shore and in the Gulf of St. Lawrence it does not rise more than 6 feet. There

are but few large lakes; the largest is Lake Rosignol, about 30 miles in length; Lake George is another sheet of water of considerable size, and the entire peninsula is dotted over with innumerable small lakes. The mines and minerals of Nova Scotia, though but imperfectly explored, are known to be valuable. Granite, trap, and clay-slate rocks predominate. The most abundant variety is the gray granite, which prevails along the shore, and is well adapted for mill-stones. Clay slate, of fine quality, is of extensive formation in the eastern section of the province, and graywacke slate along both shores of Chedabucto Bay. Several extensive and beautiful grottoes are to be found on different parts of the coast; and grindstones of superior quality are obtained from a stratum of sandstone, found between the coal and limestone. Coal, and iron in combination with it, abounds in many places. Copper ore also exists, but the attempts to work it have been hitherto unsuccessful; gypsum is plentiful, and furnishes an active and profitable trade. The soils of Nova Scotia are various; along the south shore the granite forms the basis, extending in many places 20 miles into the interior. This region is the least fertile, but there are elsewhere extensive alluvial tracts producing the most abundant crops. Many fine fertile districts, also, are met with on the north coast, along the banks of rivers and the heads of bays. The climate of Nova Scotia is affected by its almost insular position, and is characterized by a remarkable salubrity. The springs are tedious, but the summer heats being for a brief season excessive, vegetation is singularly rapid, and the autumn is delightful. The thermometer ranges from 18° to 70°. It is estimated that about 7,000,000 acres are still covered with primeval forests. There were in this province in 1851, 40,012 acres of diked land, and 799,310 acres of other improved land.

Live Stock.—Horses, 28,789; neat cattle, 156,857; milch cows, 86,856; sheep, 282,180; swine, 51,533.

Agricultural Products, etc.—Wheat, 297,157 bushels produced; rye, 61,438; Indian corn, 37,475; oats, 1,384,437; peas and beans, 21,638; barley, 196,037; buckwheat, 170,310; potatoes, 1,986,789; pounds of butter made, 3,613,890; of cheese, 652,069; of maple sugar, 110,441; hay, 287,887 tons made; grass seeds, 3686 bushels; and were made 89,976 gallons of malt and distilled liquors. Nova Scotia, however, does not yet supply her population with bread, even in good seasons; large importations of fine flour being yearly made from the United States. The apple orchards of the western counties are very productive. Apples and cider are annually exported, and the domestic supply is cheap and abundant. Cattle and sheep are raised in considerable numbers, and are exported both to New Brunswick and Newfoundland; but the breeds are inferior, and little attention is paid to their improvement. The cod and haddock fisheries are actively prosecuted all along the south coast. Mackerel and herrings are also taken in great quantities; but the salmon fishing has greatly fallen off, from the erection of grist and saw mills on the streams. The fisheries employed, in 1851, 812 vessels, with an aggregate of 43,333 tons, manned by 3681 men, and 5161 boats, manned by 6713 men; the catch amounted to 1669 barrels of salmon, 3536 of shad, 100,047 of mackerel, 53,200 of herrings, and 542 barrels of alewives; total value of fisheries, £217,220; and there were manufactured 189,250 barrels of fish-oil, valued at £17,754. Several attempts have been made to prosecute the whale and seal fisheries, but hitherto with no great success. The manufactures of Nova Scotia are yet but very limited. Coarse cloths, called "homespun," are made, and are generally worn by the farmers, fishermen, etc. There were in this province, in 1851, 81 woolen factories, employing 119 persons, and 11,096 hand-looms, producing 119,698 yards of filled cloth, 790,104 yards not filled, and 219,352 yards flannel; total value, £36,178; 9 iron foundries, employing 138 persons, making castings, etc.,

timated at 470 miles, and average breadth at 56 miles. It consists of two islands, separated by the channel Matotshkin-shar. Surface on the western side rises generally to 2000 feet, and in some places to from 3200 to 3500 feet above the sea; but the eastern shores are comparatively low and barren. Black clay-slate and limestone are the principal constituent rocks, as in the Ural chain, of which Nova Zembla may be considered an insular continuation. Its coasts are frequented by walrus hunters in summer, but nowhere permanently inhabited. Subterranean stone labyrinth of great antiquity have been discovered here.

Nut, or Hazel-nut (Germ. *Haseknusse*; Fr. *Noisettes*, *Avellines*; It. *Naccinole*, *Avellane*; Sp. *Avellanas*; Port. *Avelladas*; Lat. *Avellana*), the fruit of different species of *Coryli*, or hazels. The kernels have a mild, farinaceous, oily taste, agreeable to most palates. A kind of chocolate has been prepared from them; and they have sometimes been made into bread. The expressed oil of hazel-nuts is little inferior to that of almonds. Besides those raised at home, we import nuts from different parts of France, Portugal, and Spain, but principally from the latter. The Spanish nuts in the highest estimation, though sold under the name of Barcelona nuts, are not really shipped at that city, but at Tarragona, a little more to the south. Mr. Inglis says that the annual average export of nuts from Tarragona is from 25,000 to 30,000 bags, of four to the ton.

Nuts (Ground) (*Arachis hypogæa*), known in French commerce as "*arachides*," in America as peanuts, and in Africa as *Mandubim*, the fruit of a papilionaceous plant, rising to the height of about 15 inches, being very like the field pea, with yellow flowers. The branches, after flowering, bend down till they touch the ground, into which they work themselves, and upon them grow the pods that contain the nuts. When the nuts are ripe the plant dies. It is then pulled up, and the nuts which adhere to the twigs are collected. The pods, which are of an elongated figure, about three quarters of an inch in length, and half an inch in circumference, and brittle, usually contain two nuts, but sometimes only one, and very rarely three. They are elliptical at one end and flattened at the other. Ground-nuts are grown in light, sandy soils in most tropical countries. They have been used as food from time immemorial in Africa, India, Brazil, and other parts both of South and North America. The best are raised on the banks of the River Gambia, where they are extensively grown in large fields, the ground being prepared for their reception by the natives after the rude fashion of the country. The plant is very prolific; it is also said to be highly exhaustive of the soil, though this is perhaps questionable. Ground-nuts yield large quantities of oil; and within the last 20 years they have begun to be grown in Africa as an article of commerce, and are now largely exported for crushing. A mill for expressing oil from them was constructed in London in 1835. But the French Government having a few years after imposed high duties on most descriptions of oil seeds, the oil-crushers of Marseilles and other towns endeavored to find out seeds not included in the tariff, or less heavily taxed than the others. They were thus led to import *arachides* or ground-nuts, which they found to answer extremely well. France has, in consequence, become the great market for this peculiar product. The exports from the Gambia, which in 1835 did not exceed 47 tons, had increased in 1851 to not less than about 12,000 tons. Of this quantity about 800 tons went to the United States (where they are eaten at dessert, roasted, as are chestnuts elsewhere), 700 tons to England, and the rest to France, principally to Marseilles. The total imports of *arachides* into France in 1851 amounted, according to the official returns, to 16,472,562 kilogrammes, or 16,180 tons.

Nuts are also exported from the Rio Grande, the

Rio Nunez, and from Sierra Leone, and the adjoining rivers. And though there are no accounts of the exact quantities sent from each, it is believed that their aggregate amount is fully equal to the exports from the Gambia. Within the last three or four years considerable quantities have been shipped from the Senegal River. The oil expressed from the nuts differs in quality and price according to the care with which it is refined. That made in London, which is equal to fine olive oil, sold, in 1853, at from £60 to £62 a ton. In France the oil is principally used in the manufacture of soap; and being inferior to the former, is only worth from £45 to £48 a ton. Besides being used for the like purposes as other oil in food, in the woolen manufacture, and in lamps, the oil of ground-nuts is said to be especially well fitted for lubricating heavy machinery, including the locomotive engines on railways. The Belgians use it for this latter purpose in preference to all other oils. Ground-nuts are worth at present (September, 1853) from 380 francs to 390 francs per 1000 kilogrammes (a ton) in Marseilles; £13 15s. a ton in London; and from £9 to £10 a ton delivered to a French ship in the Gambia. Sierra Leone nuts bring from £1 to £2 less than those from the Gambia.

Nutmeg (Ger. *Muskatennüsse*; Du. *Muskaät*; Fr. *Muscades*, *Noix muscades*; It. *Noce muscada*; Sp. *Moscada*; Arab. *Jowzaleib*; Sans. *Jatiphala*; Malay, *Buah-pala*), the fruit of the genuine nutmeg-tree (*Myristica Moschata*), a native of the Moluccas, but which has been transplanted to Sumatra, Penang, etc. An inferior and long-shaped nutmeg is common in Borneo; but the fruit nowhere attains to the same perfection as in the Moluccas. Of the several varieties of the tree, that denominated the Queen Nutmeg, which bears a small, round fruit, is the best. The kernel, or proper nutmeg, is of a roundish oval form, marked on the outside with many vermicular furrows, within of a fleshy, farinaceous substance, variegated whitish and bay. Nutmegs are frequently punctured and boiled, in order to obtain the essential oil, the orifice being afterward closed; but the fraud is easily detected by the lightness of the nutmeg.—*Thomson's Dispensatory*; *Ainslie's Materia Indica*. Nutmegs should be chosen large, round, heavy, and firm, of a lightish gray color on the outside, and the inside beautifully marbled, of a strong fragrant smell, warm aromatic taste, and a flat, oily body. They are very subject to be worm-eaten. The best manner of packing them is in dry chunam. The oblong kind, and the smaller ones, should be rejected. 15 cwt. are allowed to a ton.—*Milburn's Orient. Com.* The dried produce of a nutmeg-tree consists of nutmeg, mace (which see), and shell. Supposing the whole produce to be divided into 100 parts, there are 18½ of mace, 33½ of shell, and 58½ of nutmeg. In the ancient commerce, and down to the establishment of the Dutch monopoly, nutmegs were always sold and exported in the shell. The natives, whenever the commerce is left to their management, continue the practice, which is strongly recommended by Mr. Crawford.—*Eastern Archipelago*, vol. iii. p. 386.

The jealous policy of the Dutch has reduced the trade in nutmegs to a mere trifle, compared to what it would otherwise have been. They have, in so far at least as it was possible, exerted themselves to exterminate the nutmeg plants every where except in Banda. The aboriginal inhabitants of this island have been expatriated, and the land parceled among settlers from Holland, under the name of *park-keepers*. These persons have about 2000 slaves, who cultivate and prepare the nutmegs. The prices paid by the cultivator are all fixed by Government; and it deserves to be mentioned, as affording one of the most striking illustrations of the ruinous effects of monopoly, that the fixed price which the Government is now obliged to pay for nutmegs is *five times greater than the price at which they bought them when the trade was free!* We can not

conceive how so enlightened and liberal a Government as that of Holland should continue to tolerate such scandalous abuses, more especially since it has established a free system in Amboyna, Java, and its other possessions. M. Temminck estimates the produce of the Banda Islands at about 600,000 pounds of nutmegs, and 160,000 pounds of mace.—*Possessions Néerlandaises dans l'Inde Archipelagique*, iii. 283. During the period that the English had possession of the Spice Islands, nutmeg plants were carried to Penang, Bencoolen, and some of the West India islands. In the latter they have altogether failed, at least as far as respects any useful purpose; but very good nutmegs, and in considerable quantities, are now raised at Penang and Bencoolen. Mr. Crawford, however, alleges that the cost of bringing them to market is there so high, that the restoration of a free culture in the native country of the nutmeg would instantly destroy this unstable and factitious branch of industry.—*Eastern Archipelago*, vol. iii. p. 409. See *American Journal of Science*, xii. 322.

STATEMENT SHOWING THE IMPORTS OF NUTMEGS INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1865.

Whence imported.	Pounds.	Value.
Hamburg	1,275	\$851
Holland	259,200	153,539
Dutch West Indies	3,970	1,908
Dutch East Indies	37,513	18,520
Belgium	11,475	5,552
England	67,923	41,765
British West Indies	456	157
British East Indies	193,881	88,566
France on the Atlantic	18,598	9,941
Hayti	115	61
China	400	233
Total	594,818	\$326,133

Nutria, or Neutria, the commercial names for the skins of *Myopotamus Bonariensis* (Commerson), the *Coyou* of Molina, and the *Quoiya* of D'Azara. In France, the skins were, and perhaps still are, sold under the name of *raccoonda*; but in England they are imported as *nutria* skins—deriving their appellation most probably from some supposed similarity of the animal which produces them, in appearance and habits, to the otter, the Spanish name for which is *nutria*. Indeed, Molina speaks of the *coyoyou* as a species of water rat, of the size and color of the otter. Nutria fur is largely used in the hat manufacture, and has become within the last 15 or 20 years an article of very considerable commercial importance. The imports

fluctuate considerably. In 1841 they amounted to 1,125,212 skins; but in some years they are much less; and in 1840 amounted to only 242,733. Those entered for home consumption pay a duty of 1s. per 100 skins. They are principally brought from the Rio de la Plata.—See FUR TRADE.

The *coyoyou* or *quoiya* is a native of South America, very common in the provinces of Chili, Buenos Ayres, and Tucuman, but more rare in Paraguay. In size it is less than the beaver, which it resembles in many points. The head is large and depressed, the ears small and rounded, the neck stout and short, the muzzle sharper than that of the beaver, and the whiskers very long and stiff. There are, as in the beaver, two incisor teeth, and eighteen molar, above and below—twenty teeth in all. The limbs are short. The fore feet have each five fingers not webbed, the thumb being very small; the hind feet have the same number of toes; the great toe and three next toes being joined by a web which extends to their ends, and the little toe being free, but edged with a membrane on its inner side. The nails are compressed, long, crooked, and sharp. The tail, unlike that of the beaver, is long, round, and hairy; but the hairs are not numerous, and permit the scaly texture of the skin in this part to be seen. The back is of a brownish red, which becomes redder on the flanks; the belly is of a dirty red. The edges of the lips and extremity of the muzzle are white. Like the beaver, the *coyoyou* is furnished with two kinds of fur; viz., the long, ruddy hair which gives the tone of color, and the brownish ash-colored fur at its base, which, like the down of the beaver, is of much importance in hat-making, and the cause of the animal's commercial value. The *coyoyou* is easily domesticated, and its manners in captivity are very mild.

Nux Vomica (Fr. *Noix Vomique*; Hind. *Kaach-la*), the fruit of a species of *Strychnos*, growing in various places in the East Indies. The fruit is about the size of an orange, covered with a smooth, crustaceous, yellow bark, and filled with a fleshy pulp, in which are imbedded several orbicular, flattened seeds, about three quarters of an inch in diameter. *Nux vomica* is inodorous, and has a very bitter, acrid taste, which remains long on the palate. It is known as a very virulent poison. A suspicion has, however, been entertained that it has been used in porter breweries; but its introduction into them is prohibited under heavy penalties.—*Thomson's Dispensatory, etc.*

O.

Oak (Ger. *Eiche*; Du. *Eik*; Dan. *Eeg*; Swed. *Ek*; Fr. *Chêne*; It. *Quercia*; Sp. *Roble*, *Carballo*; Port. *Roble*, *Carbalho*; Russ. *Dub*; Pol. *Dab*; Lat. *Quercus*; Arab. *Baalut*). There are several varieties of this valuable tree; but the common English oak (*Quercus robur*) claims precedence of every other. The knotty oak of England, the "unwedgedable and gnarled oak," as Shakspeare called it, when cut down at a proper age (from 50 to 70 years), is the best timber known. Some timber is harder, some more difficult to rend, and some less capable of being broken across, but none contains all the three qualities in so great and equal proportions; and thus, for at once supporting a weight, resisting a strain, and not splintering by a cannon shot, the timber of the oak is superior to every other.

A fine oak is one of the most picturesque of trees; it conveys to the mind associations of great strength, and of all but endless duration. It stands up against the blast, and does not take, like other trees, a twisted form from the action of the winds. Except the Cedar of Lebanon, no tree is so remarkable for the stoutness of its limbs; they do not exactly spring from the trunk, but divide from it; and thus it is sometimes difficult to know which is stem and which is branch. The twisted branches of the oak, too, add greatly to its

beauty; and the horizontal direction of its boughs, spreading over a large surface, completes the idea of its sovereignty over all the trees of the forest. Even a decayed oak, such as that described by Spenser:

"————— dry and dead,
Still clad with reliques of its trophies old,
Lifting to heaven its aged, hoary head,
Whose foot on earth has got but feeble hold,"

is strikingly beautiful. To such an oak Lucan compared Pompey in his decline:

"Qualis frugifero quercus sublimis in agro
Exuvius veteres populi, sacraque gestans
Dona duem; nec jam validis radicibus herens,
Pondere fixa suo est; nudosque per aëra ramos
Effundens, trunco, non frondibus, efficit umbram.
At quamvis primo nutet casura sub Euro,
Tot circum silvæ firmo se robore tollant,
Sola tamen colitur."—(Lib. i. lin. 186.)

The oak is raised from acorns, sown either where the oak is to stand, or in a nursery, whence the young trees are transplanted. The color of oak wood is a fine brown, and is familiar to every one; it is of different shades; that inclined to red is the most inferior. The larger transverse septa are in general very distinct, producing beautiful flowers when cut obliquely. Where

the septa are small, and not very distinct, the wood is much the strongest. The texture is alternately compact and porous; the compact part of the annual ring being of the darkest color, and in irregular dots surrounded by open pores, producing beautiful dark veins in some kinds, particularly pollard oaks. Oak timber has a particular smell, and the taste is slightly astringent. It contains gallic acid, and is blackened by contact with iron when it is damp. The young wood of English oak is very tough, often cross-grained, and difficult to work. Foreign wood, and that of old trees, is more brittle and workable. Oak warps and twists much in drying, and, in seasoning, shrinks about 1-32d of its width. Oak of a good quality is more durable than any other wood that attains a like size. Vitruvius says it is of eternal duration when driven into the earth: it is extremely durable in water; and in a dry state it has been known to last nearly 1000 years. The more compact it is, and the smaller the pores are, the longer it will last.

Remarkable Oaks.—The oldest oak in England stands in the most ancient park, belonging to the Duke of Portland. It is called the Parliament Oak, for it is said that Edward I. held a Parliament under its branches. It is supposed to be 1500 years old. Another remarkable oak is at Welbeck Abbey, in Nottinghamshire, which is famous for its oaks. This tree is called "The Duke's Walking-stick." It is 112 feet high. Three others of these noble trees claim attention for their extraordinary size and longevity, of which the Greendale Oak is the largest. Through its trunk a coach road is cut, and its branches cover a space of 700 square yards. The Two Porters, standing near one of the park entrances, are each 100 feet high; the third is called the Seven Sisters, from its having seven stems rising 90 feet in height from the trunk. The Cathorpe Oak, in Yorkshire, is noted as being the largest oak in England. Its girth is 78 feet.—*The Half Holiday.*

The supply of oak timber in this country is plentiful, but not inexhaustible, and care should be taken to preserve the forests, and, by a judicious use of the timber, avoid the great waste that has been going on; for upon a supply of this lumber depends, in a measure, our success as a maritime nation. Though some prejudice has existed in Europe against the quality of our oak timber, it is now conceded by all to be unsurpassed. By means of the Mississippi River and its tributaries we are enabled to use with advantage the oak forest on the western slope of the Alleghanies, and even in the forest of Michigan, and the West will soon be a rival to the East in ship-building. Kentucky especially abounds in the finest oak forests, as yet unmolested, but destined to add greatly to our wealth.—*See SHIP and SHIP BUILDING.*

Gall-nut Oak (*Quercus infectoria*), a native of Persia, Asia Minor, Arabia, Egypt, Morocco, and Algeria, in its natural habitat, is an evergreen shrub, with a very crooked stem, and seldom attains six feet in height. From the circumstance of its growing near Paris, where it bears the winter quite well in the open air, though losing its leaves in the autumn, it doubtless would be adapted to the climate of our Middle and Southern States. On this shrub is found the well-known "gall-nuts" of commerce, which are extensively used in the manufacture of writing-ink and in dyeing. These excrescences are the product of the gall-fly (*Cynips scriptorum*), a small insect of a dale-brown color, which may often be found inclosed in the galls sold in the shops of the druggists, collected before the fly had made its escape. There are two kinds of gall-nuts known in commerce; those which still contain the insect, and are known in the trade under the names of "Black," "Blue," or "Green" galls, termed *yerly* by the natives of the country in which they are collected; and those from which the insect has escaped, and which are called "White" galls. The latter con-

tain not more than two-thirds of the astringent qualities of the former, and are of a pale-brown or whitish color, being not so heavy and less compact.

The *Agilops*, or *Valonia Oak* (*Quercus agilops*), is indigenous to the islands of the Archipelago, and, indeed, to all Greece, and often grows to a height of fifty or sixty feet. It is perfectly hardy in the climate of England, from which it may be inferred that it also would grow in favorable localities in our Middle and Southern States. The cups and acorns of this tree are annually conveyed to Europe, where they are in great demand for tanning, and are believed to contain more tannin than any other vegetable, in proportion to their bulk. These acorns, which are commonly called "Valonia," form a very considerable article of export of the Morea and the Levant, being worth in England from \$60 to \$70 a ton. The more substance there is in the husks, or cups, of these acorns the better. They are of a bright-drab color, which they preserve as long as they are kept dry; but dampness injures them, as they turn black, and become impaired, both in quality and strength. A kind of gall is found on this tree somewhat similar to that on the *Quercus infectoria*, and which is employed for the same purposes. These galls are rugose, of an angular form, and are either the fruit itself, distorted by the puncture of the insect (*Cynips quercus calycis*), or merely the scaly cup which is enlarged into a gall.

Oakum, the substance into which old ropes are reduced when they are untwisted, loosened, and drawn asunder. It is principally used in calking the seams, tree-nails, and bends of a ship, for stopping or preventing leaks.

Oar, a long piece of timber, long at one end, and round or square at the other, used to make a vessel advance upon the water. The flat part, which is dipped into the water, is called the *blade*, and that which is within the board is termed the *loom*, whose extremity, being small enough to be grasped by the rowers, is called the *handle*. To push the boat or vessel forward by means of this instrument, the rowers turn their backs forward, and, dipping the blade of the oar in the water, pull the handle forward, so that the blade, at the same time, may move aft in the water. But, since the blade can not be so moved without striking the water, this impulsion is the same as if the water were to strike the blade from the stern toward the head; the vessel is therefore necessarily moved according to the direction. Hence it follows that it will advance with the greater rapidity by as much as the oar strikes the water more forcibly; consequently, an oar acts upon the side of a boat or vessel like a lever of the second class, whose fulcrum is the station upon which the oar rests on the boat's gunwale.

Oats (Ger. *Hafer*; Du. *Haver*; Dan. *Havre*; Swed. *Umfre*; Fr. *Avoine*; It. *Vena*, *Avena*; Sp. *Avena*; Port. *Avena*; Russ. *Oves*; Pol. *Owies*), a species of grain, the *Avena sativa* of botanists. There are innumerable varieties of this grain. It is the hardiest of all the cereal grasses, growing luxuriantly in cold northern climates, and in coarse mountainous districts, where neither wheat nor barley can be advantageously cultivated. It thrives best, and is, indeed, chiefly raised, in northern latitudes; being but little known in the south of Europe. In Scotland it forms a large part of the food of the people, and is far more generally cultivated than any other species of grain. There are four leading varieties of this grain cultivated; viz., white, black, gray, and brown or red oats. The sub-varieties of the white are numerous. That denominated the potato oat is at present almost the only one raised on land in a good state of cultivation in the north of England and the south of Scotland, and usually brings a higher price in the London market than any other variety. It was accidentally discovered growing in a field of potatoes in Cumberland in 1788; and from the produce of that single stalk has been obtained the stock

now in general cultivation. Black and gray oats are little cultivated, except in some places in the north of Scotland. The red oat is chiefly confined to Cheshire, Derbyshire, and Staffordshire. A species of naked oats, provincially called *pillar*, is raised in Cornwall.—*London's Encyclopedia of Agriculture*; *Brown's Rural Economy*.

The oat, when considered in connection with the artificial grasses and the nourishment and improvement it affords to live stock, may be regarded as one of the most important crops we produce. Its history is highly interesting, from the circumstance that, while in many portions of Europe, when ground into meal, it forms an important aliment for man, one sort at least has been cultivated from the days of Pliny on account of its superior fitness as an article of diet for the sick. The country of its origin is somewhat uncertain, though the most common variety is said to be indigenous to the island of Juan Fernandez. Another oat, resembling the cultivated variety, is also found growing wild in California. This plant was introduced into the North American colonies soon after their settlement by the English. It was sown by Gosnold, on the Elizabeth Islands, in 1602; cultivated in Newfoundland in 1622, and in Virginia, by Berkeley, prior to 1648.

The oat is a hardy grain, and is suited to climates too hot and too cold either for wheat or rye. Indeed, its flexibility is so great, that it is cultivated with success in Bengal, as low as latitude 25 degrees north, but refuses to yield profitable crops as we approach the equator. It flourishes remarkably well when due regard is paid to the selection of varieties, throughout the inhabited parts of Europe, the northern and central portions of Asia, Australia, Southern and Northern Africa, the cultivated regions of nearly all North America, and a large portion of South America.

In this country the growth of the oat is confined principally to the Middle, Western, and Northern States. The varieties cultivated are the common white, the black, the gray, the imperial, the Hopetown, the Polish, the Egyptian, and the potato oat. The yield of the common varieties varies from forty to ninety bushels and upward per acre, weighing from twenty-five to fifty pounds to the bushel. The Egyptian oat is cultivated south of Tennessee, which, after being sown in autumn and fed off by stock in winter and spring, yields from ten to twenty bushels per acre. In the manufacture of malt and spirituous liquors oats enter but lightly, and their consumption for this purpose does not exceed sixty thousand bushels annually in the United States. It will be seen by the following exhibit that New York, Pennsylvania, Ohio, Virginia, and Illinois are the largest producers of oats, and in the order in which they are here placed.

PRODUCTION OF OATS IN THE UNITED STATES DURING THE YEAR 1850.

States and Territories.	Oats, Bushels.	States and Territories.	Oats, Bushels.
Alabama.....	2,965,696	Missouri.....	5,278,079
Arkansas.....	656,183	N. Hampshire..	973,381
California.....	.....	New Jersey.....	3,378,063
Columbia, D. of	8,134	New York.....	26,552,814
Connecticut.....	1,258,738	North Carolina	4,052,078
Delaware.....	604,518	Ohio.....	13,472,742
Florida.....	66,586	Pennsylvania..	21,538,156
Georgia.....	3,820,044	Rhode Island..	215,232
Illinois.....	10,087,241	South Carolina	2,322,155
Indiana.....	5,655,014	Tennessee.....	7,703,086
Iowa.....	1,524,345	Texas.....	199,017
Kentucky.....	8,201,311	Vermont.....	2,307,724
Louisiana.....	89,637	Virginia.....	10,179,144
Maine.....	2,181,087	Wisconsin.....	3,414,672
Maryland.....	2,242,151	Minnesota.....	30,532
Massachusetts..	1,165,146	New Mexico....	5
Michigan.....	2,866,056	Oregon.....	61,214
Mississippi.....	1,503,288	Utah.....	10,900
		Total bushels	146,678,890

The oat, like rye, never has entered much into our foreign commerce, as the domestic consumption has always been nearly equal to the quantity produced. The annual average exports, for several years preceeding

1817, were seventy thousand bushels. By the Census returns of 1840, it will be seen that the total produce of the United States was 123,000,000 bushels; of 1850, 146,678,890 bushels.—*United States Patent Office Report*.

A few years since the oat crop of the Western States sold at 80 or 40 cents per bushel. At the present time (October, 1856), owing to the larger number of horses employed in the West and the East, the price is steady at 40 to 60 cents in the West; and 45 to 50 cents in the States of New England and New York.

Observatories. The first is supposed to have been on the top of the temple of Belus, at Babylon. On the tomb of Osymandias, in Egypt, was another, and it contained a golden circle 200 feet in diameter: that at Benares was at least as ancient as these. The first in authentic history was at Alexandria, about 300 B.C. The first in modern times was at Cassel, 1561. The Royal Observatory at Greenwich was founded by Charles II. A.D. 1675; and from the meridian of Greenwich all English astronomers make their calculations.

First modern meridional instrument, by Copernicus.....	A.D. 1540
First observatory at Cassel.....	1561
Tycho Brahe's, at Uranibourg.....	1576
Astronomical tower at Copenhagen.....	1657
Royal (French).....	1667
Royal Observatory at Greenwich.....	1675
Observatory at Nuremberg.....	1678
At Utrecht.....	1690
Berlin, erected under Leibnitz's direction.....	1711
At Bologna.....	1714
At Petersburg.....	1735
Oxford, Dr. Radcliffe.....	1772
Dublin, Dr. Andrews.....	1783
Cambridge, England.....	1824

Observatories in the United States.

Yale College, New Haven, Conn.....	1828-1830
Williams' College, Massachusetts.....	1836-1837
Western Reserve College, Hudson, Ohio.....	1837-1838
Military Academy, West Point, New York.....	1837-1838
High School, Philadelphia, Pennsylvania.....	1840-1842
National Observatory, Washington, D. C.....	1842-1844
Georgetown College Observatory, D. C.....	1843-1844
Cincinnati Observatory, Ohio.....	1843-1844
Cambridge Observatory, Massachusetts.....	1845-1847
Sharon Observatory, near Philadelphia, Penn.....	1845-1846
Tuscaloosa Observatory, Alabama.....	1843
Lewis M. Rutherford's Observatory, New York City.....	.....
Dartmouth College Observatory, New Hampshire.....	.....
Amherst College, Observatory, Massachusetts.....	.....
Shelbyville, Kentucky.....	.....
Dudley Observatory, Albany, New York.....	1855-1856

—See *Christian Review*, v. 89; *North American Review*, viii. 205, lix. 143 (B. A. GOULD); *American Journal of Science*, xlvii. 88, xlii. N. S. 295; *Edinburgh Review*, xci. 159; *Southern Literary Messenger*, xiv. 4 (Lieutenant MAURY), xv. 304; Professor LOOMIS'S "Recent Progress of Astronomy," New York, 1850.

Ocean (Gr. *ωκεανος*.) In Geography, the vast body of water which surrounds the continents, and is the receptacle of all their running waters. It is divided by geographers into five great basins; viz., the Pacific Ocean (so called by reason of its comparative stillness, which separates Asia from America, and is the largest of all the basins; 2. The Atlantic Ocean, which has Europe and Africa on its eastern shore, and America on its western; 3. The Indian Ocean, which washes the south of Asia, and the south-eastern coast of Africa; 4. The Arctic Ocean, which surrounds the north pole; and, 5. The Antarctic, which surrounds the south pole. Other smaller portions of the great connected body of water are called *seas*, of which the Mediterranean, the German, the Baltic, and Black seas, are the most considerable. The superficial extent of the several great basins is not known with any certainty, nor, indeed, can their limits be exactly defined. From the nearest estimation that can be made of the extent of the continents and principal islands, it is supposed that nearly three-fourths of the whole surface of the globe are covered by water. The Pacific Ocean alone exceeds the whole surface of the dry land.

Depth of the Ocean.—If the superficial extent of the ocean can not be easily ascertained, it will readily

be supposed that its depth is a problem of much greater difficulty. The bottom appears, wherever it has been reached by the sounding-line, to have similar inequalities to those of the surface of the land: hence the depth must be extremely various; and it might be supposed from analogy that the greatest depth of the ocean is at least equal to the height of the highest mountains above its surface. Lord Mulgrave found no bottom in the North Atlantic Ocean with a sounding-line of 4680 feet, and Mr. Scoresby sounded to the depth of 7200 feet without the lead touching the ground. These experiments are not altogether to be depended on for the determination of such great depths; for, the pressure becoming very great, the lead may be drawn out of the perpendicular direction by currents, of which it may encounter more than one, flowing in different directions. Over a great portion of the Atlantic and Pacific oceans no bottom has been found. The depth of the ocean, in general, and the form of the bed on which it rolls, can not, therefore, be determined by experiment. The mathematical theory of the oscillations of fluids has, however, thrown some light on the subject. Laplace demonstrated that the difference which is indicated by observation between the height of two consecutive tides depends on the law of the depth of the sea, and that, but for the influence of accessory circumstances, it would disappear altogether if the depth were constant. It follows, therefore, that, since the difference between the consecutive tides is extremely small, the depth of the sea, taking in a large extent of ocean, must be nearly uniform; that is to say, there must be a certain mean depth from which the variations are not considerable.—*Méc. Céleste*, book xiii.

Level of the Ocean.—Were it not for the disturbing actions of the sun and moon, and of the winds, the level of the ocean would be every where the same, and its surface would have the form determined by the attraction of the whole mass of the earth, combined with the centrifugal force belonging to its velocity of rotation; that is to say, the surface would be that of an oblate spheroid of revolution. This uniformity, however, can never be established. The tide at every instant is at different heights in different parts of the ocean; and therefore the form of the surface, within the limits of the rise and fall of the tides, is variable. But even if we neglect the alternate rise and fall of the water which constitutes the tides, and take the surface of the ocean at its mean height, it is found by accurate leveling that all its parts do not coincide with the surface of the same spheroid. Gulfs and inland seas, which communicate with the ocean by narrow openings, are affected according to their position with regard to the prevailing winds. The level of the Red Sea was found, by the French engineers in Egypt, to be 32½ feet higher than that of the Mediterranean, which is supposed to be a little lower than the ocean. Humboldt concluded, from observations made on the Isthmus of Panama, that the waters of the Gulf of Mexico are about two feet higher than those of the Pacific Ocean. The Baltic and Black seas rise in spring from the great quantity of river water poured into them, and are lowered in summer by the joint effects of a small supply and increased evaporation.

Color of the Ocean.—The usual color of the ocean is a bluish green, of a darker tint at a distance from land, and clearer toward the shores. According to Mr. Scoresby, the hue of the Greenland Sea varies from ultramarine blue to olive green, and from the purest transparency to great opacity. The surface of the Mediterranean, in its upper part, is said to have at times a purple tint. In the Gulf of Guinea the sea sometimes appears white; about the Maldives Islands black; and near California it has a reddish appearance. Various causes co-operate to produce this diversity of tint. The prevailing blue color may be ascribed to the greater refrangibility of the blue rays of light,

which, by reason of that property, pass in greatest abundance through the water. The other colors are ascribed to the existence of vast numbers of minute animalculæ; to marine vegetables at or near the surface; to the color of the soil; the infusion of earthy substances; and very frequently the tint is modified by the aspect of the sky. The phosphorescent or shining appearance of the ocean, which is a common phenomenon, is also ascribed to animalculæ, and to semi-putrescent matter diffused through the water.

Temperature of the Ocean.—Water being a slow conductor of heat, the temperature of the ocean is much more uniform than that of the atmosphere. At a certain distance from the equator, it follows, though not very closely, the mean temperature of the corresponding latitudes, the solar action being greatly modified by the existence of currents which convey the temperature of one region to another; so that at any place the temperature of the water depends, in some measure, on the direction of the currents. Within the tropics the mean temperature at the surface is about 80° of Fahrenheit, and generally ranges between 77° and 84°. At great depths the temperature is probably nearly the same under every latitude. In the torrid zone it is found to diminish with the depth; in the polar seas it increases with the depth; and about the latitude of 70° it is nearly constant at all depths. But the small number of observations which have yet been made on this subject do not indicate any uniform law, according to which the variations of temperature at different depths is regulated.

Saltness of the Ocean.—The ocean holds in solution a variety of saline matters, of which by far the most abundant is common salt, constituting, in general, about two-thirds of the whole. The saltness of sea-water at particular places is influenced by temporary causes—storms, for example; as well as by the neighborhood of large rivers, and permanent accumulations of ice. A series of experiments on this subject were made some years ago by the late Dr. Marcet, and the following are the general conclusions which he deduced from them: 1. That the Southern Ocean contains more salt than the Northern Ocean, in the ratio of 1·02919 to 1·02757. 2. That the mean specific gravity of sea-water near the equator is 1·02777. 3. That there is no notable difference between sea-water under different meridians. 4. That there is no satisfactory evidence that the sea at great depths is more salt than at the surface. 5. That the sea, in general, contains more salt where it is deepest, and that its saltness is always diminished in the vicinity of large masses of ice. 6. That small inland seas, though communicating with the ocean, are much less salt than the ocean. 7. That the Mediterranean contains rather larger proportions of salt than the ocean.—*Philosophical Transactions*, 1819; *PROUT'S Bridgewater Treatise*; *BRANDE'S Dictionary*. The peculiar bitter taste of sea-water does not appear to belong to it beyond a certain depth, and is ascribed to the vegetable and animal matter held in a state of decomposition near the surface.—*See TIDES, ATLANTIC OCEAN, GULF STREAM, AND SOUNDINGS; Massachusetts Quarterly*, ii. 208; *American Journal of Science*, v. 128, v. N. S. 41; *Foreign Quarterly*, xiv. 369.

Oceanica. Geographers have divided "Oceanica" into three distinct portions; viz., Malaysia, Australasia, and Polynesia. So comparatively little is known of its component parts, that it is only possible to state the statistics of such countries as most frequently come under the notice of civilized nations, and this is done in the annexed accounts:

1. *Malaysia.*—This portion includes most of the islands of the Indian Archipelago, and has its name from the fact that the Malay race are its most prominent inhabitants. Malaysia is naturally composed of five grand divisions.

1. Sumatra, Java, Bali, Sumbawa, and about two-thirds of the western portion of Borneo as far as 116°

E. long.; 2. Celebes, with the smaller islands about its coast, and the eastern portion of Borneo up to 3° N. lat.; 3. The Spice Islands; 4. The Soo-Joo Archipelago, Mindanao, and the northeast corner of Borneo; and, 5. The Philippine Islands.

These several divisions are peculiar in physical formation, in climate, productions, and inhabitants.

II. *Australasia* extends from 1° N. to 55° S. lat., and from 112° to 180° E. long., and its components are, Australia or New Holland, Van Diemen's Land, New Zealand, Papua or New Guinea, New Britain, New Ireland, the Arru Islands, Solomon Islands, New Caledonia, New Hebrides, Queen Charlotte's Islands, New Hanover, Admiralty Islands, and many smaller islands scattered over the intervening seas.

III. *Polynesia* includes the numerous groups of islands scattered over the Pacific between Asia, Malaysia, and Australasia on the west and southwest, and the western coast of America. The following is the most approved classification of these groups: the Bonin or Arzobispo Islands, the Ladrone or Marian Islands, the Caroline Islands, the Feejee Islands, the Tonga or Friendly Islands, Navigator's or Samoa Islands, Cook's or the Hervey Islands, the Society, Georgian, and Low Islands, the Austral Islands, the Marquesas and Washington Islands, the Hawaiian or Sandwich Islands, the Kermadec Isles, and scattered and isolated islands, among which are Gambier Islands, Pitcairn Island, etc. The *Malaysian*, with the exception of the Philippine Islands, belong chiefly to Holland, and, according to the latest official reports, the following are the statistics of the Dutch possessions: The superficies of Netherlands India is 27,892 square geographical, or 36,887 American miles. The population of Java and Madura, exclusive of the army, is 9,584,130; viz., Europeans, etc., 16,409; Chinese, 119,481; other easterns, 27,687; and natives, 9,420,553. Sumatra has 3,430,000 inhabitants; Banka and dependencies, 50,000; Rhio and dependencies, 30,000; Borneo and dependencies, 1,200,000; Celebes, 300,000; Molucca Islands and dependencies, 718,500; Timor and dependencies, 800,000; Bali and Limbok, 1,205,000. Total, 10,473,500. Total population of Dutch India, 20,037,630. Great Britain is the first power in *Australasia*. The statistics of the following colonies refer to the commencement of the year 1851:

Colonies.	Population.	Value of Imports. £	Value of Exports. £	Tonnage entered.
New South Wales.....	192,000	2,078,338	2,339,580	234,215
Victoria.....	77,360			
South Australia.....	67,430	845,572	570,816	86,583
West Australia.....	5,886	52,851	22,134	15,988
Van Diemen's Land	70,130	1,232,272	1,172,530	23,031

Of the exports, as above, the following is the value of wool from each colony in 1850: New South Wales and Victoria, £1,614,241; South Australia, £131,730; West Australia, £15,482; and Van Diemen's Land, £451,203. The value of minerals, chiefly copper, from South Australia in the same year was £362,568. Since the above returns gold has been discovered in Australia, and the fields have been more productive than those of California. The quantity yielded in the year ending 30th December, 1852, was 3,998,321 ounces, valued at over £15,000,000, or \$75,000,000. The population and every interest has increased, and perhaps doubled, under the stimulating influence of this shower of gold. Among the islands of *Polynesia* the Sandwich Islands hold the first rank, whether viewed in relation to their position, products, population, or civilization. The population in January, 1849, was 80,641. The excess of deaths over births in 1848 had been 6465, or 8 per cent. About 10,000 died of measles and hooping-cough in 1847-'8. At this rate of mortality the population in 1860 would be 32,224; in 1870, 14,073; in 1880, 6134; in 1890, 2667; and in 1900, only 1162. In 1950 the Hawaiian race would be extinct. Such is the influence of civilization on aboriginal races—the

same throughout America and throughout the world. In 1853 the islands were visited by small-pox, and about 6000 died of the epidemic. A new census was taken at the commencement of 1854. The extent of the cultivation of sugar in these islands is shown in the annexed table:

	Acres Cultivated.	
	1852.	1853.
Lihue.....	200	580
Koloa.....	240	650
Honahula, Maui.....	250	300
Makawao, ".....	325	500
Hana.....	45	130
Waimea, Hawaii.....	50	50
Hilo.....	540	540
Total.....	1650	2750

Average yield per acre, 2000 lbs.; average value, five cents per lb.

The *Polynesian* of 29th January, 1853, referring to the year just passed, furnishes the following relating to the commerce of these islands:

"Imports.—There is a large falling off in the value and amount of goods imported for consumption. The value of goods imported, as compared with previous years, is as follows:

1850.	1851.	1852.
\$1,035,058 70.....	\$1,823,821 68.....	\$759,363 54

—giving as an average of imports for three years, \$1,206,249.

"Exports.—The following comparison of some of the staple exports for the islands with those of former years shows at a glance that the exports for 1852 do not equal those of 1850, though a large gain on those of 1851 is apparent.

Staples.	1850.	1851.	1852.
Sugar..... pounds.	750,738	721,030	729,877
Syrup..... gallons.	75,577	60,111	36,375
Molasses.....	53,865	13,631	47,000
Coffee..... pounds.	208,428	37,190	117,210
Salt..... bushels.	7,652	3,769	7,118

"The custom-house receipts in 1850 amounted to \$121,506 73; in 1851, to \$160,602 19; and in 1852, to \$113,091 93; the receipts of the latter year thus showing a decrease of \$47,510 26 as compared with 1851, and of \$7414 80 as compared with 1850. The number of merchant-vessels that visited the islands in 1850 was 469; in 1851, 446; and in 1852, 235. It is impossible," adds the *Polynesian*, "to give the number of 'whalers' that have visited the islands in 1852, but the number is about 300, which is much more than the number in 1851 or 1850. It may be added here, in regard to the number of merchant-vessels in 1850 and 1851, that a large proportion of them were small vessels engaged in the potato trade, while in 1852 the vessels have been generally of a larger class. Another reason for the large number given in 1850 and 1851 was the fact that vessels more generally then touched at several ports, which would increase the number in the custom-house returns, though in fact it should not. The ports being now more generally known, vessels for produce go directly to the port where they can obtain their cargoes." In a commercial point of view, as an entrepôt between the western coast of America and Eastern Asia, these islands are of the greatest importance; and in view of the vast commerce now springing up in the Pacific, and which will eventually revolutionize the trade of the world, it is possible that the United States may see fit to accept the offer to annex them to the national territory. Already the question has been before Congress.—*American Statistical Annual*.

Odessa, a flourishing sea-port of Southern Russia, on the northwest coast of the Black Sea, between the rivers Dniester and Bug, in lat. 46° 28' 54" N., long. 30° 48' 22" E. Population in 1850, 78,000. The foundations of Odessa were laid so lately as 1792, by order of the Empress Catharine, after the peace of Jassy. It was intended to serve as an entrepôt for the commerce of the Russian dominions on the Black Sea and the Sea

of Azof, and has in a great measure answered the expectations of its founders. By an imperial ukase, dated the 7th of February, 1817, it was declared a free port, and the inhabitants exempted from taxation for thirty years; since which period its increase has been extremely rapid. The bay or roadstead of Odessa is extensive, the water deep, and the anchorage good, the bottom being fine sand and gravel; it is, however, exposed to the southeasterly wind, which renders it less safe in winter. The port, which is artificial, being formed by two moles, one of which projects to a considerable distance into the sea, is fitted to contain about 300 ships. It has also the advantage of deep water. There is a convenient lazaretto, on the model of that of Marseilles. The want of fresh water used to be the greatest disadvantage under which the inhabitants labored; but this has been obviated by the construction of a canal, which conveys an abundant supply of water into the town. There are no trees in the vicinity, which has, in consequence, a bleak and arid appearance.

Light-houses.—A light-house has been erected on Cape Fontan, about 6½ nautical miles south of Odessa. The light, which formerly revolved, is now fixed, and is about 203 (Russian) feet above the level of the sea. At the distance of eleven leagues S.E. by E. ½ E. from Odessa, on the north end of the long, narrow, low island of Tendra, a light-house has been erected, of great use to ships approaching Odessa from the south or west. The lantern is elevated 92½ (Russian) feet above the level of the sea. It consists of three reflecting lights, suspended in the form of a triangle, revolving in the space of four minutes, so that each lamp arrives at its maximum of brilliancy after an interval of one minute, twenty seconds. Being also of a red color, this light is readily distinguished from Fontan light, and the other lights in the Black Sea. In foggy weather a bell is kept ringing.—*Coulier sur les Phares*, 2d ed.; NORRIE'S *Sailing Directions for the Mediterranean and Black Seas*, etc. Not being at the mouth of any great river, nor having any considerable manufactures, Odessa is not a port for the exportation of what may be called articles of native growth; but in consequence of her convenient situation, excellent port, and the privileges she enjoys, she is, as already remarked, the emporium where most part of the produce of Southern Russia destined for foreign countries is collected for exportation, and where most part of the foreign articles required for home consumption are primarily imported. The shallowness of the water at Taganrog, and the short period during which the Sea of Azof is navigable, tend to hinder foreign vessels of considerable burden from entering the Strait of Yenikalé, and occasion the shipment of a considerable portion of the produce brought down the Don in lighters to Caffa and Odessa, especially the latter. All the products brought down the Dniester, the Bug, and the Dnieper are exported from Odessa; but owing to the difficult navigation of the first and last mentioned rivers, by far the greater part of the corn brought to Odessa from Podolia, the Ukraine, etc., is conveyed to the town in carts drawn by oxen. The roads traversed by these carts are only practicable at certain seasons of the year; and nothing would contribute so much to increase the commerce of the port, and the prosperity of Southern Russia, as the opening of improved communications with the interior, whether by removing obstructions in the channels of the rivers, constructing canals, or railways, or good common roads. Among the articles of export from Odessa, corn, especially wheat, occupies, as every one knows, the highest rank; but tallow is also an important article; and next to it are linseed, wool, hides, copper, wax, caviar, potash, beef, furs, cordage, sail-cloth, tar, butter, isinglass, etc.

Ports of the Black Sea, the Sea of Azof, and the Crimea.—The importance of the Black Sea as a channel of Russian commerce will be easily understood by cast-

ing an eye over the map of Southern Russia, and tracing the rich and extensive regions which are tributary to its various ports. The Danube and its branches, the Dniester, the Bug, Dnieper, Don, and several lesser rivers, empty their waters into the Black Sea. Odessa is situated on a bay, 30 miles from the mouth of the Dniester, and 60 from that of the River Dnieper. The bay is secure and accessible, and seldom closed by ice. The port is protected by two moles, each extending 315 fathoms, and raised 7½ feet above the surface of the sea; and, thus formed, it will afford ample protection to two hundred large-sized vessels. Akerman is situated near the Black Sea, on the lagoon on the Dnieper. It is the principal outlet of the produce of Galicia, Podolia, and Bessarabia. The lagoon, or liman, on which Akerman is situated, is said to produce annually 7,000,000 poods (252,000,000 pounds) of salt. The port is, however, too shallow for vessels drawing over seven feet of water. Kherson, Nicolaief, and Sevastopol are the remaining principal ports of these seas.

The following table exhibits the tonnage of Odessa in 1852:

Nationality.	Entered.		Cleared.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
England	208	68,601	225	69,175
Austria	198	68,731	206	71,591
Belgium	1	250	2	442
France	42	7,028	42	7,028
Greece	162	43,935	150	40,272
Holland	12	2,658	12	2,640
Ionian Islands ..	14	2,891	13	2,919
Sicily	27	7,024	26	6,696
Sardinia	172	43,623	197	48,792
Sweden, etc.	90	20,412	88	22,605
Tuscany	10	3,557	11	4,200
Turkey	43	8,300	60	11,352
Others	97	20,317	113	30,109
Total in 1852 ..	1076	296,797	1145	317,801
Total in 1851 ..	623	172,179	648	177,138
Increase in 1852	453	124,618	497	140,668

The preceding table exhibits a total of 2221 vessels (entered and cleared), with an aggregate of 614,598 tons, being an increase over 1851 of 950 vessels, with an aggregate of 265,286 tons. If to the figures given in the table is added the coasting trade, viz., 2304 vessels, with an aggregate tonnage of 418,436, the total navigation of the port of Odessa, in 1852, will amount to 4525 vessels, with an aggregate of 1,033,034 tons. An analysis of the table gives to Austria the first rank in the navigation of this port. Total tonnage entered and cleared, 614,598 tons: Austria, 140,322 tons. England holds the second rank, viz., 137,776 tons; then Sardinia, 92,420 tons; Greece, 83,637 tons; Sweden, 43,017 tons. The augmentation in 1852 over 1851 gives Austria 66,878 tons more; England, 61,534 tons more; Sardinia, 38,977 tons more; and Greece, 13,577 tons more. The steam navigation of Odessa is maintained by the two lines of Constantinople and the Danube. The first makes thirty-six voyages (between the two points), and the second eighteen, annually. The Constantinople line conveyed, in 1852, 1214 passengers; that of the Danube, 995; making a total for both lines of 2209 passengers. The first of these transported to Odessa merchandise and specie amounting to 5,411,520 francs, and the other 359,620 francs. There was exported to Constantinople by the first line merchandise valued at 1,669,108 francs; and to the ports of the Danube, by the other, merchandise to the amount of 637,796 francs. Government steamers keep up the communication between the ports of Kherson, Nicolaief, the Crimea, and the Caucasus. In 1852 they made ninety-five voyages from these different points to Odessa, transporting passengers and merchandise.

The different steamers which make Odessa their starting-point made, in 1852, 149 voyages, transporting 20,905 passengers, and merchandise to the amount of 10,705,768 francs, equal to \$2,000,000 nearly.

COMMERCE OF ODESSA.

	1852.	1851.
	France.	France.
Exports.....	103,452,410	53,200,024
Imports.....	86,100,066	29,886,800
Total, France.....	139,642,476	85,086,824

The principal exports were:

Grains, value.....	63,756,826 francs.
Wool, ".....	17,044,716 "
Linseed, ".....	7,969,580 "
Tallow, ".....	1,927,296 "

The principal imports in 1851-'52 were: raw cotton and cotton yarns, olive-oil, dye-stuffs, drugs, metals, wines, and sugar. In 1853 the total value of the foreign trade of Odessa was \$25,953,807, viz.: exports, \$18,583,293; imports, \$7,370,514. Grains constituted the chief export in 1853. Thus, of the \$26,000,000 (in round numbers), grains amounted in value to \$13,000,000; linseed, wool, tallow, and cordage covered \$5,000,000. In 1854 this immense trade must have been completely paralyzed, as an official notification was published at Odessa on 3d March, 1854, prohibiting the exportation of grains of all kinds, from all ports of the Black and Azof Seas, until the 1st of September following. This prohibition, however, is now removed; and official returns, when received, will show how far the blockade of the Russian ports by the allied powers affected the trade of the Black Sea. By declaration published at St. Petersburg 7th [19th] April, 1856, all the mercantile harbors of Russia are open to the merchant vessels of neutral countries.

The total value of the trade of the ports of the Sea of Azof (Taganrog, Kertch, Rostoff, Mariopol, and Berdiansk), was, in 1851: imports, 6,902,000 francs; exports, 27,182,000 francs.

The imports were chiefly from Turkey, the Two Sicilies, Ionian Islands, France, and Greece. The exports were destined to Turkey, England, Sardinia, Tuscany, Ionian Islands, and France. The total value of the trade at the commercial ports of the Crimea (Eupatoria, Balaklava, Theodosia, and Kertch), in 1852, was: imports (including specie), 1,092,500 francs; exports, 654,500 francs. Total, 1,747,000 francs.

Compared with 1851, the imports increased 12 per cent., and exports decreased nearly 60 per cent. Imports consisted of cottons, raw cotton, coals, oil, and fruits; exports, of wool, raw hides, butter, caviar, and grains.—*United States Commercial Relations.*

The United States Consul, under date of July 1, 1854, communicates the following information: There exists a treaty of commerce between the United States and the Imperial Russian government, which was concluded at St. Petersburg on the 6th [18th] December, in the year 1832, and was ratified at Washington on the 11th May, 1833, to which the Russian government abides with strictness. The city and port of Odessa was declared as *porto-franco* by a decree of the imperial government in the year 1823, which was put into execution only on the 15th August, in the year 1824, by which the importation of all kinds of merchandise was allowed, on paying only one-fifth of the entire duty paid in other ports of this empire; and this one-fifth duty was employed to defray the annual expenditure for the benefit of this city, such as pavements, footpaths, repairing streets, lights, government buildings, and for the expenses of all the local administrations. The importation of all kinds of merchandise is allowed, even those articles which are prohibited at all other ports of the empire, but they are not allowed to be transported into the interior from hence, as tea, refined sugars, strong spirits, cloths—black and green—printed cottons, silks, and wools. These articles are to be consumed at Odessa. The term of these privileges for Odessa expired in the year 1849, but his majesty the emperor, wishing to favor this city, granted a prolongation of the same privileges for a period of five years, which ends on the 14th August, 1854. During this last period the duty was augmented; instead of

one-fifth, it is now two-fifths of the entire duty on the import of any kind of merchandise, with the exception of tobacco, rum, and other strong spirits, on which the entire duty is paid, as at all other ports of Russia. Refined sugars, tea, and wines, have to pay three-fifths of the entire duty, one-fifth of which is destined for expenses of this city, and the remainder in favor of government. There does not exist at this port any privilege granted to any nation, in any way, which is denied to citizens of the United States. The only restriction existing at Odessa is on ships under French and Neapolitan colors, they not being allowed to import any merchandise from foreign countries to Russia, unless paying 50 per cent. more on the import duty, in comparison to Americans, or ships of other nations. This difference on French and Neapolitan vessels exists by the commercial treaties between the respective powers, by which it is also prohibited for Russian vessels to import to France or to Naples merchandise from foreign ports not Russian produce, as the cargo must be, and from a Russian port. There are no differences in the charges, or any other dues, on ships of the United States and Russian vessels. A Russian vessel of 150 lasts (equal to 300 tons) pays the same charges as an American of the same size. The following affords a comparative statement:

Lasts, 150, at 17-100 per last.....	S. R. 25 50 = \$19 18
Light dues.....	7 15 = 5 38
Quarantine dues, custom-house charges and fees.....	20 00 = 15 04

The tonnage and light dues are a fixed charge, and established by law; the quarantine and custom-house dues are not so. The amount of the latter charges is generally paid partly for stamp paper, fees, and other trifles, which reaches the sum above stated, and which every one pays without opposition, as it is the custom and has been for many years past, and by which means business is greatly facilitated. It is prohibited by law to reship merchandise from one ship to another, even if the merchandise reshipped be destined for another Russian port, and no matter under what colors it is brought to this port. The merchandise, before reshipment, must first be landed and visited by the custom-house authorities, and the whole amount of duty paid, before permission can be obtained for such merchandise to be shipped and transported to another Russian port. But if such merchandise be destined for a foreign port, it has to be landed, and after being visited by the custom-house officers, a certificate to that effect is given to the shippers of the cargo, allowing the re-shipment and exportation to a foreign port. All foreign, as well as American vessels are allowed to share in the coasting trade from one Russian port to another in the Black Sea or the Sea of Azof. The current coin, weights, measures, etc., are the same at Odessa as at St. Petersburg. The value of a silver ruble is 75-²⁸/₁₀₀ cents of an American dollar; one pood weight is 36 English pounds; one arshine measures 28 English inches; one chetwert of wheat is 5½ English bushels.

The only cargo exported from hence for America since the 1st of July, 1853, consisted of common washed wool, 505 bales, weighing 5972 poods, 23 pounds; and linseed, 1200 chetwerts—the whole shipped on board of an American bark of 380 tons, bound for New York, and cleared from hence on the 10th November, 1853. The duty on the cargo amounted to 342-80 silver rubles, or \$257 80, being on the linseed alone, as there is no duty on the exportation of wools. No insurances have ever taken place here for the United States, but the general custom is to insure in England for America. The custom in purchasing any kind of merchandise for exportation at this place is to pay ready cash, and without any discount whatever; but in the sale of colonial and other goods imported from abroad sometimes a credit of six or eight months is granted to the buyers. There is no established rate of exchange here for the United States, but the value of the dollar is

nominal at $1\frac{1}{2}$ silver ruble. The amount of duty paid here on merchandise exported for America during the last period amounts to \$257; but no import duty was paid here, as no merchandise arrived from America. There is no duty levied in Russia by government on produce exported in its new state, or partly manufactured, or entirely so; the only existing duty is on raw sugars, on which the refiners of Russia pay an excise to government of $\frac{60}{100}$ silver rubles per pood on the refined sugars, or $45\frac{1}{100}$ cents in American currency. Laborers are generally paid here by the day, and, the rate not being fixed, fluctuates according to the wants of such men—rising from $\frac{30}{100}$ to one silver ruble per day, or from $22\frac{1}{2}$ to 75 cents per day, American currency.

A tribunal of commerce was established at Odessa in 1824, whose jurisdiction extends over all disputes connected with trade. There is no appeal from its decisions except to the Senate. There are twelve sworn brokers, approved and licensed by the Tribunal of Commerce, who have deputies appointed by themselves. They register all transactions, and receive $\frac{1}{2}$ per cent. from each party as commission. There is a discount or loan bank, established in 1828, and marine and fire insurance societies. Most articles of provision are cheap; and fish, which costs next to nothing, is excellent. Fuel, however, is scarce and dear. Within the last thirty years, the Merino breed of sheep has been extensively introduced into the governments of Taurida, Cherson, and Ekaterinoslov; so that there has been not only a great increase in the quantity, but also a very decided improvement in the quality, of the wool exported. *Corn Trade.*—The principal trade of Odessa is with Constantinople, Smyrna, and other towns in the Levant, Naples, Leghorn, Genoa, Marseilles, etc. "It is generally stated," says Mr. Jacob (*Memoir on the Trade of the Black Sea*, in the *Appendix* to the octavo edition of *Tracts on the Corn Trade*), "that the supply of Constantinople requires annually 100,000 quarters of Black Sea wheat. The Greek Islands scarcely, on the average of years, produce sufficient wheat for their own consumption, and in some years require a large supply, which is furnished partly from the neighboring continent, and partly from the Black Sea. The Asiatic coasts of the Turkish Empire, especially in Anatolia, are nearly in the same predicament. At times the market of Smyrna is very favorable for the sale of the corn of Southern Russia. The islands of Malta and Gozo produce only about half as much corn as the 120,000 inhabitants require. Sicily, though it has greatly declined from its ancient productiveness, has still a quantity of grain to spare for the less fruitful parts of Italy in most years, and its wheat enters into competition with that of the Black Sea, in the ports of Naples, Genoa, and Leghorn. There are few years in which Tuscany grows a sufficiency of wheat; and its chief port, Leghorn, being one of those in which ships can unload their cargoes of corn, without being detained to perform quarantine, has been at all times a place of deposit for the wheat of the Black Sea. A market at some price may always be found there, as the capitalists are disposed to purchase, relying on the uncertain productiveness of some adjacent country, in which they may realize a profit at no great distance. Genoa, like Leghorn, is a port where wheat can be unloaded within the bounds of the lazaretto. The country around it yields but little wheat; and at some periods it enjoys a trade in that article even as far as Sunderland. This internal demand, and the chance of advantageous re-exportation, induces much trade in corn. There is said to be seldom less than 100,000 quarters in store at the two ports of Genoa and Leghorn, and at some periods a far greater quantity. Nice, though not having the same advantageous quarantine regulations, and, consequently, not being a *dépôt* for corn beyond its own demand, from the sterile soil that surrounds it, requires every year a large importation

of wheat. That of Sicily and Odessa creates a competition in its port, and the government draws a revenue by imposing a heavy duty on both. Though the corn laws of France have kept the ports closed against the introduction of foreign corn for domestic use, yet it is allowed to be bonded for re-exportation. From the frequent local and partial scarcities which occur on the eastern coast of Spain, at which periods wheat is allowed to be lawfully imported, and, it is said, from the facility of its introduction by contraband when not legally allowed, Marseilles has been a great *dépôt* for the wheat of the Black Sea. From thence, as also from Gibraltar, where there is generally some in store, it can easily be transported to Spain, to Sardinia, to Corsica, to Tunis, to Tripoli, or wherever scarcity has created a beneficial market. The coasts of Barbary, though often having a surplus of wheat, much of which occasionally assists to feed Portugal, in some seasons have been affected with most deficient harvests. This was recently the case in a remarkable degree. Tripoli and Tunis experienced, in the year 1820, a harvest most miserably short, and were supplied from other countries." The warehouse rent of corn at Odessa is from eight to ten copecks per chetwert per month. M. De Hagemeister supposes that Turkey and the different ports of the Mediterranean require, at an average, an annual supply of 1,400,000 chetwerts, or about 1,050,000 quarters, of which 1,000,000 chetwerts, or 750,000 quarters, are furnished by Southern Russia, and principally shipped from Odessa. Wallachia and Moldavia are both very fertile in corn; and were tranquillity and good order introduced into them, and the free navigation of the Danube secured, Galacz and Brailoff would be two of the principal European grain-shipping ports.—See the excellent Report of HAGEMEISTER on the Trade of the Black Sea, p. 96–114, Engl. Trans. Exclusive of corn, the other articles mentioned as being exported from Odessa find their way to the different markets in the Mediterranean. Those shipped for Turkey are iron, tallow, sail-cloth, cordage, anchors for ships of war, butter, etc. The exports to Italy and other European countries are similar. The importation of all foreign articles into the Russian dominions on the Black Sea and the Sea of Azof is confined to Odessa, Theodosia or Kaffa, and Taganrog. The import trade is, however, of inferior importance when compared with the export trade. The principal articles are sugar and coffee, dye-woods, vine and brandy, cotton stuffs and yarn, woolen and silk manufactures, spices, cutlery; oranges, lemons, figs, and other fruit; lemon-juice, oil, tin and tin plates, dried fruits, paper, silk, specie, etc.

Odessa, in addition to its great and rapidly increasing trade with Constantinople and the countries on the Mediterranean, had, before the war of 1854–1855, a considerable trade with Redout-kalé at the mouth of the Phasis, and with Trebizond and several ports on the south coast of the Black Sea. Georgian and Armenian merchants are already considerable purchasers at the Leipsic and other German fairs, and civilization is beginning to strike its roots throughout all the extensive countries between the Black Sea and the Caspian. It is probable that at no very remote period the Phasis will be frequented by British ships; and that merchants, without any enchantress to aid them, and depending only on the superior cheapness and excellence of their goods, will be hospitably received in the ancient Colchis, and bear away a richer prize than fell to the lot of Jason and his compeers.—See RUSSIA.

Offing, or Offin, in Nautical language, that part of the sea, a good distance from shore, where there is deep water and no need of a pilot to conduct the ship. Thus if a ship from shore be seen sailing out to seaward, they say, "She stands for the offing;" and if a ship, having the shore near her, have another a good way without or beyond her, toward the sea, they say, "That ship is in the offing."

Ohio, one of the United States, lies between lat. 38° 30' and 42° N., and between long. 80° 35' and 84° 47' W. It is 210 miles long from north to south, and 200 miles broad. Area, 39,964 square miles. The population in 1790 was 8000; in 1800, 45,365; in 1810, 230,760; in 1820, 581,434; in 1830, 937,637; in 1840, 1,519,467; and in 1850, 1,980,408. The land in the interior of the State and bordering on Lake Erie is generally level, and in some places marshy. From one quarter to one third of the State, comprehending the eastern and southeastern parts, bordering on the Ohio River, is generally hilly and broken, but in no part mountainous. On the margin of the Ohio River and several of its tributaries are alluvial lands of great fertility. The valleys of the Scioto and the Great and Little Miami are the most extensive sections of level, rich, and fertile lands in the State. At the head of the Muskingum River are prairies of considerable extent, some of which are wet, though generally dry and fertile. The height of land which divides the waters which fall into the Ohio from those which fall into Lake Erie is the most marshy of any in the State, while the land on the margin of the rivers is generally dry. Wheat may be regarded as the staple production of the State, though Indian corn and other grains are largely cultivated. It is rich in mineral wealth, iron, coal, limestone, marble, and superior building stone, grind-stones, etc. There are many valuable salt springs. There were in this State in 1850, 9,851,493 acres of land improved, and 8,146,000 of unimproved land in farms; cash value of farms, \$358,758,603; and the value of implements and machinery, \$12,750,585. *Live Stock*—horses, 463,397; asses and mules, 3423; milch cows, 544,499; working oxen, 65,381; other cattle, 749,067; sheep, 3,942,929; swine, 1,964,770. Value of live stock, \$44,121,741.

Agricultural Products, etc.—Wheat, 14,487,351 bushels; rye, 425,918; Indian corn, 59,078,695; oats, 13,472,742; barley, 354,358; buckwheat, 688,060; peas and beans, 60,168; potatoes, 5,057,769; sweet potatoes, 187,991. Value of products of the orchard, \$695,921; of the market-gardens, \$214,004. Pounds of butter made, 34,449,379; of cheese, 20,819,542; maple sugar, 4,588,209; molasses, 197,308 gallons; beeswax and honey, 804,275 pounds; wool produced, 10,196,371; flax, 446,932; silk cocoons, 1552; hops, 63,731; tobacco, 10,454,449; hay, tons of, 1,433,142; hemp, 150; clover-seeds, 103,197 bushels; other grass seeds, 37,310; flax-seed, 188,880; and were made, 48,207 gallons of wine. Value of home-made manufactures, \$1,712,196; of slaughtered animals, \$7,439,243.

Rivers, etc.—The Ohio River, which gives name to the State, washes its entire southern border. This river is 1004 miles long from Pittsburg to its mouth, by its various windings, though it is only 614 in a direct line.—See OHIO RIVER. The Muskingum, the largest river which flows entirely in this State, is formed by the junction of the Tuscarawas and Walhonding rivers, and enters the Ohio at Marietta. It is navigable for boats 100 miles. The Scioto, the second river in magnitude, flowing entirely within the State, is about 200 miles long, and enters the Ohio at Portsmouth. Its largest branch is the Whetstone, or Olentangy, which joins it immediately above Columbus. It is navigable for boats 180 miles. The Great Miami, a rapid river in the western part of the State, is 100 miles long, and enters the Ohio in the southwest corner of the State. The Little Miami has a course of seventy miles, and enters the Ohio seven miles above Cincinnati. The Maumee, 100 miles long, rises in Indiana, runs through the northwest part of the State, and enters Lake Erie at Maumee Bay. It is navigable for steamboats to Perrysburg, eighteen miles from the lake, and above the rapids is boatable for a considerable distance. The Sandusky rises in the northern part of the State, and, after a course of about eighty miles, enters Sandusky Bay, and thence into Lake Erie.

The Cuyahoga rises in the north part of the State, and after a curved course of sixty miles, enters Lake Erie at Cleveland. It has a number of falls, which furnish valuable mill seats. Besides these there are Huron, Vermilion, Black, Grand, and Ashtabula rivers, which enter Lake Erie.

The principal places are Cincinnati, the metropolis; Columbus, the Capital; Cleveland, Sandusky, Dayton, Springfield, Zanesville, Marietta, and Portsmouth. There were in February, 1854, sixty-eight banks, with a paid capital of \$8,718,366; in January, 1856, forty-six railroads, of which 2725 miles of track were finished and in operation, and 1578 in course of construction. Tonnage of the State in 1853, 25,632 tons.

Manufactures, etc.—There were in the State in 1850 eight cotton factories, with a capital invested of \$297,000, employing 132 males and 269 females, producing 280,000 yards of sheetings, etc., and 443,000 pounds of yarn, valued at \$394,700; 130 woolen factories, with a capital of \$870,220, employing 903 males and 298 females, manufacturing 1,374,087 yards of cloth, and 65,000 pounds of yarn, valued at \$1,111,027; thirty-five establishments making pig-iron, with a capital of \$1,503,000, employing 2415 persons, producing 52,658 tons of pig-iron, etc., and the entire value of products, \$1,255,850; 183 establishments, with a capital of \$2,063,650, employing 2758 persons, and making 37,399 tons of iron castings, etc., valued at \$3,069,350; eleven establishments, with a capital of \$620,800, employing 708 persons, manufacturing 14,416 tons of wrought iron, valued at \$1,076,192; 1082 flouring and grist-mills; 1730 saw-mills; 243 printing-offices, 302 newspapers, twenty-eight daily, six tri-weekly, four semi-weekly, 222 weekly, seven semi-monthly, twenty monthly, and one yearly publication. Capital invested in manufactures, \$28,612,136; value of manufactured articles, \$61,915,036.—See PORK for further information.

Educational Establishments, etc.—The University of Ohio at Athens, the Miami University at Oxford, Franklin College at New Athens, the Western Reserve College at Hudson, Kenyon College at Gambier, Granville College at Granville, Marietta College at Marietta, Oberlin College at Oberlin, St. Xavier at Cincinnati, Ohio Wesleyan University at Delaware, Wittenberg College at Springfield, Willoughby University at Willoughby, Lane Theological Seminary at Cincinnati. There are also theological departments at Kenyon, Western Reserve at Hudson, Granville at Granville, Oberlin at Oberlin, Wittenberg at Springfield, and a seminary of the Associate Reformed Church at Oxford, Western Reserve Medical College at Cleveland, Medical College of Ohio at Cincinnati, Medical College (Homeopathic) at Cleveland, Starling Medical College at Columbus, and Cincinnati Law College at Cincinnati. The whole having, in 1850, 3621 students. There were also 206 academies, 5052 pupils; 11,661 schools, 484,153 scholars; 352 libraries—aggregate number of volumes, 186,826. School fund, \$304,474.

The first permanent settlement in Ohio was made in 1788 at Marietta. In 1802 Ohio was admitted into the Union.

The progress of banking in the State of Ohio is shown in the following summary:

Year.	Number of Banks.	Capital.
1805	1	\$200,000
1811	4	895,000
1815	12	1,484,000
1816	21	2,061,000
1820	20	1,797,000
1835	24	5,819,000
1838	33	9,247,000
1840	37	10,507,000
1845	8	2,171,000
1850	56	7,129,000
1856	60	6,995,900
1857	54	5,398,000

The free-banking law of Ohio was adopted in the year 1851, and forms at present a part of the banking system in operation.

FOREIGN COMMERCE OF THE STATE OF OHIO (SHOWING ALSO THE DISTRICT TONNAGE IN 1831, 1831, 1841, AND 1851) FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Tonnage Cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821.....		....		\$12	....	....	331	716
1822.....	\$105	....	\$105	190	....	....	....	....
1823.....	....	....	....	161	81	....	....	....
1824.....	....	....	....	....	....	....	....	....
1825.....	....	....	....	....	....	....	....	....
1826.....	1,810	....	1810	....	339	....	....	....
1827.....	....	....	....	....	....	....	....	....
1828.....	....	....	....	....	....	....	....	....
1829.....	2,004	....	2004	293	....	....	....	....
1830.....	....	....	....	162	56	49	....	....
Total...	\$3,919	....	\$3,919	\$818	456	49	....	....
Sept. 30, 1831.....	\$14,728	....	\$14,728	\$617	91	138	120	1622
1832.....	58,394	....	58,394	12,392	269	1,341	....	....
1833.....	225,544	....	225,544	8,353	2,041	4,125	....	....
1834.....	241,451	....	241,451	19,767	2,999	3,756	....	....
1835.....	97,061	\$140	97,201	9,808	2,166	4,371	....	....
1836.....	8,718	....	8,718	10,960	165	2,443	....	....
1837.....	132,844	....	132,844	17,747	4,249	4,558	....	....
1838.....	139,827	....	139,827	12,895	1,141	2,438	....	....
1839.....	95,854	....	95,854	19,280	4,716	1,987	....	....
1840.....	991,954	....	991,954	4,915	8,708	3,265	....	....
Total...	\$2,001,875	\$140	\$2,001,515	\$116,734	26,485	28,922	....	....
Sept. 30, 1841.....	\$793,114	....	\$793,114	\$11,318	9,600	2,624	....	25,111
1842.....	899,786	....	899,786	13,051	14,890	8,596	....	....
9 mos., 1843*.....	120,108	....	120,108	10,774	1,245	5,170	....	....
June 30, 1844.....	543,856	....	543,856	36,015	2,653	14,162	....	....
1845.....	321,114	....	321,114	78,196	6,294	1,201	....	....
1846.....	352,630	....	352,630	102,714	6,222	4,331	....	....
1847.....	778,944	....	778,944	90,681	7,144	10,223	....	....
1848.....	147,599	....	147,599	186,726	7,065	5,553	....	....
1849.....	149,724	....	149,724	149,839	6,957	9,821	....	....
1850.....	217,532	\$100	217,632	582,574	15,485	18,322	....	....
Total...	\$4,324,407	\$100	\$4,324,507	\$1,261,908	77,535	80,803	....	....
June 30, 1851.....	\$395,125	....	\$395,125	\$686,331	18,720	11,866	....	58,352
1852.....	353,514	....	353,514	932,216	14,844	11,222	....	....
1853.....	158,418	....	158,418	847,760	22,630	9,939	....	....
1854.....	743,004	\$1580	744,584	790,082	37,054	18,234	....	....
1855.....	847,143	....	847,143	600,656	26,339	18,890	....	....
1856.....	1,045,052	....	1,045,052	463,473	28,252	42,676	....	....

* Nine months to June 30, and fiscal year begins July 1, 1843.

FINANCES OF THE STATE OF OHIO.

Fiscal Years.	Foreign and Domestic State Debt.	Annual Interest on State Debt.	Taxable Property of State, Real and Personal.	Gross Revenue of State.	Gross Expenditures of State.
1833.....	\$4,750,000	\$265,000	\$78,019,526	\$208,739	\$288,750
1834.....	4,891,660	293,500	75,598,312	261,326	277,949
1835.....	4,979,287	294,757	94,438,016	201,766	235,865
1836.....	5,857,833	351,470	85,812,382	301,059	269,660
1837.....	6,186,516	368,190	91,591,745	327,863	257,560
1838.....	6,905,790	414,343	106,953,018	451,757	324,702
1839.....	10,030,162	601,809	111,224,197	655,995	632,823
1840.....	14,012,230	770,822	112,037,651	306,493	295,090
1841.....	15,573,854	934,401	128,353,657	255,332	192,279
1842.....	16,947,325	1,016,839	132,343,835	292,224	227,863
1843.....	18,668,821	1,120,099	138,663,794	328,270	233,462
1844.....	19,276,751	1,167,444	136,142,666	371,963	230,141
1845.....	19,251,180	1,140,706	144,160,469	1,538,456	1,869,937
1846.....	19,246,002	1,164,260	150,293,132	2,081,384	2,038,027
1847.....	19,233,847	1,163,509	409,897,379	2,644,785	2,397,605
1848.....	19,173,223	1,159,893	419,897,236	2,473,702	2,137,194
1849.....	19,026,200	1,147,854	422,665,629	2,511,119	2,383,135
1850.....	18,744,594	1,124,536	439,876,340	2,536,553	2,961,551
1851.....	15,594,893	923,343	462,148,620	2,878,656	2,676,369
1852.....	15,520,763	919,496	507,581,911	3,016,403	2,736,060
1853.....	15,213,129	901,191	593,396,843	2,864,07	2,696,118
1854.....	14,524,886	859,596	866,979,932	3,715,105	3,993,253
1855.....	14,008,225	829,253	860,877,354	3,631,173	3,512,844
1856.....	14,008,274	829,253	820,661,037	3,589,353	3,712,206

Cincinnati, the metropolis of Ohio, capital of Hamilton county, and one of the leading commercial places west of the Alleghany Mountains. It is situated on the right bank of the Ohio River, 455 miles below Pittsburgh, 1548 miles above New Orleans, and 502 miles from Washington. It is the largest city of the Mississippi Valley, north of New Orleans, and the fifth in population in the United States. Population in 1800, 750; in 1810, 2540; in 1830, 24,831; in 1840, 46,338; in 1845, 65,000; in 1850, 115,438; in 1853, 160,141. The Ohio River at Cincinnati is 1800 feet, or about one-third of a mile wide, and its mean annual range from low to high water is about fifty feet; the extreme range may be about ten feet more. Depressions are gener-

ally in August, September, and October, and the greatest rise in December, March, May, and June. The upward navigation is in winter very rarely suspended by floating ice, and in some winters not at all. Its current at its mean height is about three miles an hour; when higher, or rising, it is more; and when very low, it does not exceed two miles. Cleveland, Toledo, and Sandusky, on Lake Erie, export largely in grain, lumber, and manufactured goods.—See *North American Review*, lxiii. 320 (HILDRETH), xxii. 459 (SPARKS), xlvii. 1 (J. H. PERKINS), xlix. 69; *American Journal of Science*, xlv. 12; *DE BOW'S Review*, iii. 129; *Bankers' Magazine*, 1856; *HUNT'S Merchants' Magazine*, xxi. 389.

Ohio, a large river of the United States, formed by the confluence of the Alleghany from the north and the Monongahela from the south at Pittsburg, in the western part of Pennsylvania, lat. 40° 32' N. and long. 80° 2' W., at the height of 1138 feet above tide-water in the Atlantic. It proceeds in a direction west-south-west, dividing the states of Virginia and Kentucky on the south from Ohio, Indiana, and Illinois on the north, and enters the Mississippi in lat. 37° N. and long. 88° 58' W. Its length from Pittsburg to its mouth, by the course of the river, is 948 miles; but the distance in a direct course is only 614 miles. It has a descent, in its whole course, of 395 feet, making an average descent of not quite five inches in a mile. The width of the Ohio varies from 400 to 1400 yards; its average width is 534 yards, opposite to Cincinnati, which is about equidistant from Pittsburg to its confluence with the Mississippi, where it is about 900 yards wide. The great valley drained by this river contains over 218,000 square miles, and a population of over 5,000,000, which is rapidly increasing. There are no considerable falls in this river excepting at Louisville, Kentucky, where it descends 22½ feet in two miles. These falls have been obviated by a canal around them, which admits of the passage of the largest steamboats; but boats ascend and descend these rapids, when the water is high. The current of the Ohio, when low, does not exceed two miles an hour; when at a mean height, three miles; and when higher and rising, four or five miles. The highest water occurs in December, March, May, and June; and the lowest in August, September, and October. The average difference between high and low water is 40 feet; its extreme range on record, 64 feet (at Cincinnati). During eight or ten weeks in the winter, the navigation is obstructed by floating ice. Of the two confluent rivers which form the Ohio, the Alleghany is the most important, being navigable for boats 260 miles to Olean, New York, and will hereafter, by means of the Genesee Valley Canal, terminating at this place, and extending to the Erie Canal, form an important communication between the city of New York and the West. The principal tributaries of the Ohio on the north are the Beaver, Muskingum, Scioto, the two Miamis, Whitewater, and Wabash; those on the south are the Kanawha, Sandy, Licking, Kentucky, Green, Cumberland, and Tennessee. Some of these are navigable at high water to a great extent by boats and steamboats. The Tennessee is navigable by boats for 1000 miles; the Cumberland is navigable for steamboats to Nashville, and for keel-boats 300 miles further; the Wabash is navigable for 200 miles; Green River, 200 miles; Kentucky, 150; Great Kanawha, 64 miles, to the salt works. The Ohio, with its tributaries, has 5000 miles of navigable waters.

The whole fall of the Ohio from Pittsburg to Cairo is estimated at 425 feet, and the distance is 977 miles. The average fall per mile is therefore less than five inches. The fall of the River Thames is greater than this, being an average of nearly seven inches per mile for one hundred and eighty miles. Indeed few rivers of equal length and volume of water have so few falls or rapids impeding navigation as the Ohio.

Its fall, however, is not distributed equally over its whole course, as the following table will show:

	Distance.	Fall.	Averages.
	Miles.	Feet.	Inches.
From Pittsburg to Wheeling..	88	79	10.77
From Wheeling to Cincinnati.	374	188	6
From Cincinnati to Louisville.	166	55	4.2
From Louisville to Falls.....	3	27	100
From Falls to Evansville	169	33	2.85
From Evansville to Cairo.....	187	45	2.9

From this table it will be seen that were it necessary to "canalize" the whole river, from its mouth to Pittsburg, it would be the most magnificent channel of trade on the face of the globe. No canal was ever constructed, and probably none could be constructed, of equal length, with comparatively as little lockage as this.

The Erie Canal has about five times the lockage in proportion to its length; and the Pennsylvania Canal, from Pittsburg to Johnstown, has more than ten times as much. But it should be remembered that it will be unnecessary, for the purpose of making this great improvement, to overcome all this fall of 425 feet by means of locks and dams. A large part of this whole descent is due to the gentle flow of the river, through the long pools which make up the most of its distance, and which, in their natural condition, afford a sufficient depth of water at all seasons of the year for the purposes of navigation. What proportion of this whole fall of 425 feet is thus due to these pools, which need no improvement, we are unable to determine; but it must be a very considerable proportion of it, and would leave a comparatively small aggregate to be overcome by locks and dams or wing dams. It would be unnecessary to construct these dams so high as to flow back the water from one to the other, but only to rise from one of these pools to another, or perhaps, in some cases, to unite one or more of them in one. To reduce the whole river to a series of long levels, as in the construction of canals, would not be required, and indeed would be liable to grave objections on the score of health. A depth of about five feet at the lowest stage of water would be all that would be necessary to render the Ohio the most important channel of commerce in the world. This depth could be had without affecting unfavorably the healthfulness of the river, and would be enough for the first class of steamers which now ply on the river.

The volume of water in this stream, in an improved condition, would be ample, for ten or eleven months in the year, to meet the wants of a commerce large enough to tax to the utmost the capacity of ten canals equal to the Erie when enlarged; and so favorable is the climate, that the obstructions from ice would be of very short duration, if, indeed, such impediments would ever occur. It is well known that the Monongahela suffers less inconvenience from ice, in its present condition, than it did before it was improved by locks and dams, and no good reason can be given why the same results would not follow the improved navigation of the Ohio. That the growing demands of trade in the Great West will imperatively require this great work to be speedily accomplished, no man who has at all considered this subject can for one moment doubt. Saying nothing of the great staples of agriculture, which already seek our Eastern cities through the valley of the Ohio, and which will continue to increase in a ratio that will almost defy computation, there are immense resources of undeveloped mineral wealth, whose tonnage will soon exceed that of all the traffic now done upon the river, and upon all the railroads running nearly parallel with it through the Western States. The vast treasures of coal, iron, and salt, are there in store for the scores of millions which will soon inhabit the rich valley of the Ohio. But admitting that the river, when improved by locks and dams, would impose a heavy expense for lockage, still the actual expense of navigation would be far less than is now imposed upon it, in consequence of the ruinous delays and disruptions of business, arising from the sudden rise and fall of the river. Though subjected to tolls at the locks, the certainty and regularity with which steamers could make their trips would more than compensate this expense. The whole system of passage and freight would be systematized, and in the aggregate rendered far less expensive and hazardous. Indeed, in whatever light this grand scheme may be viewed, it is matter of surprise that public attention has not been fully directed to it before, and that statesmen should not long ago have urged its paramount importance upon the attention of Congress.—See article MISSISSIPPI RIVER.

Oil (Fr. *Huile*; Germ. *Oel*; It. *Olîe*; Lat. *Oleum*; Russ. *Maslo*; Sp. *Acêite*). The term *oil* is applied to

designate a number of unctuous liquors, which, when dropped upon paper, sink into it, and make it seem semi-transparent, or give it what is called a greasy stain. These bodies are very numerous, and have been in common use from time immemorial. Chemists have divided them into two classes; namely, *volatile* and *fixed* oils. Oil was used for burning in lamps as early as the epoch of Abraham, about 1921 B.C. It was the staple commodity of Attica, and a jar full was the prize at the Panathenean games. It was the custom of the Jews to anoint with oil persons appointed to high offices, as the priests and kings, *Psalm cxxxiii. 2; 1 Sam. x. 1, xvi. 13*. The anointing with this liquid seems also to have been reckoned a necessary ingredient in a festival dress, *Ruth, iii. 3*. The fact that oil, if passed through red-hot iron pipes, will be resolved into a combustible gas, was long known to chemists; and after the process of lighting by coal-gas was made apparent, Messrs. Taylor and Martineau contrived apparatus for producing oil-gas on a large scale.—HAYDN.

We borrow from Dr. Thomas Thomson the following statement with respect to these bodies:

I. **VOLATILE OILS**, called also *essential oils*, are distinguished by the following properties: 1. Liquid, often almost as liquid as water, sometimes viscid; 2. Very combustible; 3. An acrid taste and a strong fragrant odor; 4. Volatilized at a temperature not higher than 212°; 5. Soluble in alcohol, and imperfectly in water; 6. Evaporate without leaving any stain on paper. By this last test it is easy to discover whether they have been adulterated with any of the fixed oils. Let a drop of the volatile oil fall upon a sheet of writing-paper, and then apply a gentle heat to it; if it evaporates without leaving any stain upon the paper, the oil is pure; but if it leaves a stain upon the paper, it has been contaminated with some fixed oil or other. Volatile oils are almost all obtained from vegetables, and they exist in every part of plants—the root, the bark, the wood, the leaves, the flower, and even the fruit, though they are never found in the substance of the cotyledons; whereas the fixed oils, on the contrary, are almost always contained in these bodies. When the volatile oils are contained in great abundance in plants, they are sometimes obtained by simple expression. This is the case with oil of oranges, of lemons and bergamot; but in general they can only be obtained by distillation. The part of the plant containing the oil is put into a still with a quantity of water, which is distilled off by the application of a moderate heat. The oil comes over along with the water, and swims upon its surface in the receiver. By this process are obtained the oils of peppermint, thyme, lavender, and a great many others, which are prepared and employed by the perfumer. Others are procured by the distillation of resinous bodies. This is the case in particular with oil of turpentine, which is obtained by distilling a kind of resinous juice, called turpentine, that exudes from the juniper. Volatile oils are exceedingly numerous. They have been long known; but as their use in chemistry is but limited, they have not hitherto been subjected to an accurate chemical investigation. They differ greatly in their properties from each other, but it is impossible at present to give a detailed account of each.

1. The greater number of volatile oils are *liquid*; many, indeed, are as limpid as water, and have none of that appearance which we usually consider oily. This is the case with the following; namely, oil of turpentine, oranges, lemons, bergamot, roses. Others have the oily viscosity. It varies in them in all degrees. This is the case with the oils of mace, cardamom, saffron, cloves, cinnamon. Others have the property of becoming solid. This is the case with the oils of parsley, fennel, anise seed, balm. Others crystallize by slow evaporation. This is the case with oil of thyme, peppermint, marjoram. The oil of nutmegs has usually the consistence of butter. This is the case also with the oils of hops and of pepper. 2. The color

of the volatile oils is as various as their other properties. A great number are limpid and colorless; as oil of turpentine, lavender, rosemary, savine, anise seed: some are yellow; as spike, bergamot; some are brown; as thyme, savory, wormwood: others blue; as camomile, motherwort: others green; as milfoil, pepper, hops, parsley, wormwood, cajuput, juniper, sage, valerian: others, though at first colorless, become yellow or brown by age; as cloves, cinnamon, saffron. 3. The odors are so various as to defy all description. It is sufficient to say, that all the fragrance of the vegetable kingdom resides in volatile oils. Their taste is acrid, hot, and exceedingly unpleasant. 4. Their specific gravity varies very considerably, not only in different oils, but even in the same oil in different circumstances. When the volatile oils are heated in the open air, they evaporate readily, and without alteration diffuse their peculiar odors all around; but there is a considerable difference between the different oils in this respect. When distilled in close vessels, they do not so readily assume the form of vapor. Hence they lose their odor, become darker in color, and are partly decomposed. Oils do not seem very susceptible of assuming the gaseous form, unless some other substance, as water, be present.

II. **FIXED OILS** are distinguished by the following characters: 1. Liquid, or easily become so when exposed to a gentle heat; 2. An unctuous feel; 3. Very combustible; 4. A mild taste; 5. Boiling point not under 600°; 6. Insoluble in water, and nearly so in alcohol; 7. Leave a greasy stain upon paper.

These oils, which are called fat or expressed oils, are numerous, and are obtained partly from animals and partly from vegetables, by simple expression. As instances, may be mentioned whale oil or train oil, obtained from the blubber of the whale and from cod: olive oil, obtained from the fruit of the olive; linseed oil and almond oil, obtained from linseed and almond kernels. Fixed oils may also be extracted from poppy seeds, hemp seeds, beech mast, and many other vegetable substances.

All these oils differ from each other in several particulars, but have also many particulars in common.

1. Fixed oil is usually a liquid with a certain degree of viscosity, adhering to the sides of the glass vessels in which it is contained, and forming streaks. It is never perfectly transparent; has always a certain degree of color, most usually yellowish or greenish; its taste is sweet, or nearly insipid. When fresh it has little or no smell.

There exist also in the vegetable kingdom a considerable number of bodies which, at the ordinary temperature of the atmosphere, are solid, and have hitherto been considered as fixed oils. Palm oil may be mentioned as an example. The various substances used in India and Africa as substitutes for butter, and as unguents, may likewise be mentioned.

2. All the fixed oils hitherto examined are lighter than water, but they differ greatly from one another in specific gravity. The same difference is observable in different samples of the same oil. Fixed oil, when in the state of vapor, takes fire on the approach of an ignited body, and burns with a yellowish white flame. It is upon this principle that candles and lamps burn. The tallow or oil is first converted into a state of vapor in the wick; it then takes fire, and supplies a sufficient quantity of heat to convert more oil into vapor; and this process goes on while any oil remains. The wick is necessary to present a sufficiently small quantity of oil at once for the heat to act upon. If the heat were great enough to keep the whole oil at a temperature of 600°, no wick would be necessary, as is obvious from oil catching fire spontaneously when it has been raised to that temperature. When oil is used in this manner, either in the open air or in contact with oxygen gas, the only new products obtained are *water* and *carbonic acid*. The drying oils are used as the vehicle of paints and varnishes. Linseed, nut, poppy, and

hemp-seed oils belong to this class. These oils in their natural state possess the property of drying oils, but imperfectly. To prepare them for the use of the painter and varnish maker, they are boiled for some time in an iron pot, and sometimes burned till they become viscid. When they burn for some time, their unctuous quality is much more completely destroyed than by any method that has been practiced. Hence it is followed frequently in preparing the drying oils for varnishes, and always for printers' ink, which requires to be as free as possible from all unctuousity. Nut oil has been found preferable to all other oils for printers' ink; though the dark color which it acquires during boiling renders it not so proper for red ink as for black. Linseed oil is considered as next after nut oil in this respect. Other oils can not be employed, because they can not be sufficiently freed from their unctuousity. Ink made with them would be apt to come off and smear the paper while in the hands of the bookbinder, or even to spread beyond the mark of the types and stain the paper yellow.

The kind of oil used for burning in lamps varies, in different parts of the world, with the sources of supply. Whale oil is used in Great Britain, but seal oil, fish oil, and oils obtained from seeds by pressure are also

largely consumed. In Paris the oils of rape-seed and of poppy-seed are used; and in the south of France, and in Italy, an inferior kind of olive oil, and also the oil of the earth-nut, are employed. In the latter country a lamp oil is expressed from grape-stones. In Piedmont walnut oil is common; oil of sesamum-seed is burned on the eastern and southern coasts of the Mediterranean; while in tropical countries cocoa-nut oil, which is solid in the climate of Great Britain, is generally used. In China, the *Camellia oleifera* is cultivated for the sake of the oil obtained from its seeds; also a shrub, *Croton sebiferum*, the fruit of which yields a useful oil. In consequence of the deficient supply of tallow during the late war with Russia, inquiries have been set on foot in various parts of the world as to the seeds and other vegetable products from which oil may be obtained, and the result of these inquiries has already shown that many oil-yielding substances, not before known in commerce, exist. The export of oils from the East Indies, especially *gingelly*, has greatly increased. Pistachio-nut oil is becoming common, as is also ground-nut oil from Africa. All these oils are used for burning in lamps.

The following is a list of the plants which yield the ordinary unctuous oils of commerce:

No.	Plants.	Oils.	Specific Gravity
1.	<i>Linum usitatissimum</i> et <i>perenne</i> D.	Linseed oil.....	0.9347
2.	<i>Corylus avellana</i> D.	Nut oil.....	0.9260
3.	<i>Juglans regia</i> D.	Poppy oil.....	0.9243
4.	<i>Papaver somniferum</i> D.	Hemp oil.....	0.9276
5.	<i>Cannabis sativa</i> D.	Oil of sesamum.....	0.9176
6.	<i>Sesamum orientale</i> G.	Olive oil.....	0.9180
7.	<i>Olea Europea</i> G.	Almond oil.....	0.9231
8.	<i>Amygdalus communis</i> G.	Oil of behen or ben.....	0.9231
9.	<i>Grilandina mohringia</i> G.	Cucumber oil.....	0.9231
10.	<i>Cucurbita pepo</i> , and <i>melapepo</i> D.	Beech oil.....	0.9235
11.	<i>Fagus silvatica</i> G.	Oil of mustard.....	0.9160
12.	<i>Siapis nigra</i> et <i>arvensis</i> D.	Oil of sunflower.....	0.9262
13.	<i>Helianthus annuus</i> et <i>perennis</i> D.	Rape-seed oil.....	0.9136
14.	<i>Brassica napus</i> et <i>campestris</i> D.	Castor oil.....	0.9611
15.	<i>Ricinus communis</i> D.	Tobacco-seed oil.....	0.9232
16.	<i>Nicotiana tabacum</i> et <i>rustica</i> D.	Plum-kernel oil.....	0.9127
17.	<i>Prunus domestica</i> G.	Grape-seed oil.....	0.9202
18.	<i>Vitis vinifera</i> D.	Butter of cacao.....	0.892
19.	<i>Theobroma cacao</i> G.	Cocoa-nut oil.....	0.968
20.	<i>Cocos nucifera</i> G.	Palm oil.....	0.968
21.	<i>Cocos butyracea</i> vel <i>avoiira elais</i> G.	Laurel oil.....	0.926
22.	<i>Laurus nobilis</i> G.	Ground-nut oil.....	0.926
23.	<i>Atachia hypogaea</i> G.	Piney tallow.....	0.9281
24.	<i>Vateria indica</i> D.	Oil of Julienne.....	0.9252
25.	<i>Hesperis matronalis</i> D.	Oil of camellina.....	0.9358
26.	<i>Myagrurn sativa</i> D.	Oil of wild-seed.....	0.9240
27.	<i>Reseda luteola</i> D.	Oil of garden cresses.....	0.9250
28.	<i>Lepidium sativum</i> D.	Oil of deadly night-shade.....	0.9136
29.	<i>Atropa belladonna</i> D.	Summer rape-seed oil.....	0.9139
30.	<i>Gossypium Barbadense</i> D.	Oil of radish-seed.....	0.9187
31.	<i>Brassica campestris oleifera</i> G.	Cherry-stone oil.....	0.9239
32.	<i>Brassica præcox</i> G.	Apple-seed oil.....	0.9880
33.	<i>Raphanus sativus oleifer</i> G.	Spindle-tree oil.....	0.9189
34.	<i>Prunus cerasus</i> G.	Cornil-berry tree oil.....	0.9130
35.	<i>Pyrus malus</i> G.	Oil of the roots of cyper grass.....	0.927
36.	<i>Eunonymus Europæus</i> G.	Henbane-seed oil.....	0.927
37.	<i>Cornus sanguinea</i> G.	Horse-chestnut oil.....	0.925
38.	<i>Cyperus esculentus</i> G.	Pinetop oil.....	0.925
39.	<i>Hosclanmus niger</i> G.		
40.	<i>Esculus hippocastanum</i> G.		
41.	<i>Pinus abies</i> D.		

Candia.—A fair crop or yield of olive oil is estimated at two million gallons, and two and a half millions an abundant crop. Although immense numbers of olive-trees were cut down during the "Greek war" and the civil commotion in 1840, the population is still insufficient to attend to them, and the only culture they receive is slightly plowing the ground on which they stand. The fruit is allowed to drop from the tree, when it is collected by women and children, who receive for their trouble one-third the quantity they collect; if the crop is abundant, generally one quarter is lost for want of hands to collect it. In the district of Opokero the fruit is beaten from the trees, evidently to its injury, for it is smaller in that section than in any other part of the island. The fruit is collected in heaps and taken to a wooden mill of very primitive and rough construction, operated by four men. The oil from the first pressure belongs to the owner of the

olives, out of which the government receives one-tenth; the mass is again pressed, and one-third quantity, in comparison with the first pressure, is obtained, although of an inferior quality; this is divided into tenths, one of which belongs to the government, two divided among the workmen, and the remainder belongs to the owner of the mill.

WHALE OIL.

STATEMENT OF THE QUANTITIES OF OIL AND BONE TRANSHIPPED AT THE SANDWICH ISLANDS IN 1854.

To what Country.	Season.	Sperm Oil.	Whale Oil.	Bone.
		Gallons.	Gallons.	Pounds.
United States	Spring	49,361	257,380	8,765
do.	Fall.	60,449	1,268,365	752,339
do.	do.	46,674	104,760	651,241
Bremen.....	do.	.....	10,244	26,788
Havre.....	do.	.....	25,172	46,810
Total, 1854	....	156,484	1,665,911	1,598,447
do. 1853	....	175,396	3,787,348	2,020,264

IMPORTATIONS OF SPERM AND WHALE OIL AND WHALEBONE INTO THE UNITED STATES IN 1856.

	Sperm Oil.	Whale Oil.	Whalebone.
	Barrels.	Barrels.	Pounds.
New Bedford.....	52,885	81,182	1,087,600
Fairhaven.....	5,606	9,648	26,300
Dartmouth.....	1,027	1,339	8,400
Westport.....	1,247	334	1,500
Mattapoisett.....	979	368	...
Sippican.....	293	32	...
Dis. of New Bedford.	62,127	93,564	1,128,800
Sandwich.....	380	140	1,000
Falmouth.....	307	2,477	18,400
Holmes's Hole.....	288	890	2,000
Edgartown.....	1,227	6,171	104,300
Nantucket.....	6,015	7,354	57,500
Provincetown.....	883	2,806	4,000
Orleans.....	480	889	3,600
Boston.....	379	842	28,500
Salem.....	281	219	1,200
Beverly.....	141	144	...
Fall River.....	50	1,944	11,600
Warren.....	3,073	11,909	109,000
Newport.....	700	...	...
New London.....	961	31,808	249,900
Mystic.....	121	5,146	69,000
Stonington.....	220	6,307	41,500
Sag Harbor.....	664	4,037	32,200
Greenport.....	675	150	4,000
Cold Spring.....	...	2,506	27,000
New York.....	2,083	13,997	691,200
Total for 1856....	80,941	197,890	2,592,700

IMPORTS OF EACH MONTH OF 1856.

	Sperm Oil.	Whale Oil.	Whalebone.
	Barrels.	Barrels.	Pounds.
January, no arrivals.	...	...	...
February.....	2,789	3,284	48,300
March.....	3,074	20,967	678,900
April.....	9,832	49,350	838,600
May.....	18,328	52,246	418,300
June.....	12,826	37,689	324,800
July.....	13,051	13,588	162,000
August.....	5,577	8,115	43,900
September.....	5,004	8,304	38,800
October.....	3,487	2,090	8,200
November.....	4,837	1,362	80,500
December.....	2,036	885	...
Total.....	80,941	197,890	2,592,700

In addition to the above there have been imported into the port of Boston from St. John's, Newfoundland, 3129 barrels seal oil, 124 barrels whale oil, and 20 barrels sperm oil.

The following table gives a summary of the importations of oil and bone into the United States for the past sixteen years:

Years.	Sperm Oil.	Whale Oil.	Whalebone.
	Barrels.	Barrels.	Pounds.
Imports for 1841 ..	153,804	207,348	2,000,000
" 1842 ..	165,637	161,041	1,600,000
" 1843 ..	166,085	206,727	2,000,000
" 1844 ..	131,534	262,047	2,532,445
" 1845 ..	167,917	272,730	3,167,142
" 1846 ..	95,217	207,493	2,270,939
" 1847 ..	120,753	313,150	3,341,650
" 1848 ..	107,976	280,656	2,003,000
" 1849 ..	100,944	248,492	2,281,100
" 1850 ..	92,892	200,608	2,869,200
" 1851 ..	99,591	328,453	3,916,500
" 1852 ..	78,872	84,211	1,259,900
" 1853 ..	103,077	260,114	5,622,300
" 1854 ..	76,696	319,837	3,445,200
" 1855 ..	72,649	184,015	2,707,500
" 1856 ..	80,941	197,890	2,592,700

STATEMENT OF THE AVERAGE PRICES OF SPERM AND WHALE OIL AND WHALEBONE FOR SIXTEEN YEARS PAST, AT NEW YORK AND NEW BEDFORD.

Years.	Sperm Oil.	Whale Oil.	Whalebone.
	100c.	30c.	19c.
1841.....	94	31½	19½
1842.....	73	31½	23
1843.....	63	34½	35½
1844.....	90½	36½	40
1845.....	88	32½	33½
1846.....	87½	33½	34
1847.....	100½	36	30½
1848.....	108 9-10	39 9-10	31 8-10
1849.....	120 7-10	49 5-10	34 4-10
1850.....	127½	45 5-16	34½
1851.....	123½	68½	50½
1852.....	124½	58½	34½
1853.....	148½	58½	39 1-5
1854.....	177 2-10	71 3-10	45½
1855.....	162	79½	58

NORTH PACIFIC FISHERY.

TABLE SHOWING THE NUMBER OF SHIPS ENGAGED IN THE NORTH PACIFIC FISHERY FOR THE LAST FIFTEEN YEARS, AND THE AVERAGE QUANTITY OF OIL TAKEN.

Years.	Ships.	Average.	Total.
	Number.	Barrels.	Barrels.
1841.....	20	1412	28,200
1842.....	29	1627	47,200
1843.....	108	1349	146,800
1844.....	170	1528	259,570
1845.....	263	953	250,600
1846.....	292	160	253,800
1847.....	177	1059	187,443
1848.....	159	1164	185,265
1849.....	155	1384	216,850
1850.....	144	1092	243,648
1851.....	138	626	86,360
1852.....	288	1348	373,450
1853.....	238	912	218,185
1854.....	232	74	184,063
1855.....	217	873	189,579

In 1856 about 181 ships cruised in the Northern Seas, two of which were lost, and three have not been reported during the season.

UNITED STATES VESSELS EMPLOYED IN THE WHALE FISHERY, JANUARY 1, 1857.

	Ships and Barks.	Brigs.	Schooners.	Tonnage.
New Bedford.....	329	..	1	111,364
Fairhaven.....	47	..	1	16,666
Westport.....	14	4	1	3,983
Dartmouth.....	10	..	..	2,700
Mattapoisett.....	12	5	1	3,580
Sippican.....	..	..	3	319
Wareham.....	1	..	..	374
Dis. of New Bedford	413	9	6	138,926
Sandwich.....	..	1	..	165
Falmouth.....	3	..	..	1,106
Holmes's Hole.....	3	1	..	1,219
Edgartown.....	14	..	3	4,955
Nantucket.....	38	1	2	13,620
Provincetown.....	5	2	15	2,735
Beverly.....	2	..	..	452
Lynn.....	1	..	..	323
Orleans.....	1	2	1	616
Fall River.....	3	..	..	715
Warren.....	15	..	..	5,043
Providence.....	1	..	..	298
Newport.....	4	..	..	1,206
New London.....	50	4	11	18,999
Mystic.....	6	..	..	1,840
Stonington.....	6	..	..	1,940
Sag Harbor.....	14	2	2	5,261
Greenport.....	9	..	..	2,652
Cold Spring.....	5	..	..	2,129
Total Jan. 1, 1857.	593	22	40	204,209

Showing an addition of eight ships, one brig, and eleven schooners, with an addition in the aggregate tonnage of 5068 tons.

Of the above are owned in the State of—

	Ships and Barks.	Brigs.	Schooners.	Tonnage.
Massachusetts.....	483	16	27	164,832
Rhode Island.....	20	..	..	6,547
Connecticut.....	63	4	11	22,788
New York.....	28	2	2	10,442
Total.....	593	22	40	204,209

The number of vessels and amount of tonnage employed in the Whale Fishery since 1844 has been as follows:

Years.	Ships and Barks.	Brigs.	Schooners.	Tonnage.
January 1, 1844....	595	41	9	200,147
" 1845.....	643	35	17	218,655
" 1846.....	673	35	22	233,189
" 1847.....	670	31	21	230,218
" 1848.....	621	22	16	210,663
" 1849.....	581	21	12	196,112
" 1850.....	510	20	13	171,484
" 1851.....	502	24	17	171,471
" 1852.....	558	27	35	193,090
" 1853.....	599	30	32	206,286
" 1854.....	602	28	36	208,399
" 1855.....	584	20	34	199,842
" 1856.....	585	21	29	199,141

—New Bedford Shipping List.

EXPORTS OF DOMESTIC OILS FROM THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30, 1856.

Whither Exported.	Spermaceti.		Whale and other Fish.		Lard Oil.		Oil Cake.
	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Dollars.
Russian Possessions in North America	100	176	60	120	....	....	....
Prussia	2,540	5,040	....	....	....	....	....
Sweden and Norway	5,704	11,170	1,284	1,001	....	....	....
Swedish West Indies .....	....	....	....	....	81	79	2,977
Denmark	1,462	3,100	....	....	....	....	....
Danish West Indies	80	164	1,778	1,402	717	684	....
Hamburg	390	850	....	....	....	....	....
Bremen .....	....	....	16,482	9,020	4,942	3,564	....
Other German ports .....	....	....	3,363	2,137	5,000	4,772	....
Holland	674	1,297	....	....	....	....	....
Dutch West Indies .....	....	....	2,865	2,324	120	102	....
Dutch Guiana .....	....	....	2,715	2,237	....	....	....
Dutch East Indies	120	235	....	....	....	....	....
Belgium	1,659	3,242	....	....	4,160	3,926	....
England	467,372	858,920	181,265	97,839	25,177	22,026	1,074,268
Scotland	13,880	26,173	24,857	18,817	49,383	40,522	10,795
Canada	17,950	21,409	177,593	170,810	9,504	9,749	980
Other British North American Possessions	5,609	8,800	11,737	9,722	2,376	2,592	32
British West Indies .....	....	....	5,715	4,580	11,492	10,484	44,035
British Guiana .....	....	....	1,676	1,509	2,996	2,673	150
British Possessions in Africa	900	1,228	561	552	606	607	....
British Australia .....	....	....	21,160	14,779	940	1,035	....
British East Indies .....	....	....	4,601	3,586	....	....	....
France on the Atlantic	13,215	32,640	90,885	65,714	....	....	....
French North American Possessions .....	....	....	....	....	40	40	....
French Guiana .....	....	....	2,523	2,100	....	....	....
Spain on the Mediterranean	163	369	....	....	41	43	....
Cuba	853	1,243	123,734	98,800	4,285	4,243	2,350
Porto Rico .....	....	....	4,445	3,537	4,063	5,128	300
Cape de Verd Islands .....	....	....	63	70	....	....	....
Hayti	180	375	3,113	2,889	51	52	....
Mexico	2,917	5,861	2,166	1,904	1,606	1,413	....
Central Republic .....	....	....	....	....	40	43	....
New Granada	28	48	892	670	5,151	5,027	....
Venezuela .....	....	....	1,269	1,089	775	704	1,032
Brazil .....	....	....	80	71	89	84	61
Chili .....	....	....	1,874	1,784	76,944	42,777	....
Peru .....	....	....	7,587	6,479	1,293	1,257	....
Sandwich Islands .....	....	....	338	345	....	....	....
Whale Fisheries .....	....	....	15	3	....	....	....
Total year 1855-56	540,784	\$977,005	646,694	\$526,338	212,262	\$161,232	\$1,136,970

STATEMENT SHOWING THE IMPORTS OF OILS INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whence Imported.	Castor.		Linseed.		Rape seed and Hemp seed.		Palm.		Neat's-foot and other animal.	Essential Oils.	Olive, in Casks.	Olive, in Bottles.
	Gallons.	Value.	Gallons.	Value.	Galls.	Value.	Gallons.	Value.	Value.	Value.	Value.	Value.
Danish West Indies	1,615	\$ 675	....	....	....	....
Hamburg	885	737	26,618	13,294	....	....	....	8,064	....	3,009
Bremen	120	153	....	....	5	13,037	....	....
Holland	8,480	6,242	95	56	....	....	....	1,659	....	....
Dutch East Indies	2	....	....
Belgium	681	805	....	...	46	25	....	....	....	1,020	....	....
England	55,585	42,139	1,691,265	1,048,910	15,127	6,191	28,471	11,912	....	21,258	6,255	4,230
Scotland	55	61	....	...	....	....	....	....	....	....
Ireland
Gibraltar
Malta	6,910	....	....
Canada	45	25	....	...	....	....	244	10	22	286
Other British N. A. Poss.	60	....	....
British Poss. in Africa	208,026	77,707	....	....	....	....
Other ports in Africa	910,559	325,752	27	....	....	....
British Australia
British East Indies	87,315	53,937	....	...	....	...	....	....	....	3,791	....	....
France on the Atlantic	11,478	7,796	11,423	6,437	....	....	....	12,281	811	53,451
France on the Med'n	13,680	18,665	249,708
Spain on the Atlantic	757	11,811	....
Spain on the Med'n	13,381	....	393
Cuba	85	989	1,701
Porto Rico	80	64	....	...	....	...	....	....	....	....	....	....
Portugal	5,648	2
Sardinia	534	5,916	37,162
Tuscany	726	6,033	25,934
Two Sicilies	17,356	13,903	393
Austria	4,509	....	77
Turkey in Europe	3,467	....
Turkey in Asia	882	....
Mexico	20	26	....	...	....	...	....	....	....	....	....	....
New Granada	4	3	....	20	....	....
Brazil	550	186	....	197	....	....
China	20,312	....	10
Whale Fisheries	322	82	....	....	....	....
Total	148,681	96,371	1,712,208	1,068,771	53,429	26,169	1,149,547	416,317	276	119,438	94,169	376,356

An instance of the demand for oil is manifest in the palm-oil trade with the west coast of Africa. A few years ago—probably less than fifteen—palm oil, in the west of Africa, was worth a dollar a gallon, and a late account from that region says not one thousand gallons left the country in a year. Now the traffic in that article with Great Britain alone amounts to 700,000 gallons a year, at an average of thirty-three cents a gallon; and with the United States as much more. For lubricating machinery, particularly in steam factories and on railroads in Great Britain, this oil is used more than any or all other articles, being both cheaper and better. There is now a monthly line of steamers from Southampton to the west coast of Af-

rica, the Madeira and Canary Isles. Bristol has fifty-four ships in the trade with that coast; Liverpool thirty-five; and the entire number from Great Britain, both steamers and sailing vessels, is not less than one hundred. Some of these are ships of 1000 tons burden. President Roberts, of Liberia, says twenty ship-loads of palm oil go from Monrovia every year. The import of oils into the United States has been as follows:

	1850.		1855.	
	Gallons.	Value.	Gallons.	Value.
Whale.....	39,669	\$12,864	103,394	\$36,267
Olive.....	91,600	55,787	126,478	88,646
Olive in bot. ....	.....	.....	88,696	316,154
Linseed.....	1,163,647	487,920	1,249,955	776,077
Rape-seed.....	136	59	45,381	26,658
Palm.....	.....	.....	767,784	295,211
Neat's-foot.....	.....	.....	5,584	2,890
Total.....	1,295,052	\$566,630	2,380,052	\$1,541,962
Increase....	.....	.....	1,085,000	985,332

The table does not include the domestic catch of whales, but only the whale oil imported mostly from the British Possessions and China. The olive oil in bottles has been estimated in gallons, and is mostly of French origin. The linseed is almost altogether English.—See OLIVE OIL.

Benzole, or *Coal Oil*, is a new discovery of producing oil from certain kinds of bituminous coal. At Cloverport, Kentucky, on the Ohio River, are extensive new works, running twelve retorts night and day, consuming from eight to ten tons of coal every twenty-four hours, and producing 750 gallons of crude oil. Re-distilled, this quantity yields 600 gallons of refined oils; viz., 125 gallons of benzole, 75 of naphtha, 225 of lubricating oil, and 175 of oil for illuminating purposes. Benzole readily sells at \$1 50 per gallon; lubricating oil at \$1 25; naphtha and burning at eighty cents. Preparations are making at Cloverport for the manufacture of a beautiful semi-transparent candle from the substance called "paraffine," resembling spermaceti, and which is formed in pearly crystals in the dark oils of the last distillations after they have cooled. The paraffine, as remarked by Professor Silliman, Jun., does not exist ready formed in the original crude product, but is a result of the high temperature employed in the process of distillation, by which the elements are newly arranged. It derives its name from the unalterable nature of the substance under the most powerful chemical agent. The residuum from the last distillation makes the first quality of asphaltum, used for

smearing vaults, etc., now imported and sold at thirty dollars per ton.

Oil-painting. Painting in which the medium for using the colors is oil. It is said to have been unknown to the ancients, and not used earlier than the fourteenth century; its invention being attributed to John Van Eyck, sometimes called John of Bruges. By him it was supposed to have been imparted to one Antonio da Messina, who first brought it to Venice. Giovanni Bellini, by a stratagem, got possession of the secret from him, and then made it publicly known. Oil-painting has the advantages, above all other modes, of affording great delicacy of execution, a union and insensible blending of the colors, and, above all, that of imparting great force to its effects. The various colors chiefly used in oil-painting are white-lead, Cremnitz white, chrome, king's yellow, Naples and patent yellow, the ochres, Dutch pink, terra da Sienna, yellow lake, vermilion, red-lead, Indian and Venetian red, the several sorts of lake, brown pink, Vandyke brown, burned and unburned umber, ultramarine, Prussian and Antwerp blue, ivory black, blue black, asphaltum. The principal oils are those extracted from the poppy, nut, and linseed. With the latter, driers are introduced.—See PAINTS.

Oldenburg, a state of Germany, in the northwest, with the title of Grand Duchy, composed of three separate portions: 1st. The Duchy of Oldenburg, which forms eight-ninths of the territory. It is surrounded by Hanover on the east, south, and west, and bounded north by the North Sea; capital, Oldenburg; 2d. The Principality of Lübeck, or Eutin, inclosed in the Duchy of Holstein (Denmark); and, 3d. The Principality of Birkenfeld, between Rhenish Prussia and Holstein Homburg; capital, Birkenfeld. Area, 2421 square miles. Population in 1852, 281,923. Oldenburg lies in the basin of the North Sea, and is entirely flat. Soil in general fertile, but in several places are extensive sand dunes and marshes. Corn raised insufficient for consumption. Pasturage excellent; horses, cattle, and sheep extensively reared. Manufactures confined to linen-weaving and coarse woollens. Revenue (estimated), 1854, 891,000 thalers; expenses, 979,000 thalers; public debt, 1,600,000 thalers. *Oldenburg*, the capital, is situated at the conflux of the Hunte with the Haaren, which here forms a small port, eighty miles west-southwest of Hamburg. Population, 7829. It is the residence of the Grand Duke. Population of circle in 1852, 59,453.

COMMERCE OF OLDENBURG IN 1854 AND 1855.

	Entered.			Cleared.		
	Number.	Tonnage.	Equipment.	Number.	Tonnage.	Equipment.
Merchant vessels.....	867	65,511	5,869	898	68,075	5,954
Coasting vessels.....	6871	77,185	13,577	5,664	65,159	11,761
Total in 1854.....	7738	142,896	19,446	6862	133,234	17,755
Domestic.....	5658	84,124	12,599	5654	79,782	11,464
Foreign.....	2080	58,772	6,847	1808	54,452	6,291
Total in 1855.....	6956	131,991	17,613	6980	121,750	15,791

Olibanum (Fr. *Encens*; Ger. *Weiranch*; It. *Olibano*; Arab. *Loaban*), a gum-resin, the produce of a large tree (*Libanus thurifera*) growing in Arabia and India. It is imported in chests, containing each about one cwt.; from the Levant and India; the best comes from the former, and is the produce of Arabia. Good olibanum is in semi-transparent tears, of a pink color, brittle, and adhesive when warm. When burned, the odor is very agreeable; its taste is bitterish, and somewhat pungent and aromatic; it flames for a long time with a steady, clear light, which is not easily extinguished, leaving behind a black (not, as has been said, a whitish) ash. Olibanum is the frankincense (*thus*) of the ancients, and was extensively used by them in sacrifices.—PLINY, *Nat. Hist.* It has also been used in the ceremonies of the Greek and Roman churches.—AINSLIE'S *Materia Indica*; THOMSON'S *Chemistry*; KIPPINGH, *Antiq. Rom.*

Olive, Olives (Fr. *Olives*; Ger. *Oliven*; It. *Ulive*, *Olive*; Sp. *Aceitunas*; Port. *Azeitonas*; Lat. *Olive*), a fruit yielding a large quantity of oil, the produce of the *Olea*, or olive-tree. The wild olive is indigenous to Syria, Greece, and Africa, on the lower slopes of Mount Atlas. The cultivated species grows spontaneously in Syria, and is easily reared in Spain, Italy, and the south of France. It has even been raised in the open air in England, but its fruit is said not to have ripened. The fruit is a smooth, oval plum, about three-quarters of an inch in length, and half an inch in diameter; of a deep violet color when ripe, whitish and fleshy within, bitter and nauseous, but replete with a bland oil; covering an oblong, pointed, rough nut. Olives intended for preservation are gathered before they are ripe. In pickling, the object is to remove their bitterness, and to preserve them green, by impregnating them with a brine of aromatized sea-salt;

for this purpose various methods are employed. The wood of the olive-tree is beautifully veined, and has an agreeable smell. It is in great esteem with cabinet-makers, on account of the fine polish of which it is susceptible.

Olive Oil (Ger. *Baumöl*; Fr. *Huile d'olives*; It. *Olio d'uliva*; Sp. *Acete de aceitunas*; Lat. *Oleum olivæ*). The olive-tree is principally cultivated for the sake of its oil. This is an insipid, inodorous, pale greenish-yellow colored, viscid fluid, unctuous to the feel, inflammable, incapable of combining with water, and nearly insoluble in alcohol. It is the lightest of all the fixed oils; and is largely used, particularly in Greece, Italy, Spain, and France, as an article of food, and in medicine and the arts. It is also very extensively used in England, particularly in the woolen manufacture. The ripe fruit is gathered in November, and immediately bruised in a mill, the stones of which are set so wide as not to crush the kernel. The pulp is then subjected to the press in bags made of rushes; and by means of a gentle pressure, the best, or *virgin* oil, flows first; a second, and afterward a third, quality of oil is obtained by moistening the residuum, breaking the kernels, etc., and increasing the pressure. When the fruit is not sufficiently ripe, the recent oil has a bitterish taste; and when too ripe, it is fatty. After the oil has been drawn it deposits a white, fibrous, and albuminous matter; but when this deposition has taken place, if it be put into clean glass flasks, it undergoes no further alteration; the common oil can not, however, be preserved in casks above one and a half or two years. It is sometimes adulterated by the admixture of poppy oil.—*Thomson's Dispensatory*. The best olive oil is said to be made in the vicinity of Aix, in France. That which is brought from Leghorn, in chests containing thirty bottles, or four English gallons, is also very superior; it is known in our markets by the name of Florence oil, and is used mostly for culinary purposes. Olive oil is the principal article of export from the kingdom of Naples.—*See NAPLES*. Apulia and Calabria are the provinces most celebrated for its production. The Apulian is the best, and is preferred by the woolen manufacturers, by whom it is extensively used. By far the largest portion of the olive oil brought to England is in general imported from Italy, principally from Gallipoli, on the east coast of the Gulf of Taranto (which see), whence it is commonly known by the name of Gallipoli oil. But besides Italy, Spain, Turkey, the Ionian Islands, etc., send us large quantities.

Oil Trade of Naples.—The oils of the kingdom of Naples are produced in Apulia, from Bari to its southern extremity, the Capo di Leuca, a district comprising the territories which export from Gallipoli and Taranto; and in Calabria from Rossano, on the Gulf of Taranto, across to Gioja. The whole coast from Gioja as far as Gaeta is covered with olive-trees. They are also abundant in the Abruzzi and the Terra di Lavoro; but Apulia and Calabria furnish by far the greatest quantity of oil. The principal magazines, or *caricatori*, for oil, are at Gallipoli and Gioja. Gallipoli supplies England, Holland, the north of Europe, and, in short, all those countries that require the most perfectly purified oil. It is clarified to the highest degree by merely keeping it in cisterns hollowed out of the rock on which the town is built. The voyages it has to perform being long, it is put into casks so well constructed that it frequently arrives at Petersburg in the heat of summer without the least waste or leakage—an advantage attributed to the seasoning of the staves, which, before they are put together, are well soaked in sea-water.

The oil received into the cisterns in Gallipoli, either belongs to the proprietor, who buys it of the planter, or is received in *deposit* on account of some other party, who gets a receipt (*biglietto di magazzino*) specifying the quantity of the oil received on his account, its quality,

etc. Depositors pay at the rate of 20 grani a year for every salma of oil to the party holding it in deposit, and who is bound to account for it. The *caricatori* of Bari and Monopoli furnish oils for the consumption of Upper Italy and Germany, through the medium of Venice and Trieste. They also draw supplies from Brindisi and Otranto. The *caricatori* of Taranto, of Eastern Calabria or Retromarina, and of Western Calabria, the principal of which is Gioja, furnish supplies for Marseilles, etc. But the *caricatori* now mentioned, having no conveniences for clarification, produce only the thick oils used for soap-making. The oils of Sicily, like those of Tunis, are too thin to be used singly in the making of soap; and, being used only for mixing, are less valuable than most others. A full crop of oil in the province of Terra d'Otranto is supposed to yield about 800,000 salme, or 41,666 tuns. To facilitate transactions, orders or *cedules* are circulated, representing quantities of oil deposited in the provincial *caricatori*. These orders are negotiable, like bills of exchange, and are indorsed by the intermediate holder, who receives their value in cash, without, however, becoming liable for their due satisfaction. The only responsible parties are the drawer and drawee. The latter is obliged to deliver the oil at sight of the order, or to hold it at the bearer's disposal, till the 10th of November for the *caricatori* of Apulia, and till the 31st of December for those of Calabria. If the contract be for time, that is, from one year to another, the oil is usually placed at the purchaser's command on the 1st of March. Purchases for time are effected by means of a contract, wherein the vendor undertakes to deliver the oil by the end of January, on receiving payment of the money; but the oil, as observed above, is not really at the purchaser's disposal before the beginning of March. Hence, in time bargains, the payment of the money precedes the delivery of the oil more than a month: scarce an instance is on record of an engagement of this sort having been broken, and the order is as readily negotiable as any other security. In purchases of oil at command, payment likewise precedes the delivery of the article; but in this case the advance is confined to the five days necessary to transmit the order to the *caricatori* where the oil is kept for delivery. The oil remains in the *caricatori* under the care and responsibility of the vendor, to be delivered on demand to the bearer of the order, free of all costs and charges whatever for the first year; but for every successive year from 25 to 30 grains per salma are charged for keeping, and for renewal of warranty. (We are indebted for these details to a very valuable Report by Mr. Steel, British vice-consul at Gallipoli, and to a brochure of M. Millenet, entitled *Coup de Œil sur le Royaume de Naples*. Naples, 1832.) *For the trade in Olive oil, see article OILS.*

Olive-tree. The wood of the olive is heavy, compact, fine-grained, and brilliant. The sap-wood is white and soft, and the heart-wood hard, brittle, and of a reddish or yellowish tint, with the pith nearly effaced, as in the box. It is employed by cabinet-makers to inlay the finer species of wood, which are contrasted with it in color, and to form light articles of ornament, such as dressing-cases, snuff-boxes, etc. The wood of the roots, which is agreeably marbled, is preferred to that of the trunk. On account of its hardness and durability, the wood of this tree was anciently used for the hinges of doors; and, before metal became common, it was selected by the Greeks for the images of their gods. From its resinous and oleaginous nature, the wood of this tree is exceedingly combustible, and burns as well before as after it is dried. There exudes from its wood a gum, which is sometimes sold for gum-elemi. There is also extracted from this tree a substance called *olivine*. The bark contains a bitter principle, and is regarded as tonic and febrifugal. The leaves are astringent.

The olives are first bruised by a mill-stone, suffi-

ciently hard as not to break the kernels, and are then put into sacks of coarse linen, feather-grass, or of wool, and subjected to heavy pressure, by which means the most fluid and the best liquor is forced out, and is called *virgin oil*. It is received into vessels half filled with water, from which it is skimmed, and put into tubs, barrels, and bottles for use. Several coarser kinds of oil are afterward obtained, by adding hot water to the bruised fruit. The best olive oil is of a bright pale-amber color, without smell, and bland to the taste. Kept warm, it becomes rancid, and at 38° Fahr. it congeals. It is of the same nature as all mild expressed vegetable oils; of these the most fluid are preferred, and hence the oils of olives and of almonds are those chiefly used in medicine. One of the most esteemed kinds of oil is that produced at Aix (*Huile d'Aix en Provence*). *Florence oil* is also a fine kind, imported from Leghorn in flasks surrounded by a kind of network, formed of the leaves of a monocotyledonous plant. These are the kinds of olive oil in most frequent use at the table for salads (hence they are called *Salad oils*). *Lucca oil* is imported in jars holding about nineteen gallons each. *Genoa oil* is a fine kind. *Gallipoli oil* is imported in casks, and constitutes the largest portion of the olive oil imported into England. *Sicily oil* is of an inferior quality. *Spanish oil* is the worst. The foot deposited by olive oil is used for oiling machinery, under the name of *Droppings of Sweet oil*.

Another important advantage afforded by this tree is its fruit in a pickled state. It is gathered unripe, and suffered to steep in water for some days, and is afterward put into a lye of water and barilla, or kali, with the ashes of olive-stones, or with lime. It is then put up in earthen bottles, or in barrels, with salt and water, and in this state is ready for use. Olives are eaten before, as well as after meals, and are believed to excite appetite and promote digestion. The finest kind of prepared fruit is known in commerce by the name of *Picholines*, after one Picholini, an Italian, who first discovered the art of pickling olives. The fruit of the olive is of a pleasant taste, and is eaten by the modern Greeks during Lent, in its ripe state, without any preparation, except with the addition of a little pepper, salt, and oil. From the value of its products, in a commercial point of view, aside from other considerations, the culture of the olive strongly claims the attention of the American agriculturist, and the trial should be made in every place where its failure is not certain, and for this purpose young grafted trees of hardy and choice varieties should be obtained from Europe, and the formation of nurseries immediately begun. A portion of Texas, Louisiana, the islands of Georgia, and chosen exposures of the interior of the last-named State, as well as of some of the Western States, California, or of Oregon, will be the scene of this species of culture, if ever attended with success in North America.—BROWNE'S *Trees of America*.

Omnium, a term used at the English Stock Exchange, to express the aggregate value of the different stocks in which a loan is now usually funded. Thus, in the English loan of £36,000,000 contracted for in June, 1815, the omnium consisted of £180 3 per cent. reduced annuities, £44 3 per cent. consols, and £10 4 per cent. annuities, for each £100 subscribed. The loan was contracted for on the 14th of June, when the prices of the above stocks were—3 per cent. reduced, 54; 3 per cent. consols, 55; 4 per cent., 70; hence the parcels of stock given for £100 advanced, were worth—

	£	s.	d.
£180 reduced, at 54.....	70	4	0
£44 consols, at 55.....	24	4	0
£10 4 per cents., at 70.....	7	0	0
Together.....	101	8	0

which would be the value of the omnium, or £1 8s. per cent. premium, independently of any discount for prompt payment.

Onion (Ger. *Zwiebel*; Fr. *Oignon*; It. *Cipolla*; Sp.

Cebolla; Russ. *Luk*), a well-known bulbous plant (*Allium Ccpa*, Linn.) cultivated all over Europe and the U. States for culinary purposes. The Strasburg, Spanish, and Portuguese varieties are the most esteemed.

Ontario, a lake of New York and Canada, easternmost and smallest in extent of the five great lakes of North America. It is between 43° 10' and 44° N. lat., and between 76° and 88° W. long. It receives Niagara River, the great outlet of the upper lakes, in its southwestern part, and has its outlet by the St. Lawrence River in its northeastern part, in which, immediately below the lake, is the cluster denominated the "Thousand Islands." Its shape approaches to a long and narrow ellipse, being 190 miles long, and 55 wide in its widest part, and about 480 miles in circumference. It is in some places over 600 feet deep, so that its bottom is considerably below the level of the Atlantic. Its surface is 380 feet below the level of Lake Erie, and 134½ feet above tide-water. In every part it has sufficient depth of water for the largest vessels. It has many good harbors, and is rarely frozen excepting in shallow parts near the shore. The principal rivers which enter it from the southern side are the Genesee, Oswego, and Black rivers, and a large number of creeks. The Bay of Quinte is a long and irregular body of water on its eastern part, which receives a considerable river, the outlet of several small lakes, and Burlington Bay is in its western part. Both these bays are in Canada. It has several important places on its shores, the principal of which are Kingston, Toronto, and Coburg, in Canada; and Oswego, Sackett's Harbor, Port Genesee, or Charlotte, in the United States. It is subject to violent storms and heavy swells. It is connected with the Erie Canal by the Oswego Canal, and from thence the Erie Canal forms a navigable communication with the Hudson River, a distance of 209 miles; and much of the trade of New York for the West passes through it and through the Welland Canal, which is 28 miles long, with 27 locks, and admits the passage of the largest vessels which navigate the lakes. This canal commences at Sherbrooke, near the mouth of Grand River, on Lake Erie, and terminates at Port Dalhousie, on Lake Ontario, nine miles west of Niagara village. Its entrance being a considerable distance west of the outlet of Lake Erie, it is open earlier than the Erie Canal at Buffalo, where the ice often accumulates in the spring. The Rideau Canal forms a navigable communication with the Ottawa River, 126 miles. It has 15 light-houses on the American shore, and 13 on the Canadian side.—See LAKES, *Commerce of*.

Onyx (Ger. *Onyx*; Fr. *Onix*, *Onice*; Sp. *Onique*; Lat. *Onyx*). Any stone exhibiting layers of two or more colors strongly contrasted is called an *onyx*, as banded jasper, chalcedony, etc., but more particularly the latter, when it is marked with white, and stratified with opaque and translucent lines. But the Oriental onyx is considered a substance consisting of two or more layers or bands of distinct and different colors. A sard, or sardoine, having a layer of white upon it, would be called an *onyx*; and according to the number of layers it would be distinguished as an *onyx* with three or more bands. Some of the antique engravings are upon onyxes of four bands.—MAWE'S *Treatise on Diamonds, etc.*

Opal (Ger. *Opal*; Fr. *Opale*; It. *Opalo*; Sp. *Opalo*, *Piedra iris*; Port. *Opal*; Lat. *Opalus*), a stone, of which there are several varieties, found in different parts of Europe, particularly in Hungary, and in the East Indies, etc. When first dug out of the earth it is soft, but it hardens and diminishes in bulk by exposure to the air. The opal is always amorphous; fracture conchoidal; commonly somewhat transparent. Hardness varies considerably. Specific gravity from 1.958 to 2.54. The lowness of its specific gravity in some cases is to be ascribed to accidental cavities which the stone contains. These are sometimes filled with drops of water. Some specimens of opal have the property of

emitting various colored rays, with a particular effulgency, when placed between the eye and the light. The opals which possess this property are distinguished by lapidaries by the epithet *Oriental*; and often, by mineralogists, by the epithet *nobilis*. This property rendered the stone much esteemed by the ancients.—THOMSON'S *Chemistry*; see also PLINY, *Hist. Nat. lib. xxxvii. c. 6*, where there are some very curious details as to this stone.

Opium (Ger. *Mohnsaft*; Fr. *Opium*; It. *Oppio*; Sp. and Port. *Opio*; Lat. *Opium*; Arab. *Ufjjoon*; Hind. *Ufeem*; Turk. *Madjoon*), the concrete juice of the white poppy (*Papaver somniferum*), which is most probably a native of Asia, though now found growing wild in the southern parts of Europe, and even in England. Opium is chiefly prepared in India, Turkey, and Persia; but the white poppy is extensively cultivated in France and other parts of Europe, on account of its capsules, and of the useful bland oil obtained from its seeds. It has also been cultivated, and opium made, in England; but there is very little probability of its ever being raised here to any considerable extent. The poppy is an annual plant, with a stalk rising to the height of three or four feet; its leaves resemble those of the lettuce, and its flower has the appearance of a tulip. When at its full growth, an incision is made in the top of the plant, from which there issues a white milky juice, which soon hardens, and is scraped off the plants, and wrought into cakes. In India, these are covered with the petals of the plant to prevent their sticking together, and in this situation are dried, and packed in chests lined with hides and covered with gunny, each containing forty cakes, and weighing two maunds, or 149½ lbs.; they are exported in this state to the places where the opium is consumed. Turkey opium is in flat pieces, covered with leaves, and the reddish capsules of some species of *rumex*, which is considered an indication of its goodness, as the inferior kinds have none of these capsules adhering to them. According to Dr. A. T. Thomson, Turkey opium has a peculiar strong, heavy, narcotic odor, and a bitter taste, accompanied by a sensation of acrid heat, or biting on the tongue and lips, if it be well chewed. Its color, when good, is a reddish brown, or fawn color; its texture compact and uniform. Its specific gravity is 1.336. When soft, it is tenacious; but when long exposed to the air, it becomes hard, breaks with a uniform shining fracture, is pulverulent, and affords a yellowish brown powder. East Indian opium has a strong empyreumatic smell, but not much of the peculiar narcotic, heavy odor of the Turkey opium; the taste is more bitter, and equally nauseous, but it has less acrimony. It agrees with the Turkey opium in other sensible qualities, except that its color is blacker, and its texture less plastic, although it is as tenacious. Good Turkey opium has been found to yield nearly three times the quantity of *morphia*, or of the peculiar principle of the drug, that is yielded by East Indian opium. Opium is regarded as bad when it is very soft, greasy, light, friable, of an intensely black color, or mixed with many impurities. A weak or empyreumatic odor, a slightly bitter or acrid, or a sweetish taste, or the power of marking a brown or black continuous streak when drawn across paper, are all symptoms of inferior opium.—*Dispensatory*. The raising of opium is a very hazardous business; the poppy being a delicate plant, peculiarly liable to injury from insects, wind, hail, or unseasonable rain. The produce seldom agrees with the true average, but commonly runs in extremes; while one cultivator is disappointed, another reaps immense gain. One season does not pay the labor of the culture; another, peculiarly fortunate, enriches all the cultivators. This circumstance is well suited to allure man, ever confident of good fortune.—COLEBROOKE'S *Husbandry of Bengal*.

The Opium Trade.—This drug is chiefly grown in British India, where it has long been a strict monop-

oly of the government, and also in Persia and Turkey. It was first imported into China by the Portuguese; but up to the year 1768 the whole quantity imported did not exceed from 100 to 200 chests annually. The East India Company commenced its importation in 1773-'4; and in 1780 small dépôts for its sale were established a little south of Macao. The trade continued to increase rapidly from India until 1794, when large English ships found it profitable to anchor near Whampoa, for fifteen months at a time, selling opium. In 1800 its sale had risen to about 2000 chests; but recently its further importation into China was prohibited. Since that period the smuggler succeeds the legal importer; and although the importation is no longer conducted in the vessels of the East India Company, it is extensively cultivated under their monopoly, and sold by them to private traders, by whom it is introduced into the prohibited markets of China.

Consumption and Trade of Opium in China.—Opium is pretty extensively used, both as a masticatory and in smoking, in Turkey and India; but its great consumption is in China and the surrounding countries, where the habit of smoking it has become almost universal. The Chinese boil or seethe the crude opium; and by this process the impurities, resinous and gummy matter, are separated, and the remaining extract only is reserved for use. Thus prepared, the drug loses its ordinary strong and offensive aromatic odor, and has even a fragrant and agreeable perfume. A small ball of it, inserted in a large wooden pipe with some combustible matter, is lighted, and the amateur proceeds to inhale four or five whiffs, when he lies down and resigns himself to his dreams, which are said to have no inconsiderable resemblance to the sensations produced by inhaling the oxyd of azote. Those who do not carry the indulgence to excess do not, it is said, experience any bad effects from it. Nine-tenths of the supplies of opium for the consumption of China have always been derived from India, a comparatively small quantity only being derived from Turkey. The trade has always been contraband, the introduction of the drug having been prohibited by the Chinese government. Until about 1810 the trade had not attracted much attention, or become of any very great importance, but it has since been very greatly extended, and has been since 1828 of first-rate consequence. The trade was at first carried on at Whampoa, about fifteen miles below Canton; next at Macao, whence it was driven by the exactions of the Portuguese; and thereafter in the Bay of Lintin. Here the opium is kept on board ships, commonly called receiving ships, of which there are often ten or twelve lying together at anchor. But latterly the trade has been carried on all along the southeast coast of China, by means of a species of fast-sailing vessels called "clippers," built expressly for the trade and strongly armed. The sales are mostly effected by the English and American agents in Canton, who give orders for the delivery of the opium; which, on producing the order, is handed over to the Chinese smuggler, who comes along side at night to receive it. Frequently, however, the smuggler purchases the opium on his own account, paying for it on the spot in silver; it being a rule of the trade, never departed from, to receive the money before the drug is delivered. During the first ten years of the present century the exports of opium from India to China averaged about 2500 chests, of 149½ pounds each. But after the introduction of Malwa opium into the markets of Bombay and Calcutta, the exports began rapidly to increase.

According to the *Friend of India* of Calcutta, October, 1855, the opium sales for the five preceding years were as follows:

1849-'50...	Chests sold, 35,383....	Proceeds, 35,432,000 Rs.
1850-'51...	" 34,409....	" 32,250,000 "
1852 ...	" 33,561....	" 37,245,000 "
1853 ...	" 39,463....	" 38,348,000 "
1854 ...	" 48,319....	" 36,727,000 "

The price paid to the cultivator is about Rs. 240 a chest.

AN ACCOUNT OF THE QUANTITIES AND PRICES (EXCLUDING FRACTIONS) OF THE DIFFERENT SPECIES OF EAST INDIA OPIUM IMPORTED INTO CHINA FROM THE SEASON 1816-1817, DOWN TO THE SEASON 1837-1838, WHEN THE TRADE WAS INTERRUPTED.

From April 1st to March 31st.	Number of Chests.	Value in Dollars.
1816-17.....	3,210	3,057,004
1817-18.....	3,680	3,904,350
1818-19.....	4,580	4,151,250
1819-20.....	4,600	5,583,200
1820-21.....	4,770	8,400,800
1821-22.....	4,628	8,314,600
1822-23.....	5,822	7,983,930
1823-24.....	7,082	8,515,100
1824-25.....	8,655	7,679,625
1825-26.....	9,621	7,608,205
1826-27.....	9,969	9,610,085
1827-28.....	9,535	10,425,075
1828-29.....	12,132	12,535,115
1829-30.....	14,000	12,057,157
1830-31.....	18,760	11,904,263
1831-32.....	13,503	10,931,605
1832-33.....	23,670	15,322,759
1833-34.....	19,786	13,056,540
1834-35.....	16,514	9,655,010
1835-36.....	16,735	10,539,875
1836-37.....	21,609	14,287,330
1837-38.....	20,049	10,893,157

Confiscation of Opium in 1839.—Opium has always been prohibited in China, and consequently its importation has always been looked upon as a smuggling speculation. There would seem, however, to be good grounds for thinking that the prohibition of the importation of opium was all along intended to be more apparent than real. At all events, it is certain that the trade grew gradually up, from a small beginning, to be one of great extent and value; and it is contradictory and absurd to suppose that this should have been the case had it encountered any considerable opposition from the Chinese authorities. But the truth is, that these functionaries, instead of opposing the trade, or even merely conniving at it, were parties to its being openly carried on, and received certain regulated and large fees on all the opium that was imported. It has even been alleged that a part of these fees found its way into the Imperial treasury at Peking, though that is more doubtful. The appetite for the drug increased with the increasing means of gratifying it; and there appeared to be no assignable limits to the quantity that might be disposed of in the empire. The rapid extension of the trade seems at length to have drawn the attention of the court of Peking to the subject. We doubt, however, notwithstanding what has been alleged to the contrary, whether a sense of the injurious consequences of the use of the drug had much to do in the matter. This, indeed, is a part of the subject as to which there exists a great deal of misapprehension; and we are well assured that, provided it be not carried to excess, the use of opium is not more injurious than that of wine, brandy, or other stimulants. The alarm of the Chinese government was probably not so much about the health or morals of its subjects as about their bullion! They are still haunted by the same visionary fears of being drained of a due supply of gold and silver, that formerly haunted the people of this country. The imports of opium having increased so rapidly as to be no longer balanced by the exports of tea and silk, sycee silver began also to be exported! The paternal government of Peking might have tolerated what are called the demoralizing effects of opium with stoical indifference, but the exportation of silver was not a thing to be endured. It is, however, only fair to state that the Chinese statesmen are not all of the school of Mun and Geo, and that some of them appear to have taken an enlightened view of the question, and to have emancipated themselves from the prejudices that still influence the majority of their colleagues. The statesmen in question contended that, whether the use of the drug were injurious or not, the taste for it was too deeply seated and too widely diffused to admit of its effectual prohibition; and they, therefore, pro-

posed that its importation should be legalized, subjecting it, at the same time, to a heavy duty. There can not be a doubt that this was the proper mode of dealing with the subject. In the end, however, the government of Peking, influenced by unfounded theories as to the mischievous effect of the export of the precious metals, came to a different conclusion, and resolved to put a stop to the traffic. No sooner had this resolution been adopted, than a most extraordinary change appears to have taken place in the conduct of the Chinese authorities; and their usual caution seems to have wholly deserted them. They now became as precipitate and violent as they had previously been slow and circumspect; and resolved at all hazards to attempt forcibly to put down the trade. To accomplish this, all foreigners were, in March, 1839, prohibited from leaving Canton; and compulsory measures were at the same time resorted to for compelling them to deliver up the opium in their possession. How the affair might have ended, had the English at Canton been left to the exercise of their own judgment in this crisis, it is impossible to say; but we have been assured by those on whose statements we are disposed to rely, that they would most probably have succeeded in getting out of it with comparatively little loss. Instead, however, of acting for themselves, they had to act in obedience to the orders of Mr. Elliot, chief superintendent of the British trade in Canton; and he, while under constraint, occasioned by confinement to the factory, commanded all the opium belonging to British subjects to be given up to him for delivery to the Chinese authorities; declaring, at the same time, that "failing the surrender of the said opium," the British government should be free "of all measures of responsibility or liability in respect of British-owned opium."

We do not presume to offer any opinion as to the necessity or policy of this proceeding on the part of the superintendent; but in consequence thereof, and of the unjustifiable proceedings of the Chinese, above 20,000 chests of opium were delivered up to Mr. Elliot by British subjects, and by him to the Chinese authorities; and the latter, not satisfied with the possession of the opium, which it was their duty to have placed in a state of security till the matters with respect to it should be arranged, immediately proceeded to destroy it! Having succeeded thus far, the Chinese next insisted that the foreign merchants should subscribe a bond, pledging themselves not to import opium into any part of China; or that, if they did, they were to be justly liable to the penalty of death. But this condition being refused, and no arrangement having been come to, Mr. Elliot suspended the trade on the 22d of May. Our readers do not require to be told that a war with China grew out of these extraordinary proceedings.

Indemnity for the Opium destroyed in China.—The question as to the amount of the compensation that should be awarded to the parties who delivered up the opium to the superintendent in China has since attracted considerable attention. The merchants contended that they were entitled to its cost, or to the price at which it had been invoiced to them, or to above £2,300,000. It is, however, admitted on all hands that the price of opium is exceedingly fluctuating, and that it is influenced in a very high degree by variations in the facilities for smuggling into China. And it was contended by government, that such were the obstacles thrown in the way of its clandestine importation when the delivery was made in 1839, that the price of opium had fallen to less than half its invoice cost, and that supposing the merchants had retained it, they must necessarily have sustained a very heavy loss. Having taken this view of the matter, government proposed that indemnity should be made at the rate of £64 per chest (£1,250,000 in all), being (though little more than half the sum claimed) considerably above the current price of opium in Canton previously

to its being delivered up. As might have been expected, this decision was much found fault with. On the whole, however, we think it eminently fair and reasonable. No one doubts, though not a pound of the opium had been delivered up to Captain Elliot, that its owners must, in consequence of the increased difficulties in the way of its sale, have lost heavily; and, under the circumstances, we see no ground for contending that government was bound, because their agent had interfered, to place the merchants in a better position than they would have been in but for that interference. All that they could justly require was, that it should not be permitted to injure them.

Cultivation of Opium in India—Monopoly—Revenue, etc.—Opium is produced in Bengal, principally in the provinces of Bahar and Benares, in parts of Bombay, and in Malwa, in Central India. In Bengal the production of opium is a monopoly, no person being allowed to grow the poppy except on account of government. The latter make advances to the cultivators, who deliver the entire produce into their hands at a fixed price of about 3s. 6d. per lb. It is afterward sold by the Company for about 11s. per lb., so that the profit of the latter amounts to about 7s. 6d. per lb. Opium may be grown and manufactured in Bombay; but it is subjected to the same high duty that is imposed on opium imported into the Presidency. The object of this high duty is to "discourage its production." Government purchase what little is produced in Bombay, supplying through licensed dealers all that is required for home consumption. The poppy is extensively cultivated in Malwa, in Central India, and yields a large revenue. Down to 1831, it was produced under a monopoly. But in that year the business was thrown open to the public, and the revenue collected by imposing a duty on the opium when passing through the Company's territories to Bombay. The capture of Scinde, by closing the route for the smuggling of opium through Kurachee to the Portuguese settlements of Demaun, etc., enabled a large addition to be made to the transit duty on Malwa opium, which was raised in 1847 to 400 rupees per chest, affording a revenue to government of about 6s. 8d. per lb.—(We have borrowed these authentic details from the Official Papers relative to India, p. 73-75, published in 1853.) No one doubts that opium is an excellent subject for taxation; and the higher the rate to which the duty on it can be raised without encouraging smuggling, so much the better. But a great deal has been said for and against the system under which the opium revenue is raised in Bengal and other parts of India; and perhaps it might be the better policy to open the culture of the plant to the unfettered competition of the public, imposing a high duty on the drug when grown or when exported. Without, however, entering on the discussion of this difficult question, we may shortly observe that the monopoly does not appear to have the consequences stated by Mr. Colebrooke; who tells us (*Husbandry of Bengal*, p. 118) that, except in a few situations that are peculiarly favorable, its culture is unprofitable; and that the peasants engage in it with reluctance, being tempted thereto only by the advances made by the government agents. But if such were the case formerly, it would seem that circumstances have changed in the interval; for it appears from the official accounts that the production of Bengal opium, which amounted to 17,858 chests of 160 lbs. each in 1840-41, had increased to about 36,000 chests in 1848-49. The number of chests of Malwa opium (140 lbs. each) exported from Bombay during the same period has continued pretty stationary at about 16,000 a year. The whole, or nearly the whole, of this immense supply of above 50,000 chests, is sent to China. Latterly it has produced to the government of India a clear revenue of considerably more than £3,000,000 sterling a year.

It is very doubtful whether the use of opium, when taken in moderate quantities, be so injurious as has

been represented. That it may, like spirits and wine, be abused, is abundantly certain; but it has not been shown that it is more liable to abuse than either of these articles. And the Chinese, by whom it is principally consumed, are a highly industrious, sober, frugal people.

It is computed that, had China no silk nor teas to give in part payment for the opium consumed in the Celestial empire, the drain of specie during the last 30 years would have amounted to \$600,000,000. It is stated in a memorial presented to the Emperor of China, on the subject of the opium trade, that the drain from the imperial treasury, to supply this destructive luxury, was,

From 1829 to 1831.....	\$24,000,000
" 1831 to 1834.....	28,000,000
" 1834 to 1838.....	40,000,000

The latter sum, it is stated, is about the average annual outlay at the present time; and it is considered by an intelligent commercial correspondent at Macao quite problematical whether the Chinese would have taken more cotton goods and other imports from the United States and England, had they not expended so much for opium. The profits of the East India Company, who are entitled to whatever of credit or discredit may attach to keeping up this lucrative trade in opium, are stated at \$18,000,000 per annum. If the company succeed in opening new markets for the drug (and it is represented that they are establishing retail shops all over the Indian empire), they will be amply reimbursed for their diminished importations into China, since the importation of Turkish opium in American bottoms has so considerably interfered with their previously almost exclusive monopoly of this trade. It should be added, that the importation of opium into China, though illegal, is openly tolerated by the Chinese officials, and no difficulty is experienced in finding cash customers for any quantity imported. From 200 chests in 1756, when the trade was legal, the importation has risen to from 70,000 to 80,000 chests per annum in 1856, when its introduction is prohibited by law. The value of opium imported in 1756 was about \$1,000,000; the value at the present day has risen to \$40,000,000. The basis of foreign exchange with China is as follows: General imports, opium (which makes about 30 per cent. of the whole), bullion and specie, or drafts on London.—*Commercial Relations of the United States*, 1856-57.

Cultivation in the United States.—A variety of the "Common" or "Opium Poppy" (*Papaver somniferum*), indigenous to the warm and temperate parts of Europe and Asia, from Portugal to Japan, and especially cultivated in China, India, Turkey, Egypt, and in the Morea, has been introduced into the United States, and has proved itself susceptible of easy cultivation on very rich soils, and is well adapted to the climate of the Middle and Southern States. The flowers of the "White Poppy" (*Papaver s. alba*), the variety with which the experiment was made, may be either entirely white or red, or may be fringed with purple, rose, or lilac, variegated and edged with the same colors, but never occur blue nor yellow, nor mixed with these colors, each petal being generally marked at the bottom with a black or purple spot. The seeds are black in the plants having purple flowers, and light-colored in those which are white; although the seeds of the latter, when of spontaneous growth, are sometimes black. The largest heads, which are employed for medical or domestic use, are obtained from the single-flowered kind, not only for the purpose of extracting opium, but also on account of the bland, esculent oil that is expressed from the seeds, which are simply emulsive, and contain none of the narcotic principle. For the latter purpose, if no other, its culture in this country is worthy of attention.

With regard to the cultivation of this plant, with the view of obtaining opium, there can be but little

doubt that our clear sky, fervid summer sun, and heavy dews would greatly favor the production of this article; but how far these circumstances, in connection with American ingenuity in devising improved methods for its extraction, would allow us to compete with the cheapness of labor in the East, can only be determined by actual trial. Certainly it is an object worthy of public encouragement, as the annual amount of opium imported into the United States is valued at upward of \$407,000, a considerable portion of which might be saved, and thereby add to our resources. Besides, if we were to raise a surplus, it could be sent to China in exchange for tea. The successful cultivation of the plant, however, requires the provision of good soil, appropriate manure, and careful management. The strength of the juice, according to Dr. Butler, of British India, depends much upon the quantity of moisture of the climate. A deficiency even of dew prevents the proper flow of the peculiar narcotic, milky juice, which abounds in almost every part of the plant, while an excess, besides washing off this milk, causes additional mischief, by separating the soluble from the insoluble parts of this drug. This not only deteriorates its quality, but increases the quantity of moisture, which must afterward be got rid of.

STATEMENT SHOWING THE IMPORTS OF OPIUM INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whence Imported.	Pounds.	Value.
England.....	113,330	\$272,608
British East Indies.....	1,000	4,626
Sardinia.....	55	100
Austria.....	1,310	2,556
Turkey in Asia.....	9,457	26,508
China.....	32,062	179,358
Total.....	157,814	\$485,846

Besides the works previously referred to, we have consulted, in compiling this article, AINSLIE'S *Materia Indica*; MILBURN'S *Oriental Commerce*; WILKINSON'S *Commerce of Bengal* (J. R. McCulloch); *American Annals*, 1841, p. 63; *Patent Office Report*, 1853; HUNT'S *Merchants' Magazine*, ii. 386, iv. 9 (F. WHARTON), xxiii. 28, 147; *Eclectic Review*, vi. 458; FRASER, xxi. 365; NILES' *Register*, xxiii. 249; *China War and Opium Trade*; *Commercial Relations of the United States*, 1856.

Opoanax (Ger. *Opoanax*; Fr. *Opoanax*; It. *Oppomasso*; Sp. *Opopanax*; Arab. *Jawesheer*), a gum-resin obtained from the *Pastinaca Opopanax*, a species of parsnep. It is a native of the south of Europe and Asia Minor. The stem rises to the height of four or five feet, with a thick branched yellow-colored root. The roots being wounded, a milky juice flows from them, which, being dried in the sun, is the opoanax of the shops. It is in lumps of a reddish yellow color, and white within. Smell peculiar. Taste bitter and acrid. Specific gravity, 1.622. It is imported from Turkey. Being used only to a small extent in medicine, the consumption is inconsiderable.—THOMSON'S *Chemistry*; AINSLIE'S *Materia Indica*.

Oporto, or Porto, a large city and sea-port of Portugal, on the north bank of the Douro, about two miles from its mouth, lat. 41° 10' 30" N., long. 80° 37' 18" W. It is a beautifully situated, well-built city, and is supposed to contain, including the suburbs of Villanora and Gaya, on the opposite bank of the river, about 80,000 inhabitants. The harbor of Oporto is a bar harbor, and can only be entered, at least by vessels of considerable burden, at high water; and it is seldom at any time practicable for vessels drawing more than sixteen feet. On the north side of the entrance is the castle of St. Joao de Foz, whence a ledge of rocks, some of which are at all times above water, extends in a southwest direction. The outermost of these rocks, named Filgueira, which is always visible, is left on the left or larboard side on entering. Cabedelo Point, forming the southern extremity of the entrance, is low and sandy. The bar being liable, from

the action of the tides, and of sudden swellings or *freshes* in the river, to perpetual alterations, it is exceedingly dangerous for any vessel to attempt crossing it without a pilot. Pilots are always on the alert, and ready to offer their services when a vessel comes in sight, unless the weather be so bad that they can not go off. On some few occasions of this sort, vessels have been detained for three weeks off the port, without having an opportunity of entering. The chapel of St. Catherine in a line with that of St. Michael leads over the bar. The ordinary rise of spring tides is from ten to twelve feet, and of neaps from six to eight feet. A light-house with a revolving light, having the lantern 220 feet above the level of the sea, is erected on rising ground about 600 yards north-northwest of St. Joao de Foz. The swellings of the river, or *freshes*, as they are called, most commonly occur in spring, and are caused by heavy rain, and by the melting of the snow on the mountains. The rise of water at such times is frequently as much as forty feet; and the rapidity and force of the current are so very great, that no dependence can be placed on anchors in the stream. Fortunately, a *fresh* never occurs without previous warning; and it is then the practice to moor with a cable made fast to trees, or stone pillars erected on the shore for that purpose.—For further information as to the harbor of Oporto, see PURDY'S *Sailing Directions for the Bay of Biscay*.

Oporto is the emporium of a large portion of the kingdom of Portugal, and enjoys a pretty considerable foreign commerce. The well-known red wine, denominated Port, from its being exclusively shipped at this city, forms by far the largest article of export. The exports vary in different years, from about 26,000 to above 40,000 pipes. England is much the largest consumer of port. The high discriminating duties on French wine originally introduced port into the British markets, and gave it a preference to which, though an excellent wine, it had no just title; this preference first generated, and its long continuance has since so confirmed the taste for port among the great bulk of the population, that it bids fair to maintain its ascendancy as an after-dinner wine, notwithstanding the equalization of the duties. At an average of the nine years ending with 1851, there were shipped from Oporto for England 22,861 pipes a year. Next to England, Brazil, Russia, and the north of Europe are the principal consumers of port; but it appears, from the subjoined account, that the total exports to them do not amount to a half of those sent to England. The other exports are oil, oranges, and other fruits, wool, refined sugar, cream of tartar, shumac, leather, cork, etc. The imports are corn, rice, beef, salt fish, and other articles of provision; sugar, coffee, etc., from Brazil; cotton and woolen goods, hardware, tin plates, etc., from England; hemp, flax, and deals, from the Baltic, etc. Besides the British manufactured goods imported into Portugal for the use of the natives, a considerable quantity is destined for the consumption of Spain; being smuggled into that country through Braganza and other towns on the frontier.

VESSELS ENTERED AND CLEARED AT OPORTO IN THE FOONOMIC YEAR 1854-55.

Years and Months.	Vessels Entered.			Vessels Cleared.		
	National.	For'n.	Tons.	National.	For'n.	Tons.
1854.						
July....	81	36	10,906	74	29	10,656
August....	98	34	14,045	92	31	13,313
September....	101	26	12,277	89	38	15,269
October....	57	19	8,132	80	19	9,442
November....	72	21	10,272	75	14	9,537
December....	42	21	9,166	59	26	9,355
1855.						
January....	75	57	11,548	55	23	10,338
February....	1	3	522	5	3	692
March....	36	43	13,363	40	39	11,950
April....	80	51	13,576	52	45	11,054
May....	104	42	16,024	95	42	10,763
June....	78	27	11,002	88	35	14,449
Total..	825	355	131,483	785	344	126,538

EXPORTATION OF WINE AND BRANDY IN THE ECONOMIC YEAR 1854-'55.—(12 canadas = 1 almude = 3.64 gallons.)

	Pipes.	Alms.	Canas.
Wine—1st quality, for ports in Europe...	32,298	15	11
“ “ “ “ out of Europe	1,366	10	8
“ “ “ “ Kingdom and islands	249	11	9
“ 2d quality, for ports out of Europe	1,740	15	7
Brandy—1st quality, for ports in Europe...	4	..	10
“ “ “ “ out of Europe	..	2	..
“ “ “ “ Kingdom and islands	17	19	..
Total.....	35,697	12	9

Total gallons 3,275,969.

QUANTITY OF PORT WINE EXPORTED FROM OPORTO IN 1855, AND THE COUNTRIES TO WHICH EXPORTED.

Countries.	Pipes.	Alms.	Canas.
Brazil.....	3,644	12	6
Bremen.....	103	20	8
Canada.....	605	20	6
Denmark.....	435	12	1
United States.....	682	15	9
France.....	27	13	8
Great Britain.....	26,755	11	11
Hamburg.....	1,076	..	10
Spain.....	..	13	3
Morocco.....	..	15	6
Russia.....	256	3	8
Portugal and possessions.....	317	6	8
Sweden.....	288	14	2
Newfoundland.....	189	19	9
Total.....	34,886	12	11

Total gallons 3,152,906.—C. D.

Oranges (Ger. *Pomeranzen*; Du. *Orangen*; Fr. *Oranges*; It. *Melorange*; Sp. *Naranjas*; Russ. *Pomeranzevii*; Hind. *Narangs*; Malay, *Sinoo-manis*), the fruit of the orange-tree. The common or sweet orange (*Citrus sinensis*, or *Citrus nobilis*), and the Seville, or bitter orange (*Citrus aurantium*), are natives of China; and the Portuguese are entitled to the honor of having transferred the plant to other countries. Particular species of *Citrus* seem to be indigenous to various Eastern countries; but the birth-place of the proper orange may be distinctly traced to China. It is now to be found in our green-houses. Oranges are imported in chests and boxes, packed separately in paper. The best come from the Azores, Spain, and Cuba; very good ones are also brought from Portugal, Italy, Malta, South America, and other places.

The orange trade carried on by this country is of considerable value and importance. Oranges are not much more expensive than most of our superior domestic fruits, while they are, perhaps, the most refreshing and wholesome of those of warmer climates.

The *Citrus aurantium*, or golden-fruited orange-tree, under favorable circumstances, usually attains a height of twenty-five or thirty feet, and is graceful in all its parts. The trunk is upright, and branches into a regular or symmetrical head. The bark of the twigs is of a soft and almost translucent green, while that of the trunk and older branches is of a delicate ash-gray. The leaves are moderately large, beautifully shaped, of a fine healthy green, and shining on the upper sides, while the under sides have a slight appearance of down. The flowers occur in little clusters on the sides of the branches, are pleasing in their form, of a delicate white in the sweet oranges, and in the more acid varieties slightly tinged with pink. In some plants they have a more powerful odor, and are, for the moment, more rich; but in the orange-grove there is a fragrance in the aroma which never satiates nor offends; and as the tree is at one and the same time in all stages of its bearing—in flower, in fruit just set, and in golden fruit, inviting the “hand to pull and the palate to taste”—it is hardly possible to conceive or imagine any object more delightful. There is something, too, peculiar in the organization of the fruit of this tree. Its rind, or external covering, is of a spongy texture, containing but little juice or sap of any kind in its substance; but the external surface is covered, or tuberculated with little glands, which secrete an acid, volatile oil, very

inflammable, and of a strong, pungent taste. The interior of the fruit is usually divided into from nine to twelve carpels or cells, which contain the pulp, seeds, and juice, and are united by a whitish pellicle or leathery skin, radiating from the centre to the rind, and may easily be separated without wasting the juice. The seeds are solitary or several, and are attached to the inner angle of the carpel, and in some varieties are entirely wanting.

The wood of the orange-tree, when dry, weighs forty-four pounds to a cubic foot, is hard, compact, flexible, slightly odoriferous, and is susceptible of being polished. When recently cut, it is of a yellowish hue, but in the course of time it fades. From its scarcity and small size, it is but little employed in the arts, the only particular uses to which it is applied being to make boxes, dressing-cases, and other articles of fancy; and in Florida, considerable quantities of straight, young shoots are cut, and shipped in bundles, to be made into walking-canes.

The fruit of the orange may be obtained fresh in any region of the globe, and at almost every season of the year. The aromatic oil and the rind preserve it from the effects both of heat and of cold; and the acidity of the former renders it proof against the attacks of insects. It is true that oranges decay, like other fruit; but that does not happen for a long time, if the rind remains uninjured, and they are kept from humidity, and so ventilated as not to ferment. With regard to the quality of this fruit in various places, there appears to be a diversity of opinion. Some consider those of Malta the best; others those of St. Michael's; while others prefer those of Bahia, Havana, or of St. Augustine.

The *Maltese oranges* are usually large, the rind thick and spongy, and the glands which secrete the volatile oil are prominent. The pulp is red and delicious, although sometimes there is a trace of bitterness in their taste. They are shipped in boxes of an irregular size, and are generally packed in shavings or saw-dust.

The *St. Michael's oranges* are of a small size, the rind is thin and smooth, the glands small, which secrete but little volatile oil, the pulp light-colored, and of a delicious, sugary taste. They are put up in boxes of three hundred and fifty to four hundred, with each fruit enveloped in paper, or in the husks of maize.

The celebrated *Navel oranges* of Bahia are of difficult transport to Europe and the United States, in consequence of the length of the voyage, and of the humidity and warmth of the climate through which they have to pass. If they are gathered green, however, and suspended in the air above deck, or at the stern of the vessel, in netting, they will endure through the voyage.

The *Havana oranges* are usually of a good size, with a moderately rough rind, and a pulp well filled with delicious juice. From the shortness of the voyage to any of the American markets, they may be safely transported during the winter months. The fruit is ripe in Cuba at the end of October, and is usually shipped in barrels of two hundred and fifty to four hundred fruits in each, put up loosely, without any envelopes.

The *St. Augustine oranges* are superior, both in size and quality, to those of Cuba or the Mediterranean. They resemble those of Havana in flavor, but are much larger, and bring from twenty to thirty per cent. more in the New York and Boston markets. Of the smaller sizes, it requires about three hundred fruits to fill a barrel, but of the largest ones only one hundred are necessary.

In Europe, the *Valencia oranges* are eagerly sought after, on account of their early appearance, large size, and beautiful color. They are put up in boxes of two hundred and twenty to two hundred and forty fruits in each, enveloped in brown paper.

The *Sicilian oranges*, and those of the south of Italy, may be regarded as nearly of the same quality. They

are of a medium size, with a fine color, and are rather acid in their flavor. Those shipped from Messina are put up in boxes of two hundred to two hundred and ten fruits in each, and those of Palermo, which mature later, are shipped in boxes of three hundred or more fruits in each. The oranges of Reggio ripen very early, so much so, that it is not unusual to send them away by the 20th of October. They are packed in boxes of two hundred and forty fruits in each, and, like most of the oranges of the Mediterranean, are enveloped in paper.

The *Provence oranges* come to great perfection, and may be classed with those of Genoa. Along the River Var, they have two harvests of the orange, the first commencing from the 10th to the 15th of November, when the fruit begins to turn, and continues till the 4th of December; the second begins about the 10th of January, and is prolonged nearly to the end of February. They are put up in boxes of one hundred and twenty to three hundred and sixty fruits in each, according to their size and qualities.

With the *Seville oranges* may be classed those of Faro, St. Ubes, Oporto, Andalusia, Malaga, and the bitter oranges of Cuba and Florida. This fruit is usually of a good size, of a beautiful color, but unfit to eat, on account of its bitter flavor. Those shipped from Seville are put up in large boxes, of one thousand fruits in each; while those of Faro and St. Ubes are badly packed in cases of three hundred to three hundred and fifty in each. Those of Spain and Portugal are principally carried to England and the Baltic, and are employed in cookery, and in the manufacture of cordials and other aromatic liquors. The essential product of the fruit is in the rind or peel; it is cut into quarters, separated from the pulp, and caused to be quickly dried. It is used in Holland in aromatizing a liquor called *curaçao*.—BROWNE'S *Trees of America*.

IMPORTATIONS OF ORANGES, LEMONS, OTHER GREEN FRUIT, AND PRESERVED FRUIT, INTO THE UNITED STATES DURING THE FISCAL YEAR ENDING JUNE 30, 1856.

Whence imported.	Oranges, Lemons, and Limes.	Other green Fruit.	Preserved Fruit.
Swedish West Indies....	....	\$4,541	\$193
Danish West Indies....	\$6	10	10
Hamburg.....	111	710	710
Bremen.....	165	233	233
Holland.....	....	15	15
Dutch Guiana.....	290	66	66
Dutch East Indies.....	....	90	90
England.....	112	45	725
Scotland.....	....	96	96
Canada.....	....	13	13
British N. A. Possessions.....	....	61	12
British West Indies.....	9,951	25,462	238
British Honduras.....	14	7,230	....
British Guiana.....	....	29	8
British Australia.....	3	....	....
British East Indies.....	....	....	9
France on the Atlantic.....	....	83	40,740
France on the Mediter'n.....	5,012	312	1,386
French West Indies.....	23	865	13
French Guiana.....	76	....	1,357
Spain on the Atlantic.....	52	6	486
Spain on the Mediter'n.....	51,546	1,421	1,530
Philippine Islands.....	....	....	9
Cuba.....	35,520	65,255	3,030
Porto Rico.....	2,113	860	141
Portugal.....	185	....	112
Madaira.....	....	....	8
Azores.....	4,468	....	....
Sardinia.....	10,195	....	2,791
Tuscany.....	1,712	....	57,498
Two Sicilies.....	487,341	....	1,408
Austria.....	....	....	90
Turkey in Asia.....	....	....	6
Africa.....	32	....	5
Hayti.....	90	34	270
Mexico.....	1,203	1,054	8
Central Republic.....	9	1,271	....
New Granada.....	83	2,367	22
Venezuela.....	....	45	13
Brazil.....	271	3	41
Chili.....	....	1,155	101
Sandwich Islands.....	2,709	1,213	....
Japan.....	916	....	643
China.....	336	155	10,454
Whale Fisheries.....	24,372	1,146	....
Total.....	\$640,670	\$117,889	\$124,480

Orchilla Weed, Orchella, or Archil (Ger. *Orseille*; Fr. *Orseille*; It. *Oricello, Orcella*; Sp. *Orchilla*), a whitish lichen (*Lichen orchella*) found in the Isle of Portland; but that which is used is imported from the Canary and Cape de Verd Islands, Madeira, Barbary, and the Levant. From it is obtained the archil, or orchal, of commerce, which yields a rich purple tincture, fugitive, indeed, but extremely beautiful. The preparation of orchilla was long a secret, known only to the Florentines and Hollanders; but it is now extensively manufactured in England. Orchil is generally sold in the form of cakes, but sometimes in that of moist pulp; it is extensively used by dyers; and in times of scarcity the weed or lichen has sold as high as £1000 per ton!—THOMSON'S *Dispensatory*.

Ordinary, in *Nautical language*, denotes the establishment of the persons employed by government to take charge of the ships of war which are laid up in the several harbors. These are principally composed of the warrant officers of the ships, as the gunner, boatswain, carpenter, deputy purser, and cook. There is, besides, enrolled in the list of the ordinary a crew of laborers, who pass from ship to ship occasionally, to pump, moor, move, and clean them, whenever it is necessary. The term *ordinary* is also applied sometimes to the ships themselves, and it is likewise used to distinguish the inferior sailors from the most expert and diligent. The latter are rated *able* on the navy books, and have higher pay than those who are rated as *ordinary*.

Oregon, territory, United States of America, bordering the Pacific coast, lies between the parallels of 42° and 46° 10' N. lat., and west of the Rocky Mountains. Area, 210,000 square miles. Much of this territory is mountainous, but it abounds in fertile valleys. It forms three sections, separated from each other by nearly parallel ridges, and following the general direction of the coast line. These several sections have each distinct characteristics of soil, productions, and climate. The division extending from the Pacific coast to the Cascade range has a genial climate throughout the year. The valley of the Willamette is exceedingly fertile, the intervalles and prairies form the best of farming lands, and the uplands afford good pasturage, and abound with valuable timber; and there is much fertile land bordering the Shastl and Umpqua rivers. The division between the Cascade range and the Blue Mountains has generally a light sandy soil, but with many valleys of rich alluvion; altogether said to be a fine grazing region. The portion lying west of the Rocky Mountains and east of the Blue Mountains, in extent full one half of the territory, is mostly a rocky and rough country, with some few narrow valleys of great fertility. In the southern portion of the territory gold has been extensively found. There were in Oregon and Washington territories in 1850, 132,857 acres of land improved, and 299,951 of unimproved land in farms. Cash value of farms, \$2,849,170; and the value of implements and machinery, \$183,423. *Live Stock*: Horses, 8056; asses and mules, 420; milch cows, 9427; working oxen, 8114; other cattle, 24,188; sheep, 15,382; swine, 80,235. Value of live stock, 1,876,189.

Agricultural Products, etc.—Wheat, 211,943 bushels; rye, 106; Indian corn, 2918; oats, 61,214; peas and beans, 6566; potatoes, 91,326; value of products of the orchard, \$1271; produce of market gardens, \$90,241; pounds of butter made, 211,464; of cheese, 36,980; molasses, 24 gallons; wool, 29,686 pounds produced; flax, 640; tobacco, 325; hay, tons of, 378; clover and other grass seeds, 26 bushels. Value of slaughtered animals, \$164,530.—See *Census Returns*, 1850.

The Columbia forms its north boundary for a distance of 300 miles, and the east part is almost entirely drained by the south branch, called Saptin or Lewis River, and its tributaries; a very small portion only in the southeast corner is drained by the head sources of the Rio Colorado, here called Green River; and also by

the Bear River of Great Salt Lake; Umatillah, John Days, and Willamette rivers enter the Columbia River on the south; and the Shastl or Rogue, Umpqua, Sequatchie, Yaquina, Kilamook, and several small streams enter the Pacific on the west. The principal places are Salem, the capital, Portland, at the head of navigation, Oregon city, and Astoria. The principal articles of export are lumber and agricultural produce. Tonnage in 1853, 1063 tons. There were in the territory in 1850, thirty-seven saw-mills employed in the manufacture of lumber. The fisheries of Oregon are important and valuable. The rivers abound with salmon, especially the Columbia and the Willamette, which are taken in large quantities below the fall. The hunting and trapping of the fur-bearing animals has given employment to a great number of persons, and the rivers and coasts abound with wild fowls. The governor is appointed by the President of the United States for four years. The Legislative Assembly is composed of a council of nine members, elected for three years, and a House of Representatives of eighteen members, elected annually. The elective franchise is enjoyed by every free white male inhabitant twenty-one years of age, and a citizen of the United States.

On the 7th of May, 1792, Captain Robert Gray, in the ship *Columbia*, of Boston, discovered and entered the Columbia River; to which he gave the name of his vessel. He was the first person that established the fact of the existence of this great river, and this gives to the United States the right of discovery. In 1804-'5, Captains Lewis and Clarke, under the direction of the government of the United States, explored the country from the mouth of the Missouri to the mouth of the Columbia, and spent the winter of 1805-'6 at the mouth of the Columbia. This exploration of the River Columbia, the first ever made, constitutes another ground of the claim of the United States to the country. In 1808, the Missouri Fur Company, at St. Louis, established a trading post beyond the Rocky Mountains, on the head-waters of Lewis River, the first ever formed on any of the waters of the Columbia. In 1810, the Pacific Fur Company, under John Jacob Astor, of New York, was formed; and in 1811, they founded Astoria, at the mouth of the Columbia, as the principal trading post, and proceeded to establish others in the interior. A little later in the same year, the Northwest Company sent a detachment to form establishments on the Columbia; but when they arrived at the mouth of the river, they found the post occupied. In consequence of the exposure of Astoria by the war of 1813, the post was sold out to the Northwest Company. At the close of the war, Astoria was restored, by order of the British government, to its original founders, agreeably to the first article of the Treaty of Ghent; but Britain still persisted in claiming this territory, south to the 42d degree of latitude, until 1845. In 1821, the Hudson's Bay and Northwest Company, who had previously been rivals, were united, and since that time have greatly extended their establishments in the region of Oregon. It was held in joint occupancy until the treaty of 1845, when Britain gave up all claims south of the 49th parallel of north latitude. It was organized with a territorial government in 1848. The portion now the Territory of Washington was set off by an act of Congress, March, 1853.

FOREIGN IMPORTS AND EXPORTS OF OREGON.

Years.	Exports.			Imports.		Tonnage Cleared.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	
1854	\$42,707	\$120	\$42,827	\$48,932	772	231	
1855	123,612	...	123,612	9,666	1668	...	
1856	6,234	...	6,234	2,724	388	...	

Organs. The invention of the organ is attributed to Archimedes, about 220 B.C.; but the fact does not rest on sufficient authority. It is also attributed to one Ctesibius, a barber of Alexandria, about 100 B.C. The organ was brought to Europe from the Greek em-

pire, and was first applied to religious devotions in churches in A.D. 658.—BELLARMINE. Organs were used in the Western churches by Pope Vitalianus in 658.—AMMONIUS. It is affirmed that the organ was known in France in the time of Louis I., 815, when one was constructed by an Italian priest. St. Jerome mentions an organ with twelve pairs of bellows, which might have been heard a mile off; and another at Jerusalem which might have been heard on the Mount of Olives. The organ at Haerlem is one of the largest in Europe; it has 60 stops and 8000 pipes. At Seville is one with 100 stops and 5300 pipes. The organ at Amsterdam has a set of pipes that imitate a chorus of human voices.

Orgol. See ARGOL.

Orinoco, one of the principal rivers of South America, ranking in size and importance immediately after the Amazon and Plata, north of which former its basin lies. It rises in the Sierra Nevada, Venezuelan Guiana, winds successively west, north, and east, through the centre of the Venezuelan territory, and enters the Atlantic by numerous mouths, in lat. 8° 40' N., and long. 61° W. Total course estimated at 1600 miles, for more than the latter half of which, or to the rapids of Atures, it is uninterruptedly navigable. Area of its basin, 252,000 square miles. It receives numerous large affluents, principal the Meta and Apure, each having a navigable stream of 500 miles, the Guaviara and Caroni. By the Cassiquiare it has a singular navigable communication with the Rio Negro and Amazon; and in the upper part of its course are several large cataracts and long rapids. At 200 leagues from the ocean, its breadth is about three miles; and at the city of Bolivar, between 250 and 300 miles from its mouths, to which place the tide reaches, it is four miles across, and, when lowest, 65 fathoms deep. About 100 miles from the ocean, it separates into a delta of numerous mouths. It rises gradually from March to September, yearly, usually from 60 to 70 feet, but in one narrow place to 120 feet. Its banks are clothed with dense forests, which, like its waters, abound with animal life. Like all great rivers, its upper waters separate into several branches, and it does not appear that the main source has been ascertained with any degree of certainty. According to La Cruz d'Olmedilla, it issues from a small lake called Ypava, situated in north latitude 5° 5', whence, by a bend of a spiral form, it enters the Lake Parima; but although the existence of this sheet of water has been determined, doubts are entertained whether it may not owe its origin only to the temporary overflowing of the river. From this lake it is said to issue by two mouths; and after a very circuitous route of upward of fifteen hundred miles, including its windings, it flows into the Atlantic Ocean, opposite the island of Trinidad, by about fifty mouths, seven of which are navigable. The Grand Boca, or principal mouth, which is six leagues wide, is southeast of Trinidad, in lat. 8° 30' N., and long. 59° 50' W.

Orpiment (Ger. *Operment*; Fr. *Orpiment*; It. *Orpimento*; Sp. *Oropimente*; Lat. *Auripigmentum*), the name usually given to sulphuret of arsenic. When artificially prepared, it is in the form of a fine yellow-colored powder; but it is found native in many parts of the world, particularly in Bohemia, Turkey, China, and Ava. It is exported from the last two in considerable quantities, and is known in the East by the name of hartal. Native orpiment is composed of thin plates of a lively gold color, intermixed with pieces of a vermilion red, of a shattery foliaceous texture, flexible, soft to the touch like talc, and sparkling when broken. Specific gravity, 3.45. The inferior kinds are of a dead yellow, inclining to green, and want the bright appearance of the best specimens. Its principal use is as a coloring drug among painters, bookbinders, etc.—THOMSON'S *Chemistry*; MILBURN'S *Orient. Comm.*

Orsedew, Orsidue, Manheim or Dutch Gold (Ger. *Flittergold*; Du. *Kluteroud*; Fr. *Oripeau*, *Oliquant*; It. *Orpello*; Sp. *Orope*), an inferior sort of gold leaf, prepared of copper and zinc. It is sometimes called *leaf brass*. It is principally manufactured in Manheim.

Ostrich Feathers. See FEATHERS.

Oswego. Oswego is one of the most thriving cities in the Union. With a population of 20,000, it does as much business as many cities of twice its population. The Welland Canal has given it advantages over even Buffalo, and hence its trade grows enormously. Its increase has been so steady that it will continue to grow with every improvement in the Western States.

The receipts of flour and grain by lake for three seasons are given as follows:

	1854.	1855.	1856.
Flour, barrels.....	167,267	224,643	102,920
GRAIN.			
Wheat, bushels.....	2,412,333	5,565,738	8,282,398
Corn, ".....	2,632,274	2,860,909	2,530,211
Rye, ".....	43,215	231,021	339,503
Barley, ".....	101,436	172,216	110,019
Peas, ".....	349	51,160	41,416
Oats, ".....	323,296	223,097	169,759
Totals.....	5,492,908	8,959,176	12,632,505
By converting the flour into wheat, at 5 bushels per barrel, the amount would be.....	836,335	1,123,215	514,050
Totals.....	6,429,238	10,092,391	13,146,555

Showing an increase in 1856 of 6,717,717 bushels over 1854, and 3,064,561 bushels over 1855.

The annual review of its commerce for 1856 says, of the grain warehouses of Oswego, "There are ten elevators, which are capable of elevating in the aggregate over 87,000 bushels of grain per hour, and storage room for over two million bushels." This is about the same as Milwaukee. There are in Oswego sixteen mills, with eighty-six run of stone, capable of manufacturing 8600 barrels of flour a day, or over 1,800,000 barrels in a year.

Out of Trim, the state of a ship when she is not properly balanced for the purposes of navigation, which may be occasioned by a defection in the rigging or in the stowage of the hold.

Outtrigger, a strong beam of timber, of which there are several, fixed upon the side of a ship, and projecting from it, in order to secure the masts in the act of careening, by counteracting the strain they suffer from the effort of the careening tackles, which, being applied to the mast-head, draw it downward, so as to act upon the vessel with the power of a lever, whose fulcrum is in her centre of gravity. *Outtrigger* is also a small boom, occasionally used in the top to give additional security to the top-mast.

Owners of Ships. The ownership or title to a ship can be acquired in several ways, as by purchase, building, or capture. In regard to the first, it is generally done by a bill of sale, of which there are two kinds: the first is where the ship passes from the builder to the first purchaser, and is called the grand bill of sale; the second is where the owner of the ship not being the builder, transfers his interest to another purchaser. Upon the death of the owner, his interests devolve upon his executors or his personal representatives. Special conditions may be introduced which may vest the property in the purchaser, although the property may not have been completed, such as a payment of a certain part of the purchase-money, when a part of the vessel has been completed; and he may insist upon the completion of that vessel, and the builder can not require him to accept any other.

er.—ABBOT. A ship's boat does not constitute a part of a vessel's tackle, apparel, furniture, etc.

Property in ships is sometimes acquired by capture. During war ships and private ships having letters of marque, are entitled to make prizes. But before the captors acquire a legal title to such prizes, it is necessary that they should be condemned in the admiralty or other court constituted for that purpose. When this is done, the captors are considered to be in the same situation, with respect to them, as if they had built or purchased them.—See articles PRIVATEERS, LETTERS OF MARQUE, PRIZES, and SHIPS and SHIPPING.

Oyster, a well-known edible shell-fish, belonging to the genus *ostrea*, occurring in most parts of the world. The European oyster (*O. edulis*), which forms a considerable article of trade on the coasts of England and France, is taken by dredging, after which the animals are placed in pits formed for the purpose, furnished with sluices, through which, at spring tides, the water is suffered to flow. In these receptacles they acquire the green tinge so remarkable in the European oyster, and which is considered as adding to their value. This color, which at one time was supposed to be owing to some mineral impregnation, has recently been ascertained to arise from the *confervee*, and other marine vegetable matter, on which the animal feeds. The oysters brought to the different markets in the United States are furnished by several species, which it is extremely difficult to discriminate, and are known among the venders and epicures of this food by appellations derived from the places from whence they are brought. The business of taking these shell-fish employs a great many hands, and no inconsiderable amount of tonnage. In many places oysters are *planted*, as it is called; that is, large artificial beds are formed in favorable situations, where they are permitted to fatten and increase. The breeding-time of oysters is in April or May, from which time to July or August the oysters are said to be *sick* or *in the milk*. This is known by the appearance of a milky substance in the gills. Oysters attain a size fit for the table in about a year and a half, and are in their prime at three years of age; though what the natural term of their lives may be, it is difficult, if not impossible, to determine with any degree of accuracy. Many curious discussions have arisen as to whether oysters possessed the faculty of locomotion. It is well known that, in general, they are firmly attached to stones or to each other; and it has been stated, and generally believed, that they were not endowed with any powers of changing their position. From the observations and experiments of naturalists, however, it appears that they can move from place to place by suddenly closing their shells, and thus ejecting the water contained between them with sufficient force to throw themselves backward, or in a lateral direction. Oysters form the basis of many culinary preparations, but are much more digestible in their raw state than after any mode of cooking them, as this process, in a great measure, deprives them of the nourishing animal jelly, which forms so large a portion of their substance. The shell of the oyster is composed of carbonate of lime and animal matter, and was at one time supposed to possess peculiar medical properties; but analysis has shown that the only advantage of these animal carbonates of lime over those from the mineral kingdom arises from their containing no admixture of any metallic substance. The lime obtained from the calcination of oyster-shells, though exceedingly pure and white, is better suited for work which does not require great tenacity, as for plastering rooms, than for the common purposes of building, as it does not form as hard a compound with sand as the mineral limes.

P.

Pacific Ocean, a vast watery expanse extending from the Arctic to the Antarctic circle, through 127° of lat., and between America on the east, and Asia, the Malay Archipelago, and Australia on the west. In its widest part, at the equator, it is 10,000 miles across; it narrows especially toward the north, where it communicates with the Arctic Ocean by Behring's Strait; and, including the Indian Ocean, it contains upward of 70,000,000 of square miles, or more than all the dry land on the globe. Its coast line on the American side, though generally bold, is very little broken by inlets; on the Asiatic side it is very irregular; and the Celebes, China, and Yellow seas, with the seas of Japan, Okhotsk, and Kamtschatka, are inlets of this ocean. It is studded with a great number of island groups, the principal of which, proceeding from west to east, are the Ladrões, Carolines, Solomon, Queen Charlotte's, New Hebrides, Feejee, Friendly, Society, Low, Marquesas, Sandwich, and Galapagos islands, and New Zealand, besides a vast multitude of solitary islands, reefs, and sand banks. The great equatorial current of this ocean originates in the *Antarctic drift current*, which flows north along the shores of South America, and then west through the Pacific, where it occupies the entire space between the tropics. Strong land currents sweep round the shores of East Australia and Japan. The northeast trade-wind prevails uninterruptedly between lat. 5° and 28° N.; the southeast trade-wind commonly blows from the equator to lat. 26° S.; between them is the region of calms, extending over 5°, and varying in position according to the season. Greatest equatorial temperature of Pacific 88°·5 Fahr. In lat. 56° 26' the temperature of the sea throughout its depth is 39°·5 Fahr. This ocean became first known to Europeans in 1513; it received its name from Magalhaens, who sailed across it in 1521. In the 18th century its different parts were explored by Behring, Anson, Byron, Bougainville, Cook, Vancouver, Broughton, La Perouse, etc. In the present century by D'Entrecasteaux, Krusenstern, Beechey, Fitzroy, D'Urville, Wilkes, and Sir James Ross.

Current of the Pacific.—Lieutenant Bent, of the United States navy, recently read a paper before the Geographical and Statistical Society of New York, of which the following is an abstract, upon "the great ocean current of the Pacific," corresponding with the Gulf Stream of the Atlantic. The Japanese have known it for many years, and call it the Kuro-suro, or Black Stream, from its dark blue color compared with that of the adjacent ocean. The fountain from which this stream springs is the great equatorial current of the Pacific, which in magnitude is in proportion to the vast extent of that ocean, when compared with the Atlantic. Extending from the tropic of Cancer on the north, to Capricorn, in all probability, on the south, it has a width of nearly three thousand miles. With a velocity of from twenty to sixty miles per day, it sweeps to the westward in uninterrupted grandeur around three-eighths of the circumference of the globe, until, diverted by the continent of Asia, and split into innumerable streams by the Polynesian Islands, it spreads the genial influence of its warmth over regions of the earth, some of which, now teeming in prolific abundance, would otherwise be but barren wastes. One of the most remarkable of these off-shoots is the Kuro-Suro, or Japan Stream, which, separated from the parent country by the Bashee Islands and south end of Formosa, where its strength and character are as decidedly marked as those of the Gulf Stream on the coast of Florida. This northwardly course continues to the parallel of 26° N., when it bears off to the northward and eastward, washing the whole southeastern coast of Japan as far as the Straits of Sangar, and increasing in strength as it advances, until reaching the chain of islands to the southward of

the Gulf of Yedo, where its maximum velocity, as shown by our observations, is 80 miles per day. Its average strength from the south end of Formosa to the Straits of Sangar is found to be from 35 to 40 miles per twenty-four hours at all seasons that we traversed it.—*Scientific Annual*, 1857.

The Pacific Trade of the United States.—The whole number of arrivals in the United States from ports in the Pacific during the year 1856 were 69; and in 1855, 146.

AT BOSTON.

Talcahuana.....	8	Honolulu, via N. London..	1
Valparaiso.....	8	Iquique.....	1
Caldera, Chili.....	3	Peru Blanca.....	1
Tongoy, Chili.....	2		
Total in 1855.....		Total for 1856.....	14
			18

AT NEW YORK.

Callao.....	10	Arica.....	1
California.....	3	Caldern.....	1
Honolulu.....	4	Callao via Valencia.....	1
Total in 1856.....			20
" " 1855.....			38

AT BALTIMORE.

Callao.....	14	Coquimbo.....	1
Valparaiso.....	1	Tongoy, Chili.....	1
Total in 1856.....			17
" " 1855.....			48

AT PHILADELPHIA.

Callao.....	10	Iquique.....	1
Total in 1856.....			11
" " 1855.....			10

AT NORFOLK.

Callao.....	6	Total in 1856.....	6
Total in 1855.....			19

Boston, 14; New York, 20; Baltimore, 17; Philadelphia, 11; Norfolk, 6; New London, 1. Total, 69.

Whole number of clearances for the Pacific in 1855 were 237; and in 1856, 261, of which there were cleared

FROM BOSTON FOR

California.....	34	W. C. Central America	1
Australia.....	13	via Philadelphia.....	1
Valparaiso.....	16	Guayaquil.....	2
Honolulu.....	1	Valparaiso via St. John.....	1
Callao.....	8	Callao via Liverpool.....	2
California via N. York.....	4	Valparaiso via Liberia.....	1
Australia via St. John.....	4	Panama via New York.....	1
" " London.....	2	Arica.....	1
New South Wales.....	2	Australia via Richmond.....	2
Callao via London.....	8	Tahiti.....	1
W. C. Central America.....	1	Total for 1856.....	108
Total for 1855.....			95

FROM NEW YORK FOR

California.....	73	W. C. Central America.....	2
Australia.....	19	Honolulu.....	1
Valparaiso.....	12	Iquique.....	1
New South Wales.....	6	Panama.....	2
Hobart Town.....	1	Acapulco.....	1
Total for 1856.....			117
" " 1855.....			113

FROM BALTIMORE FOR

W. C. Central America.....	4	Valparaiso.....	1
California.....	2	Valparaiso via Rio.....	1
Acapulco.....	2	Arica.....	1
Total for 1856.....			11
" " 1855.....			7

Boston, 108; New York, 117; Baltimore, 11; Philadelphia, 5; New London, 2; Bangor, 1; Charleston, S. C., 1; Providence, 1; Portland, 1; Savannah, 1; Salem, 1; New Orleans, 2. Total, 251.

Package, Scavage, Baillage, and Portage, were duties charged in the port of London on the goods imported and exported by aliens, or by denizens being the sons of aliens. During the Dark Ages it was usual to lay higher duties upon the goods imported or exported by aliens, whether in British or foreign ships, than were laid on similar goods when imported or exported by natives. But according as sounder and more enlarged principles prevailed, this illiberal dis-

tion was gradually modified, and was at length wholly abolished, in so far at least as it was of a public character, by the act of 24 Geo. III. The duties thus preserved to the city were not very heavy; but the principle on which they were imposed was exceedingly objectionable, and their collection was attended with a great deal of trouble and inconvenience. Not being levied in other places, they operated to the prejudice of the trade of the metropolis. The act 3 and 4 Will. IV. c. 66, authorized the Lords of the Treasury to purchase up the duties in question from the city. This was done at an expense of about £140,000, and the duties were abolished.

Packet, in *Navigation*, meant originally a vessel appointed by government to carry the mails between the mother country and foreign countries or her own dependencies. It is now used as nearly synonymous with an ordinary vessel, chiefly of small burden, that freights goods or passengers.—See NEW YORK, PASSENGERS, and POST-OFFICE.

Pack-horse, a horse employed to carry goods on its back in bundles, called packages or packs. In countries not yet intersected by regular roads this is the only mode of transporting goods from one part to another. In Britain, horses were formerly employed for this purpose, but for these carts and wagons are now substituted. In Spain, mules and asses are still so employed, and in Asia and Africa camels and dromedaries.

Padang. This settlement lies on the west coast of Sumatra, and receives its imports almost exclusively from Java. It has no direct importations from foreign countries. Port, harbor, and other commercial regulations the same as at Java, to the government of which island Padang is subordinate. Under the operation of high tariff duties, especially on American cotton goods, the trade between the United States and Padang is insignificant.

Painter. In *Naval language*, a rope used to fasten a boat either along side of the ship to which it belongs, or to some wharf, quay, etc., as occasion requires.

Paints. The coloring substances or pigments used in the arts. The following are some of the principal pigments and coloring substances included in the commercial name of Paints, and coloring substances:

Asphaltum,	Lead, red and white,
Bronze Powders,	Mineral White,
Brunswick Green,	Ochre,
Brunswick Blue,	Oxyd of Zinc, etc.
British Lustre,	Plumbago,
Chalk,	Pumice-stone,
Carmine,	Painter's Colors,
Dry Ochre,	Paints in Oil,
Emery,	Putty Oil,
Emerald Green,	Paris Green,
Gum Damar,	Shellac,
Gum Sandrac,	Ultramarine,
Gum Animi,	Vermilion,
Gum Copal,	Venetian Red,
Ivory Black,	Verdigris,
Lustre,	White Oxyd of Zinc,
Litharge,	Whiting and Paris White,
Lampblack,	Zinc Paint.

IMPORTS OF PAINTS INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whence Imported.	Dry Ochre.	Red and White Lead.	Whiting and Paris White.
	Value.	Value.	Value.
Hamburg.....	...	\$17	...
Bremen.....	...	368	...
Holland.....	...	284	...
Belgium.....	...	702	\$577
England.....	\$2,820	136,681	21,748
Scotland.....	...	95	...
Canada.....	...	19	...
France on the Atlantic...	15,622	3,234	1,498
France on the Mediter'n...	453	560	...
Spain on the Atlantic...	...	2,385	...
Spain on the Mediter'n...	...	29,290	...
Tuscany.....	1,923	...	...
Two Sicilies.....	215	...	...
Total.....	\$21,033	\$174,125	\$25,825

EXPORTS OF PAINTS OF FOREIGN MANUFACTURE FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whither Exported.	Dry Ochre.	Red and White Lead.	Whiting and Paris White.
	Value.	Value.	Value.
England.....	...	\$1430	...
Canada.....	\$4950	3223	\$508
Other British N. A. Poss..	...	1025	...
Hayti.....	...	24	...
San Domingo.....	8	...	...
Mexico.....	...	127	...
Sandwich Islands.....	...	62	...
Total.....	\$4958	\$5891	\$593

EXPORTS OF PAINTS AND VARNISH OF DOMESTIC MANUFACTURE FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whither Exported.	Value.
Sweden and Norway.....	\$1,261
Danish West Indies.....	4,156
Hamburg.....	400
Bremen.....	862
Holland.....	90
Dutch Guiana.....	273
Belgium.....	216
England.....	4,659
Scotland.....	362
Gibraltar.....	16
Canada.....	106,578
Other British North American Possessions...	5,012
British West Indies.....	2,684
British Honduras.....	572
British Guiana.....	343
British Possessions in Africa.....	2,077
Other ports in Africa.....	1,430
British Australia.....	1,355
British East Indies.....	529
France on the Atlantic.....	6,770
France on the Mediterranean.....	104
French North American Possessions.....	384
Philippine Islands.....	580
Cuba.....	13,983
Porto Rico.....	671
Portugal.....	591
Cape de Verd Islands.....	43
Two Sicilies.....	71
Austrian Possessions in Italy.....	50
Hayti.....	4,220
San Domingo.....	46
Mexico.....	9,018
Central Republic.....	135
New Granada.....	5,985
Venezuela.....	4,218
Brazil.....	2,449
Uruguay, or Cisplatine Republic.....	1,999
Buenos Ayres.....	4,079
Chili.....	13,376
Peru.....	3,682
Equador.....	150
Sandwich Islands.....	4,471
China.....	6,745
Whale Fisheries.....	56
Total value.....	\$217,179

Palermo (anciently **Panormus**), a large city and sea-port, the capital of the noble island of Sicily, on the north coast of which it is situated, the light-house being in lat. 38° 8' 15" N., long. 13° 21' 56" E. Population, 170,000. The Bay of Palermo is about five miles in depth, the city being situated on its southwest shore. A fine mole, fully a quarter of a mile in length, having a light-house and battery at its extremity, projects in a southerly direction from the arsenal into nine or ten fathoms water, forming a convenient port, capable of containing a great number of vessels. This immense work cost about £1,000,000 sterling in its construction; but the light-house, though a splendid structure, is said to be very ill lighted. There is an inner port, which is reserved for the use of the arsenal. Ships that do not mean to go within the mole may anchor about half a mile from it, in from sixteen to twenty-three fathoms, the mole light bearing N.W. & W. A heavy sea sometimes rolls into the bay, but no danger need be apprehended by ships properly found in anchors and chain cables. In going into the bay, it is necessary to keep clear of the nets of the tunny fishery, for these are so strong and well moored as to be capable of arresting a ship under sail.—SMYTH'S *Sicily*, p. 70, and *Append.* p. 4.

Imports and Exports.—The great articles of export

from Sicily are, olive oil, grain, particularly wheat and barley, silk, brimstone, wine and brandy, barilla, lemons and oranges, lemon juice, manna, shumac, linseed, fruit, salted fish, and salt; with argol, liquorice, pumice-stone, rags, skins, honey, cotton wool, saffron, etc.

ARTICLES EXPORTED FROM AND IMPORTED INTO PALERMO IN 1852.

EXPORTS.			
Articles.	Quantities.	Values.	
Argols and cream of tartar.	Cwt. 7,558	£11,746	
Brimstone	188,886	22,217	
Cantharides	— 5	60	
Cheeses	— 188	300	
Corn, grain, and pulse	Quarters. 2,160	4,820	
Essences	Pounds. 29,420	20,578	
Fish, salted	Cwt. 8,476	4,451	
Fruits, dry and picked	— 2,148	2,726	
Oranges and lemons	Boxes. 400,681	100,508	
Linseed	Quarters. 4,417	8,834	
Liquorice paste	Cwt. 14,229	25,532	
Manna	— 3,558	34,140	
Oils, olive	Gallons. 189,910	21,745	
Shumac	Cwt. 84,795	15,897	
Rags	— 283,554	369,873	
Skins	— 30,100	834	
Wine and spirits	Gallons. 197,856	22,984	
Other articles	Value.	32,000	
Total	—	698,744	
IMPORTS.			
Cocoa	Cwt. 409	£1,045	
Coffee	— 4,476	11,201	
Indigo	— 56	1,430	
Pepper	— 2,208	4,476	
Rum	Gallons. 1,600	820	
Spices	Cwt. 62	690	
Sugars	— 11,944	23,902	
Tea	Pounds. 800	60	
Woods	Cwt. 2,600	1,680	
Cottons	Packages. 834	41,400	
Cotton yarn	Cwt. 7,199	55,032	
Cotton and linen	Packages. 30	2,250	
Cotton and wool	— 56	4,480	
Earthen-ware and glass	— 1,898	41,940	
Fancy goods	— 100	4,000	
Hardware	— 458	13,841	
Linens	— 161	6,000	
Silks	— 161	16,100	
Woolens	— 504	50,300	
Copper	Cwt. 605	2,875	
Coals	Tons. 10,000	10,600	
Deal boards	Number. 1,016,197	50,850	
Drugs and colors	Packages. 1,271	12,710	
Fish, cod	Cwt. 7,750	5,813	
Herrings	Barrels. 85	170	
Hemp	Cwt. 476	1,904	
Iron	— 8,049	48,281	
Lead	— 11,496	5,748	
Leather	— 4,900	3,775	
Pitch and tar	— 226	4,440	
Saltpetre	Barrels. 539	1,078	
Stationery and books	Cwt. 444	898	
Steel	Packages. 146	2,140	
Tin in bars	Cwt. 1,500	1,500	
Tin in plates	— 325	1,600	
Tobacco	— 15,850	2,082	
Wax	— 2,672	63,400	
Wool	— 207	18,704	
Other articles	Value.	2,350	
Total	—	85,000	
Total	—	606,083	

Wheat is largely exported. It is of a mixed quality, hard, and is generally sold from the public magazines, or *caricatori*, by measure, without weight. But the best hard wheat, grown in the neighborhood of Palermo, is sold by the salma of 272 rottoli=476 lbs, English; the difference between weight and measure being made good by the seller or buyer, as the case may be. Wine is principally shipped from Marsala; lemons, oranges, and lemon-juice from Messina; salt from Trapani; and barilla from the southern coast. But all the articles to be found on the coast may, for the most part, be had at Palermo; unless, however, the quantity required be small, it is usually best to ship them from the outports, the expense of their conveyance to Palermo being very heavy. The crops of barilla and shumac come to market in August; but brimstone, salt, oil, wine, rags, etc., may generally be had all the year round. The first shipments of lemons and oranges may be made in the beginning of November.

Purchases of produce are always paid for in cash, generally half on making the purchase, and the other half on delivery, when in Palermo, and on receiving order for delivery, on the coast. The imports consist of cotton yarn, wool, and stuffs; sugar, coffee, cocoa, dye stuffs, iron, earthen-ware, spices, tin, hides, Newfoundland cod, timber for building, etc. The best of the old accounts of the trade of Sicily that we have met with is contained in SWINBURNE's *Travels in the Two Sicilies*, 4to ed., vol. ii. p. 401-413.

Palm (Lat. *palma*, the hand). An ancient measure of length taken from the extent of the hand. There were two different palms; one corresponding to the length of the hand, and the other to the breadth. The Roman palm was about eight and a half English inches. The English palm is understood to be three inches.

Palm Oil (Ger. *Palmöl*; Fr. *Huile de palme*, *Huile de Senegal*; It. *Olío di palma*; Sp. *Acete de palma*) is obtained from the fruit of several species of palms, but especially from that of the *Elais Guineensis*, growing on the west coast of Africa, to the south of Fernando Po, and in Brazil. When imported, the oil is about the consistence of butter, of a yellowish color, and scarcely any particular taste; by long keeping it becomes rancid, loses its color, which fades to a dirty white, and in this state is to be rejected. It is sometimes imitated with hog's lard, colored with turmeric, and scented with Florentine iris root. The inhabitants of the coast of Guinea employ palm oil for the same purposes that we do butter. Our supplies of palm oil are almost wholly derived from the west coast of Africa, of which it is the staple article of export.—LEWIS'S *Materia Medica*; THOMSON'S *Dispensatory*.

Candles are made of palm oil and cocoa-nut oil, of which many thousand tons per annum are now employed. This modern substitution of vegetable fat for animal fat is remarkable. It is bringing Central Africa into intimate commercial relations with civilized countries. The palm oil is liquid in Africa, but it assumes a solid state in a colder climate. The casks containing it have steam forced into them, by which the oil is melted and made to flow out; and the oil is then purified and bleached to various degrees of whiteness, according to the purpose to which it is to be applied. The whitened cakes of palm oil are cut into slices by a machine; the slices are deposited on mats of cocoa-nut fibre; the mats are piled in heaps, with iron plates between them; the heaps are placed in hydraulic presses, where intense pressure brings the palm oil to the state of dry, thin cakes. After a little more purification, the palm oil is fitted for melting, previous to the making of candles.

IMPORTS OF PALM OIL INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Districts imported into.	Gallons.	Value.
Salem and Beverly	06,078	\$238,417
Boston and Charlestown	76,064	25,102
New Bedford	322	82
New London	4,868	2,079
Stonington	4,073	1,507
New York	397,562	148,594
Baltimore	550	186
Mobile	40	59
Total	1,149,547	\$416,317

Palms, called by Linnaeus, from their noble and stately appearance, the princes of the vegetable kingdom, are a natural order of arborescent endogens, chiefly inhabiting the tropics, distinguished by their fleshy, colorless, six-parted flowers, inclosed within spathes; their minute embryo, lying in the midst of albumen, and remote from the hilum; and rigid, plaited or pinnated infarticulated leaves, sometimes called fronds. Wine, oil, flax, flour, sugar, and salt, says Humboldt, are the produce of this tribe; to which Von Martius adds thread, utensils, weapons, food, and habitations. The most common species is the cocoa-nut. Their wounded stems, or spathes, yield in abundance a sac-

charine fluid, known in India by the name of toddy. The succulent rind of the date is a most nutritious as well as agreeable fruit. "Sago is yielded by the interior of the trunks of nearly all, except *Areca catechu*, the well-known *pisang*, or betel-nut. The fruit of the latter species is remarkable for its narcotic or intoxicating power." The common canes or ratans of the shops are the flexible stems of species of the genus *Calamus*.

Pampas. The name given to one of the great systems of South American plains, which can scarcely, with propriety, be called *deserts*, inasmuch as they are covered with luxuriant herbage, and inhabited by vast herds of wild cattle and droves of horses. The region of the Pampas forms the basins of the Paraguay and La Plata, and includes the vast plains of Buenos Ayres, extending from the foot of the eastern ridge of the Andes to the "sea-like Plata," and stretching southward into the deserts of Patagonia.—*TRAILL's Physical Geography.* See *Quarterly Review*, xxxv., 114 (ROBERT SOUTHBY).

Pamphlet, a small book, usually printed in the octavo or duodecimo form, and stitched with paper cover, popularly understood to comprise from fifty to two hundred pages.

Panama, a city and sea-port of New Granada, on the Pacific, thirty-eight miles southeast from Chagres, lat. 8° 56' N.; long. 79° 31' 2" W. Population, 7000. It stands on a rocky peninsula, projecting into the Bay of Panama, and has an imposing aspect from the sea. Its streets are well ventilated, and it is said to be cleaner than most Spanish-American cities. It is encircled by irregular and not very strong fortifications, constructed at different periods. The houses are partly of wood, straw, and other fragile materials; but many are substantially built of stone, the larger having court-yards, or *pacios*, in the old Spanish style; and no doubt it has been much improved within the last two or three years. Its roadstead is one of the finest in the world. There are a number of islands a short distance from the main land, which afford secure anchorage for ships of any burden, and from which supplies of provisions, including excellent water, may easily be obtained. The tides daily rise and fall from twenty to twenty-seven feet, so that it is peculiarly well fitted for the repair and building of ships. Previously to 1740, when the trade with the Pacific first began to be carried on round Cape Horn, Panama was the principal entrepôt of trade between Europe and Western America. From that period, however, it fell off; and its decay was peculiarly rapid after the independence of South America, and the opening of the other ports of the Pacific. But since the occupation of California by the Americans, and especially since the discovery of the auriferous deposits in that country, it has again rapidly increased. And now that a railway is carried across the isthmus, it will in all probability attain to greater commercial distinction than ever. In the course of the year 1855 as many as twelve steamers were employed in the trade between Panama and San Francisco.

There is a treaty of commerce between the United States and New Granada, the terms of which are complied with by New Granada, but are sometimes broken by the local government of the province, which placed a tax upon passenger-carrying vessels, at the rate of one dollar for each passenger, which has been recently annulled by the supreme government of New Granada. The commercial intercourse of the United States is alone dependent on the regulations made by the general government of New Granada, which latter, by an act of Congress, has made Panama and other ports on the isthmus free ports of entry since the 1st of January, 1850. There are no privileges permitted to the commerce of other nations which are denied to the United States, and there are no restrictions imposed on the commerce of other nations other than what are

imposed upon that of the United States. The sum of \$6 40 is collected from each American vessel; viz., \$4 80 to the captain of the port, and \$1 60 to the interpreter. The same charge is made against New Granadian vessels, except the interpreter's fee. The transshipment of goods from one port to another in New Granada, or to a foreign country, by United States ships, is permitted without restrictions. The currency of this country, by a recent law, is established at ten dimes to the dollar. The weights and measures are the same as used in France, but as yet are not brought into use in this country. The French silver, by a law of New Granada, is made a legal tender at the rate of twenty cents to the one-franc piece, although, compared with the value of United States silver, it would only be worth 18-6 cents. New Granada does not export anything from here other than a very few hides, and the imports of the United States to this place consist only of coal and provisions for the steamers which carry passengers to and from the isthmus. The laborer in this consular jurisdiction receives from two to three dollars per day; mechanics from six to eight dollars per day; and clerks from \$1500 to \$2000 per annum. There are no price-current sheets published in this consular jurisdiction.—*Commercial Relations of the United States.*

Panama, or Darien (Isthmus of), connects North (or rather Central) and South America, and is comprised in the republic of New Granada, sec., Isthmus, forming a province between lat. 9° and 10° N., and long. 77° 30' and 81° W., having north the Caribbean Sea and Gulf of Darien, and south the Gulf of Panama. Length, west to east, about 200 miles, average breadth 40 miles, but in long. 79° it is narrowed to less than 30 miles. Surface undulating, the hill chains which extend through the isthmus, uniting the mountain systems of Central and South America, are, near Panama, not more than 260 feet above the level of the Pacific. A great quantity of rain falls; in the months of July, August, and September it rains incessantly. Soil very fertile; products comprise fine timber, in great variety, fruits, rice, maize, sugar-cane, coffee, cocoa, caoutchouc, vanilla, dyes, drugs, hides, limestone. On its north coast are Aspinwall (colony), Puerto-Bello, and Chagres; on its south side is Panama. A connection between the Atlantic and Pacific oceans has been proposed at different points of Central America; viz., at Tehuantepec, at Chiquimula, at Nicaragua, and at the narrowest part, where a railroad has been constructed between Aspinwall and Panama.

Passage across the Isthmus of Panama or Darien.—Latterly, or since the discovery of the mineral riches of California, the isthmus has become a great thoroughfare, vast numbers of individuals having crossed from the port of Chagres on the Caribbean Sea to Panama on the Pacific Ocean, and conversely. The port of Chagres is within the mouth of the river of that name, in lat. 9° 18' 6" N., long. 79° 59' 2" W. A bar at the mouth of the river has only from 10 feet to 12 feet water, though within the bar the river deepens to from four to six fathoms. It is probable that the bar might be deepened without much difficulty, and a canal might be cut from the bottom of the Bay of Manzanilla to the river, from which it is only three miles distant. A short while ago the town (if so it might be called) was a mere cluster of huts, unhealthy, and without any accommodation for passengers. But having latterly become one of the starting-points in the nearest and shortest route from the east to California, it has been considerably improved. A joint-stock company was formed in New York for the construction of a railway from or near Chagres, at the bottom of Manzanilla Bay, to Panama, a distance of about 34 or 35 miles. This railway has been completed, and is now in operation. The undertaking reflects great credit on American enterprise and perseverance. The difficulties to be overcome were of a very formidable description, partly from

the nature of the ground, which not unfrequently consisted of deep marshes, but more from the luxuriance and strength of the vegetation through which it was necessary to penetrate, and the heat, moisture, and unhealthiness of the climate. Unluckily, the desire to accomplish their task in the shortest time and at the least expense, tempted the engineers to execute the work in a very superficial manner, substituting bridges, viaducts, pillars, etc., of wood for those of stone, mortar, and iron. In a country where the decomposition of vegetable matter is so very rapid this was as false and spurious a species of economy as can well be imagined. Already several miles of the railway have had to be repaired, or rather reconstructed, by the substitution of *lignum vitae* and other hard woods for the softer ones that were first used. This, however, will do little more than palliate the evil; and there can be no doubt that eventually stone and iron bridges and viaducts will have to be used instead of wooden ones every where along the line. Trains take about four hours in passing from sea to sea; but were the railway properly finished, the passage might be performed in less than half that time. A station, called Aspinwall, has been erected on Manzanilla Island, in the Caribbean Sea. But it is extremely unhealthy, and there is little prospect of its ever becoming a place of much importance. —TOMES's *Panama Railroad*, New York, 1855, *passim*.

But supposing (which is not the case) that this railway were every thing that could be desired, still it is plain that the grand desideratum is the carrying across the isthmus of a water communication between the Atlantic and Pacific oceans. We do not mean by this a canal suitable only for coasters, or vessels of comparatively small burden. Such a channel would be of little use, except to the countries contiguous to its termini. What is really wanted is a canal that will admit ships of the largest burden, and bound on the longest voyages. The advantages that would result from having the isthmus perforated by such a channel can not be easily exaggerated. No other project that appears to be within the limits of possibility, perhaps not even the carrying of a ship canal across the Isthmus of Suez, would give so great a stimulus to commerce and navigation. It would remove the barrier which renders the navigation between the eastern and western coasts of America so tedious and difficult. And, by doing this, it would enable ships from Europe to reach the latter and the Pacific in less than half the time they do at present, while it would greatly facilitate the voyage to Australia and China.

And a grand project of this sort is on foot. It is proposed to cut a canal that shall admit ships of 1000 tons burden and upward, between Porto Escoces (lat. 8° 5' N., long. 77° 21' W.), near Point Caledonia, in the Gulf of Darien, on the Caribbean Sea, and the Rio Savana, which falls into the Gulf of San Miguel, on the Pacific. The intervening space (about 38 or 40 miles) is said to be comparatively flat; the ports at each extremity are easy of access, and have deep water; and it is proposed that the canal should be constructed throughout on the same level, and have no locks. The cost of the project is estimated at from 12 to 15 millions sterling. And considering the vast importance of such a work to the United States, to England, and, indeed, to all maritime nations, this expense, heavy as it may appear, should be reckoned a subordinate matter. Were the country through which it is to pass in the possession of England or the United States, it would most probably have been undertaken. But the unsettled state of Central America, and the knotty questions that might eventually arise as to the property and management of the canal, are serious obstacles to its being proceeded with.—See, for ample details on this interesting subject, the work of Dr. CULLEN, entitled *Isthmus of Darien Ship Canal*.

The route by which the railroad passes is in every respect the most desirable for this purpose, and the

means by which the character of the country could be best known, as far as its topography and the features essential to the object in view could be seen. It was, in fact, the direct means for the accomplishment of the purpose. It is supposed that the canal will be united with the waters of the Pacific on either side of the city, and that a channel might be dredged to the depth of thirty feet, to meet the navigable waters for ships of large draught. The bay then expands into an ample harbor, where the winds are said never to blow with violence, sufficiently comprehensive for the commerce of the world, and studded with islands, convenient for all the great purposes that the condition of things would call for, by the construction of a canal through the isthmus.

The Isthmus itself seems to present no serious obstacle to science for the construction of a canal. The whole extent, from the Atlantic to the Pacific, is made up of swamps, hills, and plains; and the highest point of land where the railroad passes is not more than 286 feet above the level of the sea. On the whole route, most if not all the hills through which the canal would pass would be required for embankments over the plains and swamps; and there are no insuperable obstacles to piercing the highest part, so as conveniently to make the waters of the Chagres, Obispo, and Rio Grande available for the wants of a canal. In a climate less unfavorable to the white man, the question of "feasibility" would not be raised. It seems to be conceded, from experience, that the African race alone persistently labor in this climate. A few thousand of free blacks might be obtained from the West India Islands; but this resource would be inadequate, as was experienced by the operations on the Panama Road. The want of men to labor would seem to be the great obstacle to the successful accomplishment of a work of so much magnitude.

On the Atlantic side the canal would enter the Bay of Aspinwall. In approaching this point, it would pass a few miles from the Chagres, and enter the bay near the River Mindi. Here, it will be seen, as in the Bay of Panama, extensive dredging for a channel to meet the deep water would be necessary. The bay expands for the distance of about five miles, between two headlands, and is open to the sea. A breakwater would be necessary here. With such an one as would afford the necessary protection against the ocean swell, the Bay of Aspinwall, like the Bay of Panama, would afford ample room for the commerce of Europe as well as America; and in contemplating these two bays with the eye of a seaman, and in reference to the great work in question, it would look as though nature had provided them for the especial convenience of man in his laborious undertakings in the extension of commerce, and a place where all nations may meet, in their varied pursuits on the great highway of the ocean. In a work like that of a canal through the Isthmus of Darien, it is to be supposed that the requirements of commerce and navigation, in its most extended application, would alone be considered; and, taking this for a standard, a canal two hundred feet wide and thirty feet deep would seem to be the appropriate dimensions. With such an avenue from the Atlantic, the stormy and distant seas of the South would be abandoned by Europe as well as America, and we should meet there on neutral ground, pursuing with a common purpose the paths of peace and industry, which by its means, we may suppose, would effect a moral revolution such as the world has never known, and surpassing in importance that which would be effected in the revolution of the commercial world.

Appended is a paper submitted by Colonel G. M. Totten, containing dimensions and other data for the proposed ship-canal across the Isthmus of Panama:

Dimensions and other Data of the proposed Ship-Canal across the Isthmus of Panama.—Length from shore to shore, 45½ miles. Length from five fathoms water

in Navy Bay, on the Atlantic, to three fathoms water in Panama Bay, on the Pacific, 48½ miles. The prism of water to be 150 feet wide at the bottom, 270 feet wide at surface, and 31 feet deep. The locks to be 400 feet in clear length of chamber, and 90 feet in clear width. The summit level will be 150 feet above mean tide of the Atlantic and Pacific oceans. The summit cut will be about four miles long. The deepest cutting on this level will be 136 feet, and the average depth of the cut will be 49 feet. The River Chagres yields an ample supply of water for the canal at all seasons of the year. The summit level will be supplied by a feeder about twenty-four miles long, which will tap the River Chagres about twenty-one miles above the town of Cruces, where the level of the river is about one hundred and eighty-five feet above mean tide, and about thirty-five feet above the summit level. The cost of this canal, including the requisite harbor improvements at each end, will not exceed \$80,000,000. —COMMODORE PAULDING'S *Report to the Navy Department*, United States, 1857.

The following figures will show the comparative distances from New York to San Francisco of the four routes, exclusive of the land travel:

Routes.	Distance on Atlantic.	Distance on Pacific.	Total.
	Miles.	Miles.	Miles.
Panama.....	2392	3755	6147
Nicaragua.....	2403	2964	5367
Honduras.....	2102	2865	4967
Tehuantepec.....	2276	2305	4581

The several transit distances, and the total distances from New York to San Francisco, are shown by the following table:

Routes.	Transit Distances.	Total Distances.
	Miles.	Miles.
Panama.....	51	6198
Nicaragua.....	137	5504
Honduras.....	161	5123
Tehuantepec.....	236	4817

Papal States. This portion of Italy comprises an area of 17,210 square miles, and contained in 1850 a population of 3,066,771 inhabitants. The chief productions of the Papal States are wheat, maize, pulse, hemp, wine, oil, and tobacco. There are numerous mines of iron, lead, sulphur, alum, vitriol, and other volcanic products; but, with the exception of the sulphur mines near Rimini, they are unproductive. The quantity of this article annually manufactured amounts to about 84,000,000 pounds. The manufactures of the Papal States comprise silks, leather, gloves, paper, musical strings, iron and glass ware, a few cotton goods (at Rome), crape and sausages (at Bologna), and cordage, soap, cream of tartar, and glue. There is no direct trade between the United States and the Papal States—the latter deriving their supplies of cotton, sugar, coffee, cocoa, rum, etc., from the ports of Genoa and Trieste. The foreign commerce of these states is conducted chiefly through the ports of Ancona and Civita Vecchia—the former with the western shores of the Adriatic, and the latter with the Mediterranean ports. The celebrated Roman cement is exported from the port of Civita Vecchia.

Foreign Trade.—In 1850, the foreign trade of Ancona represented \$4,464,000, viz., imports, \$2,976,000; exports, \$1,488,000. This trade was distributed between Austria, England, and its dependencies in Europe, these countries appropriating more than three-fourths of the whole. During the same year the foreign trade of Civita Vecchia amounted to \$3,821,928; viz., imports, \$2,929,314; exports, \$892,614. The countries participating in this trade were France, Sardinia, England, Holland, and the Two Sicilies. The whole foreign commerce of the Papal States in 1850 amounted to \$19,208,680; and in 1851 to \$20,454,240. All foreign vessels are permitted to engage in the coasting trade of the States on the payment of the fol-

lowing dues: Anchorage, on French, Austrian, and American vessels, three bajocchi per ton—about three cents. Foreign vessels putting into harbor, either for anchorage or through stress of weather, pay half of the above-named duty.—See ITALY.

Clearance Duty.—For each vessel of from 1 to 149 tons, ten bajocchi (ten cents); and for 150 tons and upward, twenty bajocchi (twenty cents). No vessels enjoy an exemption from the custom-house duties on imports and exports. These duties have recently undergone several reductions, applicable chiefly to articles of necessity; on articles of luxury, in which sugar is included, the duties have been proportionably raised. —*Commercial Relations of the United States.*

Paper (Ger. and Du. *Papier*; Fr. *Papier*; It. *Carta*; Sp. *Papel*; Russ. *Bumaga*; Lat. *Charta*; Arab. *Kartas*; Pers. *Kaghaz*). This highly useful substance is, as every one knows, thin, flexible, of different colors, but most commonly white, being used for writing and printing upon, and for various other purposes. It is manufactured of vegetable matter reduced to a sort of pulp. The term paper is derived from the Greek word *παπύρος*, *popyrus*, the name of the plant on the inner bark of which (*Liber*, βίβλος, whence our word *book*) the ancients used to write. Paper is made up into sheets, quires, and reams, each quire consisting of twenty-four sheets, and each ream of twenty quires.

Historical Sketch of Paper. *Difference between ancient and modern Paper.*—Some of those learned and ingenious persons who have investigated the arts of the ancient world have expressed their surprise that the Greeks and Romans, though they possessed an immense number of books, and approached very near to printing in the stamping of words and letters, and similar devices, should not have discovered the art; the first rude attempts at typography being sufficiently obvious, though much time and contrivance have been required to bring the process to its present state of perfection. But they should rather, perhaps, have wondered that the more civilized nations of antiquity did not invent paper, an invention which, it may easily be shown, necessarily preceded that of printing. But this was an exceedingly difficult task; the more so, that the vast importance of paper could not be appreciated, or even imagined, till after it had been generally introduced. At first, the memory of important events appears to have been handed down by inscriptions cut on rocks, pillars of stone or marble, and the walls of edifices; and this primitive usage is still retained in the monuments in our churches and cemeteries. In a later, though still very remote age, men were accustomed to write upon portable surfaces of various kinds. Every body knows that the Decalogue was written upon tables of stone; and Joshua wrote a copy of the law upon the like materials.—*Josh. c. viii., v. 32.* The Greeks and Romans engraved laws, treaties, contracts, and other important documents, on plates of brass; and it is stated that a fire which broke out in the capitol, in the reign of Vespasian, consumed above 3000 such bronze muniments.—*Nouveau Traité de Diplomatique, i. 451.* But exclusive of plates of this sort, which were necessarily inconvenient, costly, and quite unfit for ordinary use, thin and flexible plates of lead and other metals (*Job, c. xix., v. 23, 24*), thin pieces of wood, skins, parchment, linen, and a variety of similar substances, were used in writing. Cheaper materials, such as the leaves and bark of trees, palms, etc., were also used from a very remote period for the same purpose; but leaves (*χάρται, chartæ*) being, when dry, apt to split in the direction of the fibres, it was found to be necessary, in preparing them for writing, to glue them together, so that the fibres might cross each other in opposite directions. The texture of the leaf, or sheet, if we may so call it, is thus greatly strengthened; and when it has been smoothed, polished, and fitted for use, it is less inconvenient and better looking than might be supposed. Such, in

fact, is the principle on which the paper of the ancients was formed. This, however, which was called *Charta Egyptiaca*, from the place of its manufacture, did not consist of leaves, but of the inner bark of the famous reed or rush, the *Cyperus Papyrus*, found along the banks of the Nile, or rather in the pools and ditches which communicate with the river. The ancients applied this useful plant to an immense variety of purposes; but here we shall only notice that from which it has acquired an immortality of renown. The inner bark having been divided by a needle or other sharp instrument into very thin and broad layers or filaments, portions of these were placed side by side longitudinally, and glued together at the ends; another portion being glued cross-wise on the backs of the latter, to give the page the requisite strength. Pliny and other writers have described the process (*Hist. Nat. lib. xiii. c. 11, 12, 13*), which has been further elucidated by Hardouin and other commentators. But the fullest and ablest discussion of this curious subject is contained in the very learned and elaborate work, the *Nouveau Traité de Diplomatique* (i. p. 448-524), where the most interesting particulars respecting the history and manufacture of papyrus, as well as of the greater number of the other writing materials used in antiquity, have been collected and set in the clearest point of view.—See also the *Dictionnaire Diplomatique* of De Vaines, art. PAPIER, ii. 165-174. Bruce has given a summary of the authorities in the seventh volume of the octavo edition of his *Travels*; and, not satisfied with this, he attempted to make paper from the papyrus, in which, not being very successful, he imputes his failure to errors in the statements of Pliny; not reflecting that, had he endeavored, trusting to written directions, without experience and traditional art, to make modern paper, or even a pair of shoes, he would most probably have been equally unsuccessful. Egypt enjoyed for a lengthened period a natural monopoly of this valuable article, and even attempted, in anticipation of a later policy, by prohibiting the growth of the papyrus, except in certain localities, and limiting its supply, to sell its produce at an artificially enhanced price!—AMELION, *Commerce des Egyptiens*, p. 238. But this policy ceased on the conquest of Egypt by the Romans, who, having imported the plant into Rome, succeeded in preparing from it a very superior article. Pliny enumerates the various kinds of paper, from the coarsest, which was used, like our brown paper, for packing, to the most expensive and finest. The latter, which was made of the innermost filaments, was of a snowy whiteness; and when properly dressed and polished, was easily written upon. The consumption was very considerable; and being, after the foundation of Alexandria, principally made in that city, it formed an important article in her commerce, and furnished employment for many workmen and much capital. Flavius Vopiscus relates that, in the third century, the tyrant Firmus used to say there was so much paper there, and so large a quantity of the glue or size used in its preparation, that he could maintain an army with it: "*Tantum habuisse de chartis, ut publicæ sæpe diceret, exercitum se alere posse papyrò et glutinò.*" We may doubt whether the value of the paper at present belonging to any single city would do the like. *Charta Egyptiaca* is very ancient, having, notwithstanding the assertion of Varro and Pliny to the contrary (*Hist. Nat. lib. xiii. cap. 11*), been in common use long before the age of Alexander. This is evident from the statement of Herodotus, who, though he lived about a century before that conqueror, tells us that in former times, when papyrus was scarce, the Ionians wrote on the skins of goats and sheep, and that that practice continued to be customary among several barbarous nations.—Lib. v. cap. 58.

Though white, smooth, durable, and not ill adapted for writing, ancient paper was not suited for the printer; by reason of the closeness of the grain, it would

not have received the ink from types more kindly than shavings of wood, and such like materials; and its texture was so very brittle that it would have shivered to pieces under the press. It was, in truth, an inartificial mass ("*viscera nivea virulentum herbarum*"), no great invention or ingenuity being discovered in its preparation. Modern paper, on the other hand, is wholly artificial; and the contrivances for its manufacture are marvelous alike for the sagacity evinced in their design and their practical efficiency. Like the paper of antiquity, it is formed of the filaments of various sorts of vegetable substances, derived principally from the tearing to pieces or pounding cotton and linen rags, and similar materials, mixed with water. This process is called beating them into pulp; and when examined with a microscope, the floating filaments are found to be well fitted for adhering together, being jagged and rough, and mixed in every possible way. A portion of this mixture or pulp being, when properly prepared, poured upon moulds or sieves of fine woven wire, the water is drained off, and the suspended fibres falling to the bottom, form a layer or sheet, which, being consolidated by pressure and dried, becomes paper, its strength and goodness depending, of course, in a great measure, on the quality of the rag or other material of which it is made. Paper used to be manufactured by dipping sieves or frames into the pulp, the portion of filaments so lifted up forming the sheet of paper. But the application of rotary motion to the manufacture has effected a total change in the mode in which it was carried on: instead of dipping the sieves or frames into the cistern of pulp, a circular web, or round towel of woven wire, revolves horizontally under the vessel (technically called the vat), receives the deposit, conveys it away, and, by an adjustment of extraordinary delicacy, transfers it uninjured, though as fragile as a wet cobweb, to a similar revolving towel of felt; thus an endless web of paper is spun, as long, at least, as the machine continues to move and pulp is supplied.

The pervious and spongy texture of paper make it readily imbibe and retain the ink impressed on it by types in printing, and by the pen in writing; its toughness hinders it from being easily torn; and, in a well-bound book, under favorable circumstances, its duration is indefinite, and, for all practical purposes, eternal! It is true that legal documents are sometimes written or printed on parchment, which is less liable to be torn or injured by rubbing; the luxury of typography occasionally, also, exhibits a few impressions of a splendid work upon vellum; and it is further true that these substances were used for writing upon by the ancients; but they are necessarily expensive, and the cost of either far exceeds the means of the great majority of book buyers—so that it would be altogether unprofitable to cast types, to construct presses, and to incur the various and heavy charges of an establishment for printing, unless we possessed a cheaper material on which to print. Almost all the more ancient and valuable existing Greek and Latin manuscripts are written either on parchment or vellum, but generally on the latter. It is singular, however, that while such is the case, all or almost all the very old charters and diplomas are written on papyrus. Indeed, the learned authors of the *Nouveau Traité de Diplomatique* affirm that no parchment charter has been discovered anterior to the sixth century.

It appears to be sufficiently established that paper, fabricated like that now in use, of cotton and other vegetable materials, and of silk, has been manufactured in China from a very remote epoch.—*Nouveau Traité de Diplomatique*. The Arab historians state that similar paper was manufactured in Mecca in the beginning of the eighth century (ANDRES, *Origine e Progressi d' Ogni Letteratura*, and GIBBON, ix. 379); and most probably the mode of its production was then also known to the Greeks. It appears to have been

soon after introduced into Europe, but it is doubtful whether this were done by the Arabians or Greeks. The mode of fabricating paper from cotton and other vegetable materials being once discovered, its fabrication from linen rags was a comparatively easy, and in Europe, where cotton was then extremely scarce, an all but necessary step. It is singular, however, that we have no positive information either as to the country where, or the epoch when, paper from rags began to be manufactured in Europe. *Mais on ne peut reculer son invention plus tard, qu'au Treizieme siecle, ni son usage ordinaire au-delà du Quatorzieme. — Nouveau Traité, etc., i. 524.* In fact, Egyptian paper, or paper made of papyrus in the manner described above, continued to be partially employed down to the middle of the eleventh century, though parchment was then the principal material used in writing. It is curious to observe how, very shortly the introduction of paper preceded the invention of printing, to which, indeed, as already seen, it was an indispensable preliminary. Muratori attributes the ignorance of the barbarous ages principally to the scarcity and high price of paper, and the superior intelligence of modern times to its abundance and cheapness. — ANDRES, i. 200. And whatever opinion may be entertained as to the first part of this statement, there can be no question that the latter is perfectly well founded.

Not only are we in the dark as to the history of modern paper, but we are unable to make any very satisfactory conjectural estimate of the mode in which it was invented. It is all but certain that the invention must have been suggested by accident, or by observing the effects produced by the accidental drying of triturated vegetable matter, or in some such way; and that the hint thus afforded was gradually improved upon. It is not possible to imagine that the invention should have been wholly the result of design; for we can not conceive how any one without any previous knowledge should have proposed to himself to produce paper by pounding rags, or other vegetable matter, mixing the mass in water, and then pressing and drying the deposit. But, without indulging in unprofitable conjectures, it is at all events certain that, however and by whomsoever discovered, no invention has been of greater importance. *Charte usu maxime humanitas vite constat et memoria.* — PLINY, *Hist. Nat. lib. xiii. cap. 11.* The processes by which the most worthless and vilest materials are converted into such admirable substances as paper and glass are probably the greatest triumphs of human talent and ingenuity. They have more than realized the dreams of the alchemists, and have been incomparably more advantageous than if we had become acquainted with a means of transmuting the inferior metals into gold.

In 1813, Dr. Colquhoun estimated the value of paper annually produced in Great Britain at £2,000,000; but Mr. Stevenson, an incomparably better authority upon such subjects, estimated it at only half this sum. From information obtained from those engaged in the trade, we incline to think that the total annual value of the paper manufactured in the United Kingdom, exclusive of the duty, may at present amount to about £1,600,000 or £1,700,000. There are about 700 paper-mills in England, and from 70 to 80 in Scotland. The number in Ireland is but inconsiderable. Of these mills, we believe, very few have lately been unemployed. It was formerly customary to collect the rags used in the manufacture into large heaps, in order that, by their heating and fermentation, they might be the more easily reduced to filaments. But this injured the rags; and it is now the practice to tear them to pieces, without any such preparation, by powerful machines constructed for the purpose. During the present century this manufacture has been signally promoted by the combined influence of science, ingenuity, and mechanical skill. These have been successfully exerted in the preparation of the pulp; the conversion of the pulp

into paper, and the provision of materials; and in none has their influence been more remarkable than in the last. This is evident from the fact that, while the manufacture has been more than doubled since 1820, the demand for Continental rags and other foreign materials has actually been reduced within that time, in consequence of the immense home supply we derive from substances previously regarded as worthless, and treated as refuse. The sweepings of cotton and flax mills, owing to the grease and dirt with which they are mixed up, were, until within these few years, of no value whatever, except as manure. The chemical and mechanical processes by which these materials are purified, whitened, and made available for the production of paper, without their strength being impaired, are not only exceedingly interesting in themselves, but are of great national importance; and, by reducing the cost of paper, have done ten times more to lower the price of books, and diffuse literature, than all the efforts of all the societies that ever existed.

The first idea of a machine for converting pulp into paper originated in France, the inventor being an ingenious workman of the name of Louis Robert. A model of this machine was brought to England by M. Leger Didot; and though at first it was far from giving an assurance of success, it sufficed to induce English capitalists and engineers, particularly Mr. Donkin, to follow up the scheme; and in the course of a few years they brought it to a high degree of perfection.

The following tabular statement exhibits the aggregate quantities, values, and prices per pound of rags imported into the United States from all countries, distinguishing in a separate column the quantities received from Italy during a period of ten consecutive years, from 1846 to 1855:

Years.	Rags imported from all Countries	Rags imported from Italy.	Aggregate Values	Price per Pound.
	Pounds	Pounds	Dollars.	Cents.
1846.....	9,837,706	8,002,865	385 020	3 89
1847.....	8,164 886	6,529,234	304 177	3 73
1848.....	17,014,587	13,808,036	626 136	3 68
1849.....	14,941,236	11,009,608	524 437	2 51
1850.....	20,696,875	15,861,266	747 137	3 61
1851.....	26,094,701	18,512,673	902 876	3 46
1852.....	18,288,458	12,220,579	622 876	3 42
1853.....	22,766,000	14,171,202	985 465	3 31
1854.....	32,015,753	24,240,999	1,007 826	3 39
1855.....	40,013,516	23,948,612	1,224 413	3 06
Aggregate.....	209,888,716	148,300,155	\$7,328,721	
Ann. average .	20,988,371	14,830,015	732 872	

From the preceding table it will be seen that during the decennial period ending with 1855 the aggregate quantity of rags imported into the United States from all parts was 206,631,954 lbs., while the aggregate quantity received from Italy reached as high as 148,300,155 lbs. The annual average for the period designated will, however, furnish a more statistical basis for ascertaining the relative importance of Italy compared with all other countries as the principal source of supply upon which the United States must rely, with any degree of certainty, for an article the consumption of which is so rapidly increasing there; even during the past year, an alarming deficiency of the manufactured material was seriously apprehended by the conductors of our periodical and newspaper journals. The average annual quantity imported into the United States from all countries during the period designated was 20,988,371 lbs.; the average annual quantity received from Italy was 14,830,015 lbs. Thus it is shown that instead of one-fifth Italy actually furnishes nearly two-thirds of all the rags imported into the United States.—See RAGS.

The consumption of paper in the United States is equal to that of France and England combined. In other words, the 28,000,000 inhabitants of the United States consume as much paper as the 64,000,000 inhabitants of France and England. This is very near-

ly correct. The statistics, however, will prove interesting. The number of paper-mills in operation in England in 1835 was 750, and the annual value of the paper manufactured reached as high as \$6,000,000. At that period, however, the manufacture of paper was burdened with an excise duty amounting to more than three times as much as the total wages of the hands employed in making it, and the quantity annually produced did not exceed 50,000,000 lbs. of first-class and 16,000,000 lbs. of second-class paper, requiring a supply of about 100,000,000 lbs. of rags.

Improvements in machinery and mode of manufacture, and the application of steam, have reduced the number of mills in Great Britain and Ireland to 380, according to the latest statistical returns; while the quantity of rags annually consumed has risen to 201,600,000 lbs., or over 100 per cent. We have compiled from a recent, though in this country a rare Dublin publication on statistics, the following tabular statement, showing the quantity of paper manufactured, consumed, and exported in Great Britain for a period of nine years, ending with 1854:

COMPARATIVE STATEMENT SHOWING THE QUANTITIES OF PAPER MANUFACTURED, CONSUMED, AND EXPORTED IN GREAT BRITAIN FROM 1846 TO 1854.

Years.	Pounds of Paper manufactured in Great Britain.	Pounds of Paper retained for Consumption in Great Britain.	Pounds of Paper exported from Great Britain.
1846	127,400,000	122,600,000	4,836,000
1847	121,900,000	116,100,000	5,852,000
1848	121,800,000	116,600,000	5,180,000
1849	132,100,000	126,100,000	5,966,000
1850	141,000,000	133,200,000	7,762,000
1851	160,900,000	142,500,000	8,305,000
1852	154,490,000	147,100,000	7,328,000
1853	177,600,000	164,900,000	13,296,000
1854	177,800,000	161,700,000	16,112,000

France turns into paper annually about 235,200,000 lbs. of rags, producing about 156,800,000 lbs. of paper. In the United States there are 750 paper-mills, which work up each year about 405,000,000 lbs. of rags. Assuming (the usual estimate) that $1\frac{1}{2}$ lb. of rags yields 1 lb. of paper, we have the following comparative statement for the United States, and France and Great Britain combined:

	Pounds of Rags annually consumed.	Pounds of Paper annually manufactured.	Pounds of Paper per Capita.
United States.....	405,000,000	270,000,000	10.30
Great Britain and France combined)	436,900,000	291,200,000	4.55

From this statement it appears that the United States consumes 31,800,000 lbs. of rags, and manufactures 21,200,000 lbs. of paper, less than Great Britain and France combined, while the quantity of paper manufactured *per capita* of the population of the former is more than double that assigned to the combined population of the two latter. The quantity of paper imported in Great Britain and France and added to

the stock for consumption might vary slightly, but not materially, the above results. The preceding statement, however, omits the quantities annually imported and exported by each of the countries respectively, items without which no calculation as to consumption can be accurately made. The importation of paper of all kinds into France in 1853 did not exceed 337,104 lbs., while the exports amounted to 17,053,657 lbs. This gives an excess of exports over imports to be supplied from the stock of domestic manufacture, of 16,716,553 lbs. Deduct this from 156,800,000 lbs., the quantity manufactured, and we have left for consumption 140,083,447 lbs., or 3.89 lbs. *per capita* of the population.

During the same year there were imported into England, according to the Report on Trade and Navigation, 909,250 lbs. of paper. The report gives this quantity for the last six months of the year only; assuming that the importation during the first six months was equal to that for the last as above given, and the total importation would reach, say 200,000 lbs. The quantity exported, we have seen, was 13,296,874 lbs., leaving an excess of exports over imports of 13,696,874 lbs. Recent and important improvements have been made, by the use of refuse tanned leather, bark of the cotton-stalk, pulp from the fibres of endogenous plants, as raw materials for the manufacture of paper.—*Scientific Ann.*

EXPORTS OF PAPER AND STATIONERY OF DOMESTIC MANUFACTURE FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whither Exported.	Value.
Russia on the Baltic and North Seas	\$300
Russian Possessions in North America	614
Danish West Indies	1,567
Bremen	330
Dutch West Indies	568
England	290
Canada	63,632
Other British North American Possessions	20,678
British West Indies	3,332
British Honduras	262
British Guiana	2,369
British Possessions in Africa	364
British Australia	1,645
British East Indies	180
France on the Atlantic	1,260
Cuba	43,186
Porto Rico	5,624
Cape de Verd Islands	124
Other ports in Africa	547
Hayti	3,059
San Domingo	49
Mexico	10,965
Central Republic	713
New Granada	7,195
Venezuela	11,068
Brazil	9,295
Uruguay, or Cisplatine Republic	403
Buenos Ayres, or Argentine Republic	883
Chili	2,757
Peru	1,533
Sandwich Islands	4,330
China	3,391
Total value.....	\$203,013

* IMPORTS OF PAPER AND MANUFACTURES OF PAPER INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whence imported.	Paper Mache Articles.	Paper Hangings.	Paper Boxes and Fancy Boxes.	Paper and Manufactures of.	Blank Books.	Writing Paper.	Sheathing Paper.	Playing Cards.
Hamburg.....	\$771	\$1,441	\$530	\$2,089	\$453	\$3,361	...	\$293
Bremen.....	5,469	1,474	6,405	17,482	954	14,777	...	489
Holland.....	62	4,604	...	4,994	2	711	...	33
Belgium.....	238	3,006	141	2,430	141	72,410	...	2,516
England.....	9,285	56,650	7,412	62,647	5,361	68,868	...	2,382
Scotland.....	...	...	75	440	38	867	...	...
Gibraltar.....	49	...	...	...	...	...	...	...
Canada.....	...	...	10	4	...	15	...	...
British West Indies.....	...	...	...	...	...	12	...	...
British East Indies.....	...	...	12	19	...	...	...	...
France on the Atlantic.....	9,187	161,560	21,328	34,519	5,588	102,354	...	2,845
France on the Mediterranean.....	...	...	...	13	...	...	...	...
Spain on the Mediterranean.....	...	...	...	...	...	1,133	...	493
Cuba.....	...	...	337	327	...	1,211	\$5580	895
Sardinia.....	...	...	...	...	...	5,492	...	...
Tuscany.....	...	...	100	33	...	...	...	...
New Granada.....	...	...	287	205	109	93	...	257
Chili.....	...	...	...	3,835	...	662	...	376
Peru.....	...	...	11	...	...	...	...	...
China.....	...	42	...	6,076	294	44	...	63
Total value.....	\$25,051	\$228,577	\$36,700	\$135,167	\$12,940	\$272,010	\$5580	\$10,577

Paper Boxes.—The manufacture of boxes from paper, or rather pasteboard, has become a very large one, from the custom of so many manufacturers selling their goods in these boxes. It is said that in Paris four thousand persons are employed in this trade alone. The trade is divided into six branches. The first comprises the most elaborately-finished and ornamented boxes, for the display of artificial flowers, rich velvets, ribbons, silks, trimmings, medals, miniatures, and corbeilles for wedding presents. The second class consists of boxes and small ornaments for confectioners. The third kind are used for packing toys and trinkets of small size. The fourth kind are for perfumery, fans, gloves, etc. The fifth comprises large boxes for shawls and ribbons for exportation. The sixth are pill-boxes, wafer-boxes, and others of the smallest kind. The French productions in this department of manufactures are superior to any other in neatness of execution and taste of ornamentation.

Chinese Paper.—The Chinese make a filamentous kind of paper much superior to ancient papyrus; it obtains in England the name of rice-paper; but sufficient is now known of it to show that this is by no means a correct designation. Dr. Livingstone introduced Chinese rice-paper in England about half a century ago; it had great favor as a material for artificial flowers. It was many years afterward that information was obtained concerning the mode adopted by the Chinese in making these small but very expensive sheets of paper. There is a leguminous plant growing in China and India, the stem of which is cut into pieces eight or ten inches in length; and these are cut by the Chinese into one continuous spiral film, on the same principle as the modern mode of veneer cutting, but by the dexterous use of hand-tools. These laminae, spread out and pressed flat, form thin sheets, which, after being dyed and otherwise prepared, constitute the rice-paper of the Chinese.

The same ingenious people make paper of bamboo. The bamboo stems, when about three or four inches thick, are cut into pieces four or five inches long. These, when softened in water, are washed, cut into filaments, dried and bleached in the sun, boiled, beaten to a pulp, and made into thin sheets of paper. This is truly paper, which the former examples are not; and the art must have made a considerable advance before such a method could have suggested itself.

Paper-hangings.—Stamped paper for this purpose was first made in Spain and Holland about A.D. 1555. Made of velvet and floss for hanging apartments, about 1620. The manufacture of this kind of paper rapidly improved in Great Britain from early in the eighteenth century; and it has now been brought to great perfection. Since this important and elegant substitute for the ancient "hangings" of tapestry or cloth came into use about 200 years ago, the manufacture has undergone a gradual succession of improvements, and has now reached a high state of beauty and perfection. The patterns on these papers are sometimes produced by stencil plates, but more commonly by blocks, each color being laid on by a separate block cut in wood or metal upon a plain or tinted ground. The patterns are sometimes printed in varnish or size, and gilt or copper leaf applied; or bisulphuret of tin (*aurum musinum*) is dusted over so as to adhere to the pattern; and in what are called *flock papers*, dyed wools minced into powder are similarly applied. Powdered steatite, or French chalk, is used to produce the peculiar gloss known under the name of *satén*. Striped papers are sometimes made by passing the paper rapidly under a trough, which has parallel slits in its bottom through which the color is delivered; and a number of other very ingenious and beautiful contrivances have lately been applied in this important branch of art. The invention of the paper machine, by which any length of paper may be obtained, effected a great change in paper-hangings, which could formerly only be printed

upon separate sheets, and were much more inconvenient to print as well as to apply to the walls.

Papier-mache, a name given to articles manufactured of the pulp of paper, or of old paper ground up into a pulp, bleached, if necessary, and moulded into various forms. This article has lately been used upon an extensive scale for the manufacture of mouldings, rosettes, and other architectural ornaments; pilasters, capitals, and even figures as large as life, have also been made of it. It is lighter, more durable, and less brittle and liable to damage than plaster, and admits of being colored, gilt, or otherwise ornamented. Another article sometimes goes under the same name which is more like pasteboard, consisting of sheets of paper pasted or glued and powerfully pressed together, so as to acquire, when dry, the hardness of board, and yet to admit, while moist, of curvature and flexure: tea-trays, waiters, snuff-boxes, and similar articles are thus prepared, and afterward carefully covered by Japan or other varnishes, and often beautifully ornamented by figures or landscapes and other devices, etc., occasionally inlaid with mother of pearl. A mixture of sulphate of iron, quicklime, and glue, or white of egg, with the pulp for papier-mache, renders it to a greater extent water-proof; and the further addition of borax and phosphate of soda contributes to make it almost fire-proof. The chief papier-mache manufactory in England is that of Bielefeld, in Wellington Street, Strand, who has recently published a concise history of the manufacture, embellished with numerous illustrations. There are manufactories of papier-mache goods now established in Massachusetts. For the imports of articles of papier-mache, see PAPER.

Para, or Belem, a sea-port city of Brazil, capital of the province, 70 miles from the Atlantic, latitude of Fort St. Pedro $1^{\circ} 28' S$, long. $48^{\circ} 30' 5'' W$. Population estimated at 10,000, mostly of European descent. It stands on elevated ground, on the south shore of the Bay of Guajara, on the right bank of the Para, or Tocantins, and has a fine appearance from the river. Chief edifices, the governor's palace, cathedral, several other churches, convents, barracks, arsenal, episcopal palace and seminary, formerly a Jesuits' college; a prison, and an unfinished theatre. Vessels of large draft can lie near the city, and the cocoa, caoutchouc, isinglass, rice, and drugs, exported from Brazil are chiefly from Para. It has also a trade in cotton, vanilla, annatto, dye-woods, honey, wax, and a great variety of other vegetable and animal products. The trade is mostly with Liverpool, London, Barbadoes, Cayenne, and the North American and other Brazilian ports. The River Para, bounding the island of Marajo southward, extends between long. $48^{\circ} 10'$ and $50^{\circ} 40' W$, receives the Tocantins and Annapu from the south, and is connected northward with the Amazon.

Para enjoys an advantage possessed by no other sea-port town in Brazil—that of an unobstructed intercourse by water with the interior. The commercial resources of this province, and the admirable trading position of the city, are unsurpassed; but inhabitants are wanting to develop these elements of commerce and civilization. In 1840, some American citizens established several saw-mills at Maguary, in the vicinity of Para; but whether they met with better success than did the Glasgow merchants, whose property to the amount of \$350,000 was pillaged in the same place during a revolt in 1835, has not been ascertained. The cotton of Para has been highly prized. Caoutchouc, the use of which was first discovered in 1735 by French academicians sent to Brazil to make astronomical observations, is abundant, and is extensively manufactured into shoes, etc. Were this article admitted into the United States, as in England, free of duty, it would become one of the staple exports to this country. A well-informed American merchant, residing at Para, addressed a letter on this subject to one of the officers of Lieutenant Herndon's expedition to the Amazon,

urging the disadvantages under which American commerce labors, as compared with that of Great Britain, in the caoutchouc trade.—See "Letter from the Secretary of the Treasury, transmitting copy of circular letter and replies thereto, in reference to the Tariff, March 8, 1854." This article is now becoming the chief staple of the province of Para; and so various and multifarious are the uses to which it is applicable, both in the arts and in domestic economy—so important as an article of commerce has it already become, that, even against the import duty of 10 per cent. in the United States, it constitutes almost 50 per cent. of our trade with Para. The following statement exhibits the quantities of India-rubber imported from Para into the United States during the years designated:

	Pounds.	Value.
1850.....	1,500,000	....
1854.....	3,330,000	....
1855.....	2,740,000	\$1,660,000

The exports from Para to foreign countries consist of caoutchouc, cotton, rice, castor-oil, copaiva, seed oil, cocoa, cloves, cinnamon, hides, horns, isinglass, Peruvian bark, etc. From 1816 to 1827, the exports from this province averaged annually \$850,131. The following summary exhibits the total trade of Para for 1845: Inward—Vessels, 69; tonnage, 11,136; value of cargoes, \$495,940; of which there entered from the United States: Vessels, 28; tonnage, 3920; value of cargoes, \$236,200. Cleared to all countries—Vessels, 70; tonnage, 11,445; value of cargoes, \$737,525. To the United States—Vessels, 27; tonnage, 3629; value of cargoes, \$261,620. In this province, the sugar and coffee plantations do not produce sufficient for home consumption, and supplies are usually imported from the neighboring provinces. The imports from foreign countries consist of cotton goods, silks, hardware, wines, spirits, salt, flour, salt provisions, gunpowder, etc. The only manufactures are ordinary cotton cloths for sacks and hammocks, and India-rubber shoes; but these manufactures seem not to thrive, from a want of skill to direct them.

TOTAL NUMBER OF VESSELS, WITH THEIR TONNAGE, ENGAGED IN THE TRADE BETWEEN PARA AND FOREIGN COUNTRIES, AND VALUE OF EXPORTS AND IMPORTS, ETC., IN 1843 AND 1850.

1843.	Vessels.	Tons.	France.
Entered.....	83	12,528	Imports, 3,295,000
Cleared.....	83	12,029	Exports, 4,881,000
1850.			
Entered.....	96	16,877	Imports, 5,109,000
Cleared.....	92	16,433	Exports, 7,482,000

STAPLE PRODUCTIONS OF PARA, RELATIVELY CONSIDERED, WITH RESPECT TO THE QUANTITIES ANNUALLY EXPORTED:

Caoutchouc.....	33,600 arrobas.
Cocoa.....	200,000 "
Cotton.....	6,120 "
Hides.....	15,500 pieces.
Copaiva.....	2,300 pots.
Rice.....	130,000 arrobas.
Rice in the husk.....	26,000 alcuieres.
Sugar.....	21,230 arrobas.
India-rubber shoes.....	192,000 pairs.

The above are the leading exports from Para; but, besides these, the province produces various kinds of timber admirably adapted for ship-building purposes, and a great variety of textile plants, medicinal drugs, and dye-woods of the richest qualities. The present population of Para is about 205,000, though the province is said to be capable of maintaining some millions of inhabitants. With such a population, its natural resources might be more fully developed, and Para thus placed, in point of position and commercial importance, in the very first rank of Brazilian ports.—*Commercial Relations with the United States.*

Paraguay, a republic or consularship of South America, extends from lat. 21° to 27° 20' S., and long. 54° to 58° 40' W. The space thus inclosed forms a very compact territory, nearly in the shape of a parallelogram, about 480 miles long, north to south, with an average

breadth of about 200 miles, and contains an area of about 86,000 square miles. Population 300,000. Capital, Asuncion. The name Paraguay at one time was used in a very extensive sense, so as to include the whole of the immense regions of South America, between lat. 16° S., and the Strait of Magellan, and between Chili and Peru on the west, and Brazil on the east, now confined to the republic properly so called. On the north the limits of this state with Brazil are not definitely settled, but in other directions it has the advantage of great natural boundaries; the Parana on the east and south, and its tributary the Paraguay on the west. The whole surface thus belongs to the basins of these two rivers, a mountain range of considerable elevation stretching between them north to south, so as to form their water-shed, and send the drainage in opposite directions, but nearly in equal portions. The distance of the water-shed from the river scarcely any where exceeds 100 miles, and hence the tributaries by which the drainage is conveyed are more remarkable for their number than their magnitude. By far the largest is the Tibimari, which, owing to an eastern bend in the water-shed, has its course considerably prolonged, and being augmented by several large affluents from the north, becomes a noble stream before it reaches the Paraguay. The surface is mountainous in the centre, and also in the northeast, where a ramification, known by the name of the Sierra de Maracay, or Cordillera de Maracara, breaks off from the central chain, and proceeding east to the banks of the Parana, interrupts the navigation of that river, and forms one of the most remarkable cataracts in the world.

Paraguay is one of the finest countries in the world. It is almost inclosed by rivers, and the interior is also bountifully watered. The exterior waters are navigable, and constitute the great avenues which are destined to become the highways of the commerce of a magnificent interior country. Unlike the open countries surrounding it, Paraguay is well wooded, and among its trees are many valuable in the arts and manufactures. It also abounds in medicinal products, as rhubarb, sarsaparilla, jalap, sassafras, dragon's blood, copaiva, nux vomica, liquorice, ginger, etc., all of the finest quality. Of dye-stuffs, too, there is an immense variety; as cochineal, indigo, vegetable vermilion, saffron, etc. Many of the forest trees yield valuable gums, and they comprise some of the most delicious perfumes and incense that can be imagined. Others, again, are like amber, hard, brittle, and insoluble in water. The *seringa*, or rubber-tree, the product of which is now almost a monopoly with Para, and also the *palosanto*, which produces the gum guaiacum, crowd the forests, and the sweet-flavored vanilla is abundant. Upon the hills the celebrated yerba maté flourishes luxuriantly. The cultivated products are sugar-cane, cotton, tobacco, rice, mandioca, Indian corn, etc. On the plains thousands of cattle range, and large quantities of hides, hair, horns, bones, tallow, etc., are lost for want of transportation. The country is not celebrated for its minerals; but in all that constitutes an agricultural country, rich lands, a fine climate, and abundance of water, it has no equal. Hitherto, however, it has been shut out from the world by the arbitrary will of despotism; and its future commerce can only be measured from its resources and facilities. The recent revolutions in the states of the Plata have opened the magnificent rivers of this country, and there is certainly no further impediment to commercial enterprise.

This state, formerly a province of Buenos Ayres, withdrew from the connection in 1811, and the Spanish-American revolution breaking out about that date secured it from molestation. The policy of its rulers has been the exclusion of foreigners from the country, and under Dr. Francia, so celebrated in connection with its annals, the utmost despotism was exercised. The tyrant dying in 1840 the government was changed in its character, and a more liberal policy obtained,

and ultimately it has become in form an elective republic. As early as 1842, Paraguay acceded to the opening of its rivers to foreign commerce; but until the overthrow of Rosas, the tyrant of Buenos Ayres, who exercised authority over the estuary of the Plata, the concession was of no value. The successors of Rosas have now fully conceded free ingress and egress with the sea. These important revolutions in the policy of the two countries will eventuate in the development of the vast resources of the southeastern and middle portions of South America—countries which are unsurpassed in agricultural wealth and valuable commercial staples. For further information, see *American Statistical Annual*; *American Whig Review*, vi. 245 (U. S. Consul HOPKINS); *North American Review*, xxvi. 444 (A. H. EVERETT); *Dublin University*, xii. 474; *Quarterly Review*, xxvi. 277.

The commercial policy of Paraguay, however, is not of that liberal character to attract foreign merchants to its ports. In addition to the expense of purchasing stamped paper, by means of which every official transaction in the republic is conducted, and without which foreign merchants can not enter the markets, the internal taxes are such as to discourage efforts to develop the resources of the country, and, as a consequence, to oppress its commercial industry. The aggregate of these taxes bearing specially upon commerce is stated to amount to 26 per cent. on the value of every article sent to market. They consist of *diezmos* (tithes), 10 per cent.; export duty, 10 per cent.; and on rent of lands (almost wholly owned by the state, and fixed at a high valuation) 6 per cent. If to this be added an import duty of 20 per cent. on almost every article which the United States could send to the markets of Paraguay, it can be readily comprehended why the name of this republic does not appear among those of other foreign nations the details of whose commerce are minutely set forth in the annual Report on Commerce and Navigation, prepared by the Department of the Treasury of the United States. The "stamps," to which allusion has been made, are divided into eight classes: those of the first class cost 25 cents; of the second, 37½ cents; of the third, \$1; of the fourth, \$2; of the fifth, \$6; of the sixth, \$8; of the seventh, \$16; of the eighth, \$26. Permission to discharge or to load a vessel of 21 tons, or 2000 tons, can only be obtained on a stamp of this last description; so that to unload a cargo valued at \$100 will cost \$26—all the same as if it were worth \$100,000; and in like manner as to taking cargo on board. The foreign trade of Paraguay is conducted chiefly through the ports of the Argentine Confederation, especially that of Buenos Ayres, and those of the Republic of Uruguay. The exports consist of yerba maté (with which the hills of the country are literally covered), tobacco, cigars, woods, hides, hair, leather, molasses, rum, white starch, mandioca, peanuts, beans, and oranges; of which latter article not less than 30,000 bushels are said to be exported per month. The exports from the United States which would most readily find a market in Paraguay are cotton domestics, calicoes, plain cloths, clocks, boots and shoes, gunpowder and shot, saddlery, and agricultural implements.

If the navigation of the River Vermejo, an affluent of the Paraguay, were opened to foreign commerce, or were even permitted to the Argentine flag, the United States would, it is believed, soon enjoy the entire foreign trade of the upper provinces of the Argentine Confederation. This privilege, however, is refused by the government of Paraguay, notwithstanding the River Vermejo, in its entire course, lies within the territories of the sister republic. Hitherto a selfish and illiberal policy excluded foreign vessels from the port of Albuquerque, a place 1600 miles above Asuncion, the capital of Paraguay, in the Brazilian province of Matto Grosso, which the government of that empire has declared open to the commerce of the world. Brazilian vessels were not permitted to descend the River Paraguay, which

takes its rise in this province, nor are foreign vessels allowed to ascend higher than the city of Asuncion; thus cutting off all trade with the richest portions of Bolivia and the fertile province of Matto Grosso, in Brazil. The claim of Paraguay to exercise jurisdiction over both banks of this river, by prohibiting its navigation above Asuncion, and by closing the navigation of the Vermejo, both to the citizens of the Argentine Republic and to foreigners, has never been admitted.

A treaty between Paraguay and Brazil was duly signed and ratified June 14, 1856, by which it is stipulated that the waters of the Upper Paraguay shall henceforth be open to general navigation and commerce. This will bring not only the produce of the Brazilian province of Matto Grosso, but also the agricultural and mineral wealth of Bolivia, to an Atlantic market. The value of these mineral resources may be inferred from the fact that there are stated to exist in this region upward of a thousand valuable mines unworked, it having been found impossible hitherto to convey machinery thither, across the mountains, from the Pacific coast. A highway to the spot is now opened from the Atlantic, as broad as the Mississippi, and equally accessible. The rich province of Matto Grosso, with its diamonds, gold, silver, and copper, is also brought in connection with the good and contiguous sea-ports, Buenos Ayres and Montevideo, by the Paraguay River; and Cujaba, its capital, in the centre of the mining districts, can easily be reached from Asuncion. Dianantino, about two hundred miles from Cujaba, sends its produce to Santarem, on the Amazon, and thence to Para. This tedious and circuitous route is now superseded, as the Paraguay connects these markets with the estuary of the Plata. A Paraguayan journal, "*La Nacional*," of August 11, 1856, publishes the subjoined regulations: "All vessels from foreign ports to the Brazilian ports above shall take pilots at Asuncion, Concepcion, the junction of the Apa, and Olimpo. The vessels that descend that river from the upper Paraguay are obliged to take pilots from Olimpo, the junction of the Apa, and Concepcion; and the wages of the said pilots are to be agreed upon at the captain of the port's bureau in Asuncion."

In 1853, the United States steamer *Water Witch*, of 400 tons burden, and nine feet draught, was dispatched, under the command of Lieutenant Thomas J. Page, to make an exploration and survey of the tributaries of the River La Plata. The results of this expedition will, doubtless, contribute in an eminent degree to the advancement of commerce and the promotion of science. The navigation of the Paraguay River, which empties into the Parana at the distance from Buenos Ayres of 800 miles, was extended to the parallel of 18° south latitude; making the entire distance of the rivers Parana and Paraguay, through which this small sea-steamer had passed from Buenos Ayres to Corumba (an interior military post of Brazil), equal to about 1700 miles. There is no doubt that the navigation of the Paraguay, during the season of high water, could have been carried by the *Water Witch* to a still greater extent; but at the time of this exploration any further ascent was prohibited by Brazil. Permission was, however, subsequently granted by the imperial government, but refused by that of Paraguay. The expedition was thus restricted to a more limited exploration of the upper waters of this river than had been anticipated. It is to be hoped that the time is not far distant when all such prohibitions will be removed, and this interesting region of unknown country brought to the knowledge of the world.

The navigation of the Paraguay has thus been extended beyond Asuncion, to the distance of 650 miles. This fact has induced the Brazilian government to avail itself of this important channel of communication, by steam, with her northwestern province, Matto Grasso, in which is found the most valuable diamond region of the empire.

An expedition was dispatched by the French government, a few years since, for the exploration of the Parana and Paraguay rivers; and the following passage is translated from a report made in March, 1855, by Captain Picard, to whose charge it had been committed: "When we consider the excellent means of communication which nature has opened to the provinces of the Argentine Confederation and the Republic of Paraguay, we can not but regret to see them unemployed and deserted. The absence of population, continual civil war, and the administrative policy of Paraguay, have, so far, been the chief obstacles to progress. Let us indulge the hope that the day is not distant when the aspect of things will change, and these magnificent countries will flourish under the blessings of a more advanced civilization."

Paraguay can hardly be said to possess a merchant marine. In 1851 there were distributed, between the two ports of Asuncion and Villa del Pilar, 12 vessels, averaging each about 42 tons. In 1852 there were 11 of the same description, and in 1853 only 9. Besides these, there is one brig belonging to the government, which is said to monopolize almost exclusively the commerce of the state. The foreign vessels engaged in the trade of Paraguay in 1852 were 81, with an aggregate of 4582 tons, from the Argentine provinces south, below the Paraguay River, and three American vessels, tonnage not known. All these vessels trade with the ports of Asuncion and Villa del Pilar, which, with the port of Encarnacion, on the Parana, were alone open to foreign commerce. There is no treaty between the United States and Paraguay. With England a treaty was ratified November 2, 1853, by the second article of which the Republic of Paraguay concedes to the merchant flag of Great Britain the free navigation of the River Paraguay as far as Asuncion, the capital of the republic, and of the right side of the Parana, from where it belongs to her, as far as the city of Encarnacion. It stipulates, also, that British subjects shall be at liberty, with their ships and cargoes, freely and securely to come to, and to leave, all the places and ports of the said territories; hire houses and warehouses; and trade in all kinds of produce, manufactures, and merchandise of lawful commerce, subject to the usages and established customs of the country; also, that they may discharge the whole or part of their cargo at the ports of Pilar and where commerce with other nations may be permitted, or proceed with the whole or part of their cargo to the port of Asuncion, according as the captain, owner, or other duly authorized person shall deem expedient; and that, in the same manner, shall be treated and considered such Paraguayan citizens as shall arrive at the ports of Great Britain with cargoes in Paraguayan or British vessels.

There is an American company established in Paraguay, under a charter from the State of Rhode Island, which has been engaged in commercial operations for some time, under the title of "The United States and Paraguay Navigation Company." The chief object of this company is to introduce steam navigation on the rivers of Paraguay; but how far it has progressed in the accomplishment of this object, information is not at hand. The only direct trade, however, yet opened between the United States and this republic consists of some shipments of cigars and samples of wood made by this company. All other articles of Paraguayan produce which reach the United States come through the ports of Buenos Ayres or Montevideo, and are included in the custom-house returns to the Treasury Department of exports from the republics to which these places respectively belong.

The government of Paraguay puts forth no statistics relative to the commercial movements of the republic, and it is said to be quite impossible to obtain information on the subject from its administrative officials. Complete commercial statistics, which may be viewed as strictly accurate, can not, therefore, be looked for in

this Digest; but the subjoined statements, derived from a Memoir prepared in 1853 by M. L. Geoffroy, an attaché of the mission extraordinary sent by France to the Plata and Paraguay, are, no doubt, reliable, so far as they extend.

EXPORTS OF ASUNCION FROM JULY, 1851, TO DECEMBER 31, 1852.

Tobacco—229,000 arrobas, at 12 reals (or \$1 50)	
per arroba of 25 pounds	\$843,500
Yerba maté—175,000 arrobas, at 20 reals per arroba	437,500
Ilides—Dry, 100,000, at 10 reals each	125,000
" Tanned, 35,000, at \$3 each	105,000
Wood—Cedar, 50,000 yards, at 4 reals	25,000
" Cabinet, asloop-load of 7000 to 8000 arrobas	6,000
Hair—600 quintals, at \$8 per quintal	4,800
Sweetmeats—20,000 arrobas, at 6 reals per arroba	15,000
Cigars—2,000,000, at \$2 per 1000	4,000
" 250,000, at \$5 per 1000 (in boxes of 100)	1,250
Sundry products—White wax, rum, molasses (several cargoes), common wood (Urunday and Lapacho), several cargoes of oranges, maize, pulse, etc.; cotton, 1,500 arrobas; tiger-skins, 500, at \$2 each; India rubber, other-skins, hammocks, baskets, etc.; fringed napkins, lace, etc.	27,800
Total	\$1,094,850

It is believed that the above total might be increased at least one-third, could exact statements be obtained. If we add the export duties of 10 and 6 per cent. on the articles exported—yerba and wood, which are government monopolies, and are exempt from duty, being excepted, and which would amount to about \$70,000—and \$20,000 in silver, exported in contraband, and \$10,000 for sundry charges—we have \$1,500,000, or an amount equal to the value of imports during the same period. Indeed, such is the scarcity of money in circulation, that the trade is necessarily one of barter; so that the figures which represent the value of imports may also, generally, give the value of exports.

Measures.—The arroba equals 25 lbs.; the cubic vara about 20½ cubic feet; the pesada 36 lbs.; the almude about three-fourths of a bushel; the asmbre about one quart; the frasco about half a gallon; the fanega about four bushels. It may be observed, that these denominations of weight and measure represent different quantities in different countries, and even in the same countries, as regards different articles.

IMPORTS AND EXPORTS OF ASUNCION FROM 1851 TO 1854.

Years.	Imports.	Exports.	Total.	Duties paid.
1851	No data.	\$341,380	No data.	No data.
1852	\$549,159	474,499	\$1,023,658	\$123,976
1853	406,638	601,932	1,008,570	56,564
1854	535,523	777,467	1,312,990	123,289

Among the importations of 1854, tissues and wines hold the first rank, or, rather, they constitute four-fifths of the total value of imports.

Navigation.—Transportation by land being extremely difficult, the commercial movements already analyzed were effected by water—by the Paraguay, an affluent of the Parana. From the opening of the port of Asuncion in July, 1851, to December, 1852, there arrived about 120 sloops, of 6000 arrobas, on an average, for each. A cargo of 7000 arrobas equals 60 tons, which would give an average of from 40 to 80 tons for each vessel. From January 1, to February 28, 1853, there arrived at Asuncion 30 Sardinian vessels. These vessels, the owners of which, or the greater part of them, were Sardinians, sailed under the Uruguayan or Paraguayan flag. There arrived also, up to March 10, 1853, at this port, 19 sloops. In 1854 there arrived 160 merchant vessels, averaging each 50 tons burden. Of these, 2 were British, 31 were under the flag of the republic, 116 belonged to the Argentine Confederation, and 11 to Uruguay.

The customs tariff of Paraguay, now in force in that republic, is that promulgated by a decree given at Asuncion, January 2, 1846.—*Commercial Relations of the United States.*

Parallels of Latitude, on the Terrestrial Sphere, are small circles parallel to the equator; but in the Celestial Sphere they are parallel to the ecliptic.

Paramaribo, the capital town of Dutch Guiana, on the west bank of the Surinam, five miles from its mouth in the Atlantic, lat. $5^{\circ} 49' N.$, long. $55^{\circ} 22' W.$ Estimated population, 20,000, mostly blacks. It is regularly and well built; streets unpaved, but ornamented with rows of tamarind and orange trees; and it has Lutheran, Calvinistic, Roman Catholic, and English churches, Portuguese and German-Jewish synagogues, and is the centre of the trade of the colony. Fort Zeelandia, north of the town, is the residence of the governor. In a hospital for lepers, on the right bank of the Coppename, 450 patients are maintained at the expense of the colony. The Kwatta Canal, begun in 1846, is the first public work executed by free laborers.

Paramo (sometimes rendered, though incorrectly, by *desert* or *heath*). The name given in South America to a mountainous district covered with stunted trees, exposed to the winds, and in which a damp cold perpetually prevails. Under the torrid zone the Paramos are generally from 10,000 to 12,000 feet in height. Snow often falls on them, but remains only a few hours; in which respect they are distinguished from the *Nevados*, which enter the limits of perpetual snow. The Paramos are almost constantly enveloped in a cold, thick fog; so that when a thick, small rain falls, accompanied with a depression of the temperature, they say at Bogota, or at Mexico, *cae un paramito*. Hence has been formed the provincial word *emparamarse*—to be as cold as if one were on a *paramo*.—HUMBOLDT's *Pers. Nar.* ii. p. 252.

Parasang, a Persian measure of length; according to Herodotus, equal to 30 stadia, and (reckoning eight stadia to the English mile) equal to $3\frac{1}{2}$ English miles. The length of the parasang was reckoned differently by different authors; and such are the discrepant estimates of the ancients that some have assigned it the length of 60 stadia. The word is supposed to be derived from the Persian *seng*, signifying a *stone*.

Parcel, a term indifferently applied to small packages of wares, and to large lots of goods. In this latter sense, 20 hogsheads of sugar or more, if bought at one price, or in a single lot, are denominated "a parcel of sugar."

Parcels, Bill of, an account of the items composing a parcel.

Parchment and Vellum. The former consists of the skins of sheep and goats, and the latter of those of calves, prepared in such a manner as to render them suitable for being written upon, for covering books, and other purposes. The consumption of these articles is very considerable. In this and most other countries it is customary to use them instead of paper in the drawing up of a great variety of deeds and other legal instruments. They are also extensively used, especially in Italy, in the binding of books. The finest copies of the magnificent classics which issued from the Dutch presses in the 17th century, and the early part of the 18th, were all bound in vellum. Parchment is coarser than vellum, and not so well adapted for writing upon. The qualities of both articles differ very widely; so much so that the best parchment is preferable to inferior or even middling vellum. The goodness of each depends partly on the quality of the skins of which they are made, and partly, and indeed in a very high degree, on the care and skill with which they are manufactured.

The history of these articles is involved in some obscurity. Varro and Pliny (*Hist. Nat. lib. xiii. cap. 11*), who have been generally followed, state that they were originally manufactured at Pergamus, in Asia Minor, the capital city of Eumenes II., one of Alexander's successors, during the reign of that prince; and that parchment owes to this circumstance its classical name of *charta Pergamena*. But there seems to be little if any foundation for this statement. We have seen, in the preceding article on paper, that Herodotus,

who flourished rather more than a century before Alexander the Great, states distinctly that, previously to his era, when paper (*charta Egyptiaca*) was scarce, the Ionians were accustomed to write on the skins of sheep and goats, and that that practice was then followed (viz., in his time) by several barbarous nations.—Lib. v. cap. 58. And it is all but certain, seeing that the practice of writing on skins had been in use for at least 2½ centuries, and probably much more, previously to the era of Eumenes, that their preparation would, in the course of that lengthened period, be so much improved as to render them little different from parchment. It is probable, indeed, that their manufacture may have been improved in Pergamus; but we incline to think that parchment owes its name rather to the extensive demand for it in that city, in consequence of Eumenes having amassed a large and valuable library, than to any thing else. He was, in fact, compelled to use parchment and vellum in the copying of books, as his contemporary Ptolemy Philadelphus had prohibited the exportation of paper.—PLINY, *ubi supra*. The scarcity of parchment during the Middle Ages, and in antecedent times, led to the practice of obliterating the writing on old parchments, by rubbing them with pumice-stone, immersing them in boiling water, and such like devices; and there can be no manner of doubt that the prevalence of this practice has been most injurious to literature, and that it has most probably occasioned the total destruction of some of the noblest *chefs-d'œuvre* of antiquity. In the Middle Ages, these were erased that room might be made for some worthless treatise on scholastic theology or logic! Sometimes, however, it happens that the ancient writing is not so much obliterated but that it may still be read; and to that circumstance the recent discovery of a portion of Cicero's treatise *De Republica* is to be ascribed. It had been effaced to make room for a commentary of St. Augustine on the Psalms. Parchments that have been erased in this way are called *Palimpsests* (from *παλιν*, again, and *ψαω*, to efface or clean), or repeatedly cleaned parchments; because they have been repeatedly cleaned, renewed, or prepared for writing upon. If the learned world is ever to be gratified by the recovery of the lost comedies of Menander, or the lost books of Polybius, Livy, and Tacitus, it will most probably be by finding them under some homily or such like trash.—*Nouveau Traité de Diplomatique; Dom de Vaines*.

Paris (anc. *Lutetia Parisiorum*), the capital of France, and, after London, the largest and most populous city in Europe; lat. (observatory) $48^{\circ} 50' 12'' N.$, long. $79^{\circ} 23' 02'' E.$ from the national observatory, Washington, and long. $2^{\circ} 20' 30'' E.$ from London. Population in 1851, 1,021,530. Situated 193 feet above the level of the sea, on both sides and on two islands of the Seine, 111 miles from its mouth. It has recently, and at the expense of about \$100,000,000, been surrounded with fortifications, consisting of a wall 83 feet in height, bastioned and terraced, lined with a fosse about 20 feet deep, and embracing both banks of the Seine, with a continuous inclosure, and of outworks composed of 14 detached forts. These fortifications take in much of the suburbs, and even of the surrounding country; but the proper limits of the town are traced by an interior wall, erected at a much earlier date, for fiscal purposes. In this wall are 50 gates or barriers, which form the proper entrances of Paris, and at which the *octroi*, or duties on goods brought into it, are levied. Many of these barriers are magnificent structures. Among others may be specified the *Barrière de Neuilly*, consisting of two pavilions, and having in front the splendid triumphal arch *De l'Etoile*; the *Barrières de Vincennes*, de *St. Martin*, de *Fontainebleau*, de *Rouilly*, de *Chartres*, and de *Passy*. Outside the barriers and their connecting wall is a large zone, finely planted, which nearly makes the circuit of the town, and forms an excellent, though not very

much frequented, promenade. It receives the name of Outer Boulevards, to distinguish them from the Inner Boulevards, which form a similar internal zone, consisting, in their finest parts, of a magnificent central thoroughfare, bounded on either side with a double row of trees, under which a broad and elevated pathway has been formed, and lined by elegant shops and mansions, the whole forming a scene of animated gayety and splendor which no other capital in Europe can equal.

The Seine traverses the city in a west-northwest direction, and has a medium breadth of about 450 feet, nearly one-third less than that of the Thames at London. It is shallow, and navigable only by barges and small steamers. Its quays are built of solid masonry, and form large terraces, with a roadway in the centre, and a footpath on either side, generally planted. They extend about 11 miles, and, in addition to the splendid walks which they afford, serve the important purpose of protecting the lower parts of the city from inundations, from which, previously to these erections, it often suffered. The number of bridges is twenty-seven, all of stone, with the exception of seven suspension bridges, three of a combination of stone and iron, and one of wood.

Manufactures and Trade.—The government possesses only two properly manufacturing establishments—that known by the name of the Gobelins, celebrated for its tapestry and carpets, made, however, not for sale, but the supply of the palaces, and for presents; and that of tobacco, which the government holds as a monopoly, and carries on in a vast establishment on the south side of the Seine, producing about a fifth of all the snuff used in the kingdom, and yielding an annual profit estimated at \$14,000,000. In the other branches, which are free, the most important manufactures are articles of jewelry and precious metals; ebony and ivory trinkets, fine hardware, paper-hangings, saddlery, and other articles in leather; cabinet-work, carriages, various articles of dress, silk and woolen tissues, particularly shawls and carpets; lace, embroidery, artificial flowers, combs, machines, mathematical and optical instruments, types, books, engravings, refined sugar, chemical products, etc. The value of all the industrial products of Paris in 1847 was, after a very careful investigation, estimated at \$292,725,670. In 1848, during the turmoil of the last revolution, they fell to less than one half of what they were before. The value of the exports, composed almost entirely of the above articles of manufacture, was declared at the custom-house of Paris to amount in value, in 1850, to \$11,095,945. The estimated revenue of the city for 1852 was \$9,303,680; and the expenditure \$9,703,630.—See article FRANCE. For commerce, etc., of Paris, see HUNT's *Merchants' Magazine*, xviii. 60; *Quarterly Review*, lxxviii. 146; *Living Age*, ii. 404, xlii. 219; *Foreign Quarterly*, xxxi. 182; *Edinburgh Review*, lxxxv. 39; *Comm. Rel. U. S.*

The commercial intercourse between the United States and this consular district depends on the regulations of the custom laws of the empire, and on the local legislation of the city of Paris, by which *octroi* duties are levied on many articles brought into the city, whether foreign or domestic, but especially on spirits and articles of subsistence. These regulations are fixed, and rest only on the contingency of alteration by legislative enactment. There are some privileges accorded to Spain by ancient treaties which will be found set forth in the *Code des Douanes*, *Code Maritime*, and the *Tarif des Droits*. We are not aware of any privileges accorded to the commerce of other nations and denied to the United States, or of any important restrictions. The books referred to above give full information, in tabular statements, on this question. The transhipment of goods belongs to the coasting trade, and, by law, only French vessels are entitled to engage in this trade. Full information will be found upon this point in the *Code Maritime*.

Rates of insurance, by steamers, on goods,	$\frac{1}{2}$ to $1\frac{1}{2}$ per cent.
“ “ by ships,	1 to $1\frac{1}{2}$ “
“ “ by steamers, valuables,	$\frac{1}{2}$ to $\frac{1}{4}$ “
“ “ by ships,	$\frac{1}{2}$ to 1 “

Commissions for shipping,..... 3 francs each package.

Commissions for purchasing in large quantities..... 3 per cent.

Commissions for purchasing in small quantities..... 5 “

Average rate of exchange between New York and Paris..... 5 13 $\frac{1}{2}$ francs.

Sales of goods are made upon cash or upon orders, with credits from thirty days to six months. Commission houses are in the habit of advancing for many of their customers.—See *Tarif des Droits*, *Regulations des Douanes*, and *Statistique Industriel*.

Parrel. In *Naval language*, the collar of greased rope, or trucks, by which the yard is confined to the mast, while it slides up and down it.

Partnership. A partnership is an agreement between two or more to share in the profit and loss of the use and application of their capital, labor, and skill, in some lawful business, whether one supplies capital, and another skill and labor, or each both labor and capital. The benefits of a union of the means and advantages of different persons for the conduct of a branch of business, in many instances, are too obvious and common to need illustration. A partnership is not constituted merely by an interest of different parties in the same thing, but it depends on a participation of profits and joint liability to loss. And yet there are some exceptions to this rule, for it has been held that seamen shipping on shares in a shipping voyage are not copartners with the owners. And so, where a certain share or commission is allowed to a clerk or agent, depending on the success of the business or amount of profits, in addition to his other compensation, it has been held, in many cases, not to make him a copartner. It is difficult to point out the criterion by which cases of this description are distinguished from those of copartnership; and some of them look more like an exception of cases which strictly come within the definition of copartnership. A question has been made whether joint owners of a ship are copartners, and the general doctrine is that they are not so; and yet it is generally held that each one is liable for the whole amount of repairs and expenditures in the navigation of the ship; but still the ownership is not joint, for, in the case of the decease of one, the property in the whole ship does not survive to the others, as would be the case if it were partnership property, but the property is held in common, each part-owner having a distinct title to his share; and one part-owner can not, merely as such, convey a title to the whole ship, or to any share except his own. As to the share of each partner in the profits, or his liability for losses, if there is no agreement on this subject, all the partners stand upon an equal footing.

As to the objects of copartnership, they are not confined to commerce, though most frequent in that branch of industry, but may embrace manufacturing, the carrying on of any mechanic art, agriculture, the practice of law or medicine, and, in short, every lawful branch of business. Copartnership is more usually formed by a written agreement; and by some codes and in regard to certain copartnerships, formal stipulations are required by law in order to constitute a copartnership. This is not a general rule, however, for in many branches of business parties may agree orally for a participation in profit and loss. These associations are divided into different classes, distinguished by their objects, and the extent of the liability of each partner. The Roman law allowed of general copartnerships, extending the community of property, and joint profit and loss, not only to the business pursued, but also to all acquisitions by either party, whether by legacy, inheritance, gift, or as the fruits of industry. By that law, and so by the laws of France, Spain, Louisiana, and other codes derived from the Roman law, a man and his wife may

be copartners; and, in making the marriage contract, the kind and extent of copartnership is agreed upon, the form of the stipulation for this purpose being particularly pointed out by the French code. It was between the parties to the marriage contract that the general copartnerships above-mentioned were most frequently formed. In this respect, however, the Roman law, and those codes derived principally from it, leave the parties at liberty to agree upon a universal copartnership or a limited one, or a separate property.

Copartnerships are usually confined to the prosecution of a particular branch of business, and it very often happens that each copartner is concerned in other branches. The term *general copartnership* is also applied to one formed for trade generally, or business generally, without limitations; but where the joint interest extends only to a particular concern, as, for instance, the freighting of a ship, it is called a *special copartnership*. And so a partnership is called *special* when the parties enter into stipulations modifying and restraining the right and powers of the members, instead of leaving them to the operation of the laws generally applicable to such associations; and this is the usual meaning of such copartnerships. Another description is that of *limited copartnerships*, in which one or more partners put in a certain amount of capital, which is liable for the contracts of the firm; but beyond this the party or parties are not liable. This sort of partnership is particularly provided for in the French code, and is not unfrequent in France. It is a very useful provision of the law that allows of such associations, for it enables persons of fortune, and retired from business, to put a part of their capital at risk in trade, without risking their whole property; and it accordingly operates very favorably upon the enterprise of the community; for a young man who has only his talents and industry to put into a concern can thus more easily obtain the capital necessary to give his activity and enterprise scope, and every community ought to open all practicable channels for the intellectual and physical exertions of its members. This species of copartnership has accordingly been partially introduced into the United States, being provided for in the code of Louisiana, which is modeled on the French code, and having been introduced also into the laws of New York by a statute, the provisions of which were closely copied from the French code—the first instance (as Chancellor Kent remarks in his Commentaries) in which any other foreign law than the English had been adopted in the particular structure and provisions of an American statute, in those States of whose codes the English law is the basis. This species of partnerships has also been authorized by statute in Massachusetts, Rhode Island, Connecticut, Vermont, New Jersey, Pennsylvania, Maryland, South Carolina, Georgia, Alabama, Florida, Mississippi, Indiana, and Michigan. We will now proceed to a more extended account of limited partnerships.

The condition of a limited partnership is that the name of the person whose liability is thus limited must be used in the firm, and particular provisions are made as to paying in the amount of capital stipulated; and another suitable provision in such case is the provision for some registry by which it may appear to those who wish to make the inquiry what amount such partner pays in. Some partnerships are *secret*; that is, some one agrees, upon terms, to share profits with ostensible partners without any notice to the public of his being a member of the firm. Each partner has a joint interest in the whole personal property, and, unless the articles stipulate otherwise, may transfer it.

Each partner may also bind the whole firm by his contract made in the course of the business of the firm, unless it be otherwise agreed between them; and even when it is otherwise agreed, still, if a party with whom a partner contracts has a legal right, from the manner in which the joint affairs are managed, to presume that

a partner is authorized to contract for and to bind his copartners in regard to the subject of any contract, the firm will be bound by such contract. But if the party contracted with has notice that, by the articles of copartnership, a partner has not authority to make a contract, the company will not be bound by it. So if a partner contracts, in the partnership name, in a manner which the party contracted with knows is not within the business of the firm—as if he makes a negotiable note in the name of the firm for his own separate debt—the contract will not bind the firm to the party thus contracted with; but still, if this contract, being transferable in its nature, and holding out on the face of it the responsibility of the whole firm, is negotiated to those who have no notice that the paper was made for the private accommodation of the partner who signed the partnership name, the company will be bound in respect to such assignee; that is, the firm having given notice to the world that they are copartners in a certain branch of business, every one has a right to presume that all acts done by each of them in regard to it are authorized by the terms of their contract, or the circumstances of the case, unless he has notice to the contrary. But certain acts are not authorized by the general powers of copartners, and those no one partner can be presumed to have power to do; as, for instance, one partner is not merely, as such, authorized to make a deed in the name of the other, or to act as his attorney; and he can not, accordingly, convey land belonging to the members of the company; for, though it may have been acquired and paid for with the property of the firm, yet when acquired, it belongs to the members in common, if the title be in them all, and each member can himself convey only his share; and in order to the conveyance of that of another, he must be specially empowered. But a partner may release a debt due to the firm if it be done fairly, and without collusion between him and the debtor. It has been held, however, that one partner can not by deed submit a question to arbitration. A partnership may be dissolved by its own limitation, the death, bankruptcy, or insanity of a member, or by the breaking out of a war between the countries to which the members belong.

A question is also made whether a member may dissolve the copartnership voluntarily before the time for which it was formed expires, and the opinion seems to be that he may do so by giving sufficient notice to this effect; and this seems to be necessarily incident to new associations; for, though he would, in such case, be answerable to his copartners for the breach of his agreement, yet it would be exceedingly inconvenient if a partner were irrevocably bound to give his copartners the right of his credit, and of disposing of his property, after all his confidence in them had ceased. In case of mismanagement by any partner having charge of the partnership effects, so that the other partners are liable to be materially injured, they may make application to a Court of Chancery to appoint a receiver to take charge of the concerns of the company, and wind up its affairs, in case the partnership has already been dissolved, or in case there appears sufficient reason to dissolve it. But where there is no ground for such application to a Court of Chancery, and the company is dissolved by the death of one partner, the joint property will survive to the other partner, who may dispose of it, and collect and pay the debts of the concern, and will be liable to account to the personal representatives of the deceased partner for his proportion of the surplus property. In case of the decease of a partner, his personal representatives do not become copartners with the surviving partners, but the affairs of the concern must be settled with reference to the time of the death of the deceased partner.—E. A.

Limited Partnership in New York.—1. According to the Revised Statutes of the State of New York, limited partnership for transaction of any mercantile, mechanical, or manufacturing business within the State may

be formed of two or more persons; but the provisions of the act will not authorize any such partnership for the purpose of banking or making insurance. 2. Such partnerships may consist of one or more persons, who shall be called general partners, and who shall be jointly and severally responsible, as general partners now are by law; and one or more persons who shall contribute, in actual cash payments, a specific sum as capital to the common stock, who shall be called special partners, and who shall not be liable for the debts of the partnership beyond the fund so contributed by him or them to the capital. 3. The general partners only shall be authorized to transact business and sign for the partnership, and to bind the same. 4. The persons desirous of forming such partnership shall make, and severally sign, a certificate, which shall contain: I. The name or firm under which such partnership is to be conducted. II. The general nature of the business to be transacted. III. The names of all the general and special partners interested therein, distinguishing which are general and which are special partners, and their respective places of residence. IV. The amount of capital which each special partner shall have contributed to the common stock. V. The period at which the partnership is to commence, and the period at which it shall terminate. 5. The certificate shall be acknowledged by the several persons signing the same, before the Chancellor, a Justice of the Supreme Court, a Circuit Judge, or a Judge of the County Courts; and such acknowledgment shall be made and certified in the same manner as the acknowledgment of conveyance of land. 6. The certificate so acknowledged and certified shall be filed in the office of the clerk of the county in which the principal place of business of the partnership shall be situated, and shall also be recorded by him at large in a book to be kept for the purpose, open to public inspection. If the partnership shall have places of business situated in different counties, a transcript of the certificate, and of the acknowledgment thereof, duly certified by the clerk in whose office it shall be filed, under his official seal, shall be filed and recorded in like manner in the office of the clerk of every such county. 7. At the time of filing the original certificate, with the evidence of the acknowledgment thereof, as before described, an affidavit of one or more of the general partners shall also be filed in the same office, stating that the sums specified in the certificate to have been contributed by each of the special partners to the common stock have been actually and in good faith paid in cash. 8. No such partnership shall be deemed to have been formed until a certificate shall have been made, acknowledged, filed, and recorded, nor until an affidavit shall have been filed, as above directed; and if any false statement be made in such certificate or affidavit, all the persons interested in such partnership shall be liable for all the engagements thereof as general partners. 9. The partners shall publish the terms of the partnership, when registered, for at least six weeks immediately after such registry, in two newspapers, to be designated by the clerk of the county in which such registry shall be made, and to be published in the senate district in which their business shall be carried on; and if such publication be not made, the partnership shall be deemed general. 10. Affidavits of the publication of such notice, by the printers of the newspapers in which the same shall be published, may be filed with the clerk directing the same, and shall be evidence of the facts therein contained. 11. Every renewal or continuance of such partnership beyond the time originally fixed for its duration shall be certified, acknowledged, and recorded, and an affidavit of a general partner be made and filed, and notice be given in the manner herein required for its original formation; and every such partnership which shall be otherwise renewed or continued shall be deemed a general partnership. 12. Every alteration which shall be made in the names of the partners, in the nature of

the business, or in the capital or shares thereof, or in any other matter specified in the original certificate, shall be deemed a dissolution of the partnership; and every such partnership which shall in any manner be carried on after any such alteration shall have been made, shall be deemed a general partnership, unless renewed as a special partnership, according to the provisions of last section. 13. The business of the partnership shall be conducted under a firm, in which the names of the general partners only shall be inserted, without the addition of the word "Company," or any other general term; and if the name of any special partner shall be used in such firm, with his privy, he shall be deemed a general partner. 14. Suits in relation to the business of the partnership may be brought and conducted by and against the general partners, in the same manner as if there were no special partners. 15. No part of the sum which any special partner shall have contributed to the capital stock shall be withdrawn by him, or paid and transferred to him, in the shape of dividends, profits, or otherwise, at any time during the continuance of the partnership; but any partner may annually receive lawful interest on the sum so contributed by him, if the payment of such interest shall not reduce the original amount of such capital; and if, after the payment of such interest, any profits shall remain to be divided, he may also receive his portion of such profits. 16. If it shall appear that, by the payment of interest or profits to any special partner, the original capital has been reduced, the partner receiving the same shall be bound to restore the amount necessary to make good his share of capital with interest. 17. A special partner may, from time to time, examine into the state and progress of the partnership concerns, and may advise as to their management; but he shall not transact any business on account of the partnership, nor be employed for that purpose as agent, attorney, or otherwise. If he shall interfere contrary to these provisions, he shall be deemed a general partner. 18. The general partners shall be liable to account to each other, and to the special partners, for their management of the concern, both in law and equity, as other partners now are by law. 19. Every partner who shall be guilty of any fraud in the affairs of the partnership shall be liable civilly to the party injured to the extent of the damage, and shall also be liable to an indictment for a misdemeanor, punishable by fine or imprisonment, or both, in the discretion of the court by which he shall be tried. 20. Every sale, assignment, or transfer of any of the property or effects of such partnership, made by such partnership when insolvent, or in contemplation of insolvency, or after, or in contemplation of the insolvency of any partner, with the intent of giving a preference to any creditor of such partnership or insolvent partner, over other creditors of such partnership, and every judgment conferred, lien created, or security given by such partnership under the like circumstances, and with the like intent, shall be void, as against the creditors of such partnership. 21. Every such sale, assignment, or transfer of any of the property or effects of a general or special partner, made by such general or special partner when insolvent, or in contemplation of insolvency, or after, or in contemplation of the insolvency of the partnership, with the intent of giving to any creditor of his own, or of the partnership, a preference over creditors of the partnership, and every judgment conferred, lien created, or security given by any such partner under the like circumstances, and with the like intent, shall be void, as against the creditors of the partnership. 22. Every special partner who shall violate any provision of the two last preceding sections, and who shall concur in and assent to any such violation by the partnership, or by any individual partner, shall be liable as a general partner. 23. In case of the insolvency or bankruptcy of the partnership, no special partner shall, under any circumstances, be allowed to

claim as a creditor until the claims of all the other creditors of the partnership shall be satisfied. 24. No dissolution of such partnership by the acts of the parties shall take place previous to the time specified in the certificate of its formation, or in the certificate of its renewal, until a notice of such dissolution shall have been filed and recorded in the clerk's office in which the original certificate was recorded, and published once in each week for four weeks in a newspaper printed in each of the counties where the partnership may have places of business, and in the State papers.—LEONE LEVI's *Commercial Law of the World*.

Analysis of the general Law of Partnerships.—Partnership in Great Britain is a contract entirely free, and subject to no formalities; it belongs to the parties themselves to regulate the conditions; the law is merely circumscribed in protecting the rights of third parties, and to see them respected. Partnership in common law is divided into three classes—universal, general, and limited or special. They are also divided into private partnerships and public companies. Public companies are divided into unincorporated companies or associations, and incorporated companies, and corporations chartered by government. By the law of Scotland partnerships are divided into ordinary partnerships, joint-stock companies, and public companies. In the first the firm is a distinct person at law, and the partners, although jointly and severally liable for all the debts and contracts of the firm, are so as guarantors of the firm. This is general partnership. Special partnership is one contracted for a particular branch of business.

There are principles connected with the law which are identical in every country; namely, that all members of an ostensible partnership, or in collective name, are responsible in *solidum*; but differences appear in points regarding the continuation or cessation of partnership after the decease of one of the partners. Thus in Prussia or Frankfort, the heirs continue the partnership until the end of the year, and if they do not give notice of their retirement, or if they are not excluded by the other partners, they do not cease to form part of it.

In France partnership ends of full right at the instant of the death of a partner, unless by contrary agreement this last regulation has been generally adopted. It is the same for that by which the profits distributed among partners are not to be returned to the partnership fund, whatever may happen afterward, unless there be fraud, and the provision is added, that a partner who brings in only his labor can not, in any case, return the dividends which he has received.

Almost every legislation except that of Great Britain recognizes the existence of three kinds of commercial partnerships. 1st. Ostensible partnerships (in collective name); 2d. Partnerships in *commandité*; 3d. Anonymous partnerships.

The Portuguese code specifies each kind of partnership, indicating their rules at some length. In effect, besides the partnership anonymous, dormant, or secret, and in collective name, that of capital and labor is made prominent; in this case the partner with capital alone is responsible beyond his investment, in consequence of which the law characterizes this association as irregular. Then come partnerships in participation, with limited or unlimited capital, called *Parceria*, either for an indivisible object, or for a determinate end; but in all cases it is necessary that it should refer to a commercial operation, and that there be at least one merchant either dormant or ostensible. There are in this code some regulations worthy of being noted; namely, that a contract which would free the provider of funds from all obligations, when he has a share in the profits, is null, but then he becomes an interested party, and not a partner. A contract is declared usurious which should allow to a lender of money the profits besides the interests, without subjecting him to the losses,

which is very proper and just; because the principle of equality ought to govern, above all, matters of partnership; consequently this last clause ought to be annulled if it existed. In general, a minor, even not a trader, may not be a partner; but he has power to make use of the privilege of restitution in case of loss. If, at his coming of age, he has not declared that he wishes to retire, he becomes responsible for all further acts of the partnership.

It is most essential in partnership in collective name that the partners should all be responsible in *solidum*. In this the Dutch code is equal in all points to the French code; but the former code contains a derogation from this rule surprising at first, because it says that a collective partner who has become *commanditaire* is not responsible in *solidum*. The reason of this extraordinary regulation is founded upon the usage which permits the continuation of ancient commercial houses, known under the names of their founders, although these have still their capital invested in them; true it is that third parties ought to have been acquainted with it by the liquidation of the preceding house, or by the publication of the dissolution.

In the Spanish code there is a regulation different from any other legislation in matter of constitution of anonymous partnerships, by subjecting the articles, not to the examination of the government, but of the tribunals of commerce. The Spanish code and that of Portugal prescribe a measure the same as that of the Code Napoleon, which consists in making interests to run in full right, on the investments of the partners, from the day in which they ought to be made. With regard to the nomination of managers of partnership, in France the law has no provision for it. In Würtemberg and in Spain, when the manager is nominated by the articles, it is allowed, should his action be injurious to the interests of the company, to add another member. In Russia it is prohibited to confer by the articles the management of the partnership on certain parties for all its duration and without a renewal.

All legislation is silent upon the interests of the capital invested by the shareholders. It is, in fact, clear that an investment of funds in a partnership is not an employment, but a sum bestowed for mere operations, and which can only allow to raise sums on the realized profits, either every year, or at the time when balance-sheets are drawn up according to law, or at any other time, periodical or not. But in Hungary the "*commanditaires*," improperly called partners, because they are then only considered as lenders of money, may stipulate for interests beyond the legal rate which the other partners ought to pay, even if they should suffer losses. It is the same in Prussia.

With regard to the emission of shares and their transference, the Hungarian code contains very important regulations. It says that all persons may buy shares, but it proscribes shares to the bearer—a regulation which was reproduced in the Russian code and in the Würtemberg code. It says also that no investment of capital can be made nor interests claimed before the constitution of the partnership, and that only when all shares are disposed of the shareholders may establish the articles. Lastly, there is the remarkable regulation, that when the majority of shareholders have voted for a change or modification in the articles, of a nature to alter the object of the partnership, the minority have power to retire.

The Russian code prescribes several very curious measures. The sale of shares, or promises of shares on credit, is prohibited. A portion of the profits must be taken to constitute a reserve fund; the unreclaimed dividend, after ten years, is united to the social fund, or may be divided among the other shareholders. Lastly, if the directors are divided in their deliberations, the dissenting minority may exact that mention be made of their opinion in the verbal process. The same code indicates the mode of terminating disputes:

between shareholders or directors they may, with their consent, be decided by the general meeting, or by arbitrators; when third parties are concerned, it stands always with the tribunal of arbitrament to decide as a forced jurisdiction. In France the same clause is equally precise. But various modern legislations inserted regulations against this mode; thus the code of Württemberg permits parties to derogate from it; the Hungarian code says that disputes among partners shall be brought before the Tribunal of Commerce; and if it regards bills of exchange, or in case of insolvency, they shall be adjudicated upon by the ordinary tribunals. The Lombardo-Venetian code does not reproduce the section of the French code, called *On Disputes among Partners*. The recent codes of Nassau and Sardinia do not contain any regulation on this matter. In England, when a reference is depending, made, or determined, it may be a bar; but the agreement of the parties does not oust either courts of law or equity, as the former will not allow their jurisdiction to be ousted by any private arrangement, and equity will not decree a specific performance thereof.

The law of merchants differs from the common law in the power of binding a partner by deed.

Lord Kenyon said, in *Harrison v. Jackson*, 7 S. R. 210: "The law on merchants is part of the law of the land, and in mercantile transactions it never was doubted but that one partner might bind the rest. But the power of binding each other by deed is now for the first time insisted on. A general partnership agreement, though under seal, does not authorize the partners to execute deeds for each other, unless a particular power be given for that purpose. Yet in common law a partner has power to bind his copartner by deed."

Although, in the words of Hobart, C. J., "The custom of merchants is part of the common law of the United Kingdom, of which the judges ought to take notice; and if any doubt arise to them about their custom, they may send for the merchants to know their custom, as they may send for the citizens to know their law;" yet, on the other hand, Lord Holt says, "We take notice of the laws of merchants that are general, not of those that are particular usages."—See *Westminster Review*, xx. 58; *American Quarterly Review*, xix. 48; *Hunt's Merchants' Magazine*, xxiv. 66, xxxiii. 457, xxxv. 720. See also LEONE LEVI's *Commercial Law of the World*, 4to. London, 1854; and KENT's *Commentaries*, vol. iii.

Partners of the Masts, the wood-work round the mast at the deck, to strengthen and support the deck against the pressure of the mast. The term is also applied to the similar supports round the capstan and pumps.

Partridge Wood, a variegated wood imported from Martinique; it is said to be the produce of the *Heisteria coccinea*.

Passengers, in *Commercial navigation*, are individuals conveyed for hire from one place to another on board ship. Passage ships are those peculiarly appropriated to the conveyance of passengers. Passage ships are generally placed under certain regulations; and the extent to which emigration is now carried renders it of the utmost importance that these regulations should be carefully compiled. The greater number of emigrants are in humble life: few among them know any thing of ships, or of the precautions necessary to insure a safe and comfortable voyage; they are also, for the most part, poor, and exceedingly anxious to economize, so that they seldom hesitate to embark in any ship, however unfit for the conveyance of passengers, or inadequately furnished with provisions, if it be cheap. Unprincipled masters and owners have not been slow to take advantage of this; and in order to prevent the frauds that would otherwise be practiced on the unwary, it has been found indispensable to lay down some general regulations as to the number of

passengers to be taken on board ships as compared with their tonnage, the quantity of water and provisions as compared with the passengers, etc. But this is no very easy task. If the limitations be too strict, that is, if comparatively few passengers may be carried, or if the stock of provisions to be put on board be either unnecessarily large or expensive, the cost of emigration is proportionally enhanced, and an artificial and serious impediment is thrown in the way of what should be made as easy as possible, consistent with security. But, on the other hand, if too many passengers be allowed, their health is liable to suffer; and should the supply of provisions be inadequate, or the quality bad, the most serious consequences may ensue.

In some respects passengers may be considered as a portion of the crew. They may be called on by the master or commander of the ship, in case of imminent danger either from tempest or enemies, to lend their assistance for the general safety; and in the event of their declining, may be punished for disobedience. This principle has been recognized in several cases; but as the authority arises out of the necessity of the case, it must be exercised strictly within the limits of that necessity.—*Boyce v. Badcliffe*, 1 Campbell, 58. A passenger is not, however, bound to remain on board the ship in the hour of danger, but may quit it if he have an opportunity; and he is not required to take upon himself any responsibility as to the conduct of the ship. If he incur any responsibility, and perform extraordinary services in relieving a vessel in distress, he is entitled to a corresponding reward. The goods of passengers contribute to general average.—ABBOTT on the Law of Shipping.

Passenger Act of the United States.—It is made the duty of the Secretary of State, by the second paragraph of the 18th section of the act approved 3d of March, 1855, to give notice, in the ports of Europe and elsewhere, of the provisions of the act to regulate the carriage of passengers in steamships and other vessels.

The special attention of United States consular officers is called to this act, and also to the instructions which have been issued by the Treasury Department in reference to it. It will be observed that, while this act prescribes spaces of certain clear superficial feet of deck to each passenger (other than cabin passengers), it moreover fixes a maximum, by restricting the number of such passengers allowed to be carried in any such vessel in the proportion of one to every two tons of said vessel's tonnage measurement, excluding children under the age of one year in the computation, and computing two children over one and under eight years of age as one passenger. It follows, that though a vessel might afford clear spaces of the dimensions indicated for a greater number of passengers than one to every two tons of her tonnage measurement, yet if the number shall exceed that allowed by her tonnage measurement the penalties imposed by the law would attach; or if her tonnage measurement should allow a greater number of passengers than according to the clear spaces prescribed by law she could carry, yet if the number shall exceed that allowed by the clear spaces prescribed by law the penalties imposed by the law would equally attach. In other words, the one rule, as to the number of passengers a vessel is entitled to carry, is a limitation upon the other. The tonnage of each vessel, according to custom-house measurement, must, therefore, be ascertained, as well as the measurement of the spaces allotted to passengers, in order to determine the number of passengers she is entitled to carry.

In order to determine the number of passengers a vessel is entitled to carry in accordance with the spaces prescribed by this act, the height between decks must be measured, not from the bottom edge of the carlines or deck beams, but from the under surface of the upper deck to the top floor below; and no space shall be con-

sidered available for passengers that has not, when measured in this manner, the height called for by the law, as the case may be; nor shall any space in the vessel of a less width than four feet be measured; provided, however, if the vessel shall, in accordance with the provisions of the first section of this act, carry any portion of her cargo, or any other article or articles, on any of the decks, cabins, or other places appropriated for the use of passengers, in lockers or inclosures prepared for the purpose, the height between decks shall be measured from the bottom edge of the carlines, or deck beams, to the upper surface of said lockers or inclosed spaces, which shall be deemed and taken to be the deck or platform from which measurement shall be made for all the purposes of this act, and the spaces occupied by said lockers or inclosed spaces shall be deducted from the spaces allowable for the use of passengers. For example: the spaces in the main and poop decks, or platforms, and in the deck houses, if any there be, will be $16 \times 6 = 96$ feet; lower deck, $18 \times 6 = 108$ feet; two-deck vessels, $14 \times 7\frac{1}{2} = 105$ feet. The encumbering by merchandise or stores, not the personal baggage of the passengers, except in lockers or inclosures prepared for the purpose, of any part of the space occupied by the passengers, will vitiate the whole space, unless the part so encumbered be separated from that so occupied by a substantial bulkhead. The deck or platform must be of a permanent nature, flush, and impervious to the water.

Passport, a warrant of protection and authority to travel, granted to persons moving from place to place by the competent officer. The word appears to be derived from the maritime usage of some Continental countries of giving similar authorities from the admiral of a naval station to vessels leaving harbors within his jurisdiction. As passports are not required in our own country, the only species known to our travelers is that of foreign passports, which, for traveling on the continent of Europe, are usually made out by the resident minister or consul of the country he intends first to visit, or by the State Department. They are subject to *visa*, or inspection, by the proper authorities at the place where the traveler disembarks, and also at other places where he may reach, according to the police regulations of each particular country, and on passing the frontiers of states. Austria is, we believe, the only European state which at this time requires absolutely the *visa* of an ambassador or minister of her own for travelers entering her domains by land. In France, and in many Continental countries, home passports are necessary for the native traveler. According to the letter of the French law (since 1796), a Frenchman can not pass the limits of the canton in which he is domiciled without a passport; but in practice it is not required within the extent of the department. Legally speaking, the strict formalities of an internal passport in France require the direction of a journey to be specified, and its exact execution attested by the *visas* and signatures of the police authorities at every place mentioned in it; and these laws are, from their severity, so incapable of complete execution, that it is a common saying that no man but a rogue is ever entirely *en règle* with respect to his passport, suspicious characters being usually the most particular in their attention to formalities, for fear of detention. A Frenchman traveling without a properly-authenticated passport is liable to arrest and detention for a period not exceeding a month. The fees fixed in France are two francs for a passport to travel at home, and ten to go abroad.

By the twenty-first section of the act of August 18, 1856, the Secretary of State of the United States is authorized to grant and issue passports, and cause passports to be granted, issued, and verified in foreign countries by such diplomatic or consular officers of the United States, and under such rules as the President shall designate and prescribe, for and on behalf of the United

States, and no other person shall grant, issue, or verify any such passport; nor shall any passport be granted or issued to or verified for any other persons than citizens of the United States; nor shall any charge be made for granting, issuing, or verifying any passport, except in a foreign country; and in any case the fee allowed therefor shall not exceed the sum of one dollar, nor shall any such charge be made for more than one such verification in any foreign country; and if any person acting or claiming to act in any office or capacity under the United States, or any of the States of the United States, who shall not be lawfully authorized so to do, shall grant, issue, or verify any passport, or other instrument in the nature of a passport, to or for any citizen of the United States, or to or for any person claiming to be or designated as such in such passport or verification; or if any consular officer who shall be authorized to grant, issue, or verify passports, shall knowingly and willingly grant, issue, or verify any such passport to or for any person not a citizen of the United States, the person so offending shall be deemed and taken to be guilty of a misdemeanor, and on conviction thereof shall be imprisoned not exceeding one year, or fined in a sum not to exceed five hundred dollars, or both; and may be charged, proceeded against, tried, convicted, and dealt with therefor in the district where he may be arrested or in custody. It is likewise made the duty of all persons who shall be authorized, pursuant to the provisions of the act, to grant, issue, or verify passports, to make return of the same to the Secretary of State; and such returns shall specify the names and all other particulars of the persons to whom the same shall be granted, issued, or verified, as embraced in such passport.

From the foregoing provisions of the act it will be seen that passports can only be issued by the Secretary of State, and such diplomatic and consular officers of the United States in foreign countries as he may expressly authorize, and they can be granted to citizens of the United States only. Passports will be granted by the Secretary of State, and by the diplomatic representatives of the United States in foreign countries, free of charge; but when issued by a consul general or consul, the fee of one dollar, as prescribed in these instructions, is to be collected in every case. As passports granted by the Secretary of State secure to the bearers facilities from foreign governments not accorded to those issued by diplomatic officers, consuls general, or consuls, it will always be to the interest of travelers to procure their passports before leaving the United States, and this course is earnestly recommended by the Department of State. In any country where there is a diplomatic representative of the United States, no consul general or consul is authorized to issue passports, except in the absence of such representative from the place of his legation. Whenever he may be so absent, authority is given to consuls general and consuls only to issue passports; but in all cases the said consuls general or consuls, as the case may be, will report to the Department of State the names of the persons to whom passports have been issued by them, together with the evidence of their being citizens of the United States, and a copy of the same report will be forwarded to the legation of the United States, if there be any in the country. In case there should be no diplomatic representative accredited to the country in which a consul general or consul may reside, then these officers are authorized to grant passports, having regard to the general instructions to consular officers in reference thereto; they will transmit, in all cases, to the Department of State the information in regard to citizenship required by this section.

Whenever a foreign government shall require the *visa* of a passport of any citizen of the United States, it shall be given by the consular officer of the United States at the place where it is demanded, and he shall, for each passport so *visé*, collect and account for the

fee prescribed in these instructions, noting on the passport that this has been done; and no charge shall thereafter be made by any officer of the United States for any *visa* of that passport in the same country. Passports are granted upon the ground of international courtesy, and as affording evidence to the diplomatic and other agents in foreign countries that the bearer thereof is a citizen of the United States, and entitled to full protection as such. A passport, in proper form, must contain a description of the bearer, with his signature; it must also request all whom it may concern to permit the bearer thereof, being a citizen of the United States, safely and freely to pass, and, in case of need, to give him all lawful aid and protection while so doing. It must be signed by the diplomatic representative, consul general, or consul, and sealed with the seal of the legation or consulate. Consuls general and consuls are expressly instructed that when an application is made for a passport by a native citizen of the United States, before granting it, the applicant must file in the consulate an affidavit stating that fact, and also his age and place of birth; this must be signed and sworn to by himself and one other citizen of the United States named therein, to whom he is personally known, and to the best of whose knowledge and belief the declaration made by him is true. If the applicant be a naturalized citizen, a passport can only be granted upon his exhibiting a certificate of naturalization, or a certified copy thereof; an authenticated copy of which must be transmitted by the consul general or consul to the Department of State. When the applicant is accompanied by his wife, children, or servants, or by females under his protection, it will be sufficient to state the names and ages of such persons and their relationship to the applicant.

UNITED STATES CONSULAR PASSPORT.

CONSULATE OF THE UNITED STATES OF AMERICA.

To all to whom these presents shall come, greeting:

Age, years.	I, the undersigned, consul of the United
Stature,	States of America for ———, and the de-
Forehead,	pendencies thereof, hereby request all
Eyes,	whom it may concern, to permit safely and
Nose,	freely to pass, ———, a citizen of the
Mouth,	United States, and in case of need to give
Chin,	him all lawful aid and protection.
Hair,	Given under my hand and the seal of the
Complexion,	consulate, at ———, this ——— day
Face,	of ———, A.D. 18—, and in the
	[SEAL.] year of the independence of the
	United States ———.

Paste (Fr. *pâte*). In Gem Sculpture, a preparation of glass, calcined crystal, lead, and other ingredients, for imitating gems. This art was well known to the ancients, and, after being long lost, was restored, at the end of the fifteenth century, by a Milanese painter. Some modern artists have succeeded in obtaining a composition possessing a hard, fine, and brilliant lustre or appearance; but *pastes*, or mock diamonds, as they are called, depend most for brilliancy on the art displayed in setting the foil or tinsel behind them. Several recipes have been given by M. Fontanien; but the most useful, and that generally employed for the production of artificial diamonds, is the following: Take of litharge 20 parts, of silex 12, of nitre 4, of borax 4, and of white arsenic 2 parts. These ingredients are to be well mixed together in a crucible and melted; the fused metal is thrown into water; and should any of the lead employed be reduced to the metallic state, it becomes separated by this process, and the glass is remelted for use. For the finer kinds, rock crystal is used instead of flint or sand, as it occurs in a much purer state; i. e., more free from the admixture of metallic oxyds, which give to vitreous compounds their different colors. In place of the above,

Loyael recommends the following ingredients to form a compound having the same specific gravity as the Oriental diamond, and on this account considered superior, as it more nearly approaches the gem with regard to its refractive and dispersive powers; but, like the former, it requires to be kept for some two or three days in a fused state, in order to expel the superabundant alkali and to perfect the refining. A moderate degree of heat fuses it. The following is its composition: Take of white sand purified by being washed, first in muriatic acid and afterward in pure water until all traces of acid are removed, 100 parts; red oxyd of lead (minium) 150 parts; calcined potash 30 to 35 parts; calcined borax 10; and oxyd of arsenic 1 part.—See the *Polytechnic Journal* for July, 1841. The term paste is also applied to the earthy mixture for pottery and porcelain; also to dough, and to the solution of starch or wheat flour, made by first mixing it with a proper portion of cold water, and then adding boiling water under constant stirring, so as to form an even solution. Alum is often added to paste to strengthen it.—BRANDE'S Dictionary.

Pastel (Lat. *pastillus*). In painting, a crayon formed with any color and gum water, for painting on paper or parchment. The great defect of this mode of painting is its want of durability.

Patents. A patent, according to the definition of Mr. Philips, is a grant by the State of the exclusive privilege of making, using, and vending, and authorizing others to make, use, and vend, an invention.

The first act of Congress on this subject was passed April 10th, 1790, and it authorized the Secretary of State, the Secretary of War, and the Attorney General, or any two of them, to grant patents for such new inventions and discoveries as they should deem sufficiently useful and important. That act extended equally to aliens, and the board exercised the power of refusing patents for want of novelty or utility. This act was repealed, and a new act passed on the 21st February, 1793. It confined patents to the citizens of the United States, and they were to be granted by the Secretary of State, subject to the revision of the Attorney General. The act gave no power to the Secretary of State to refuse a patent for want of novelty or usefulness, and the granting of the patent became a mere ministerial duty. The privilege of suing out a patent was, by the act of 17th April, 1800, extended to aliens of two years' residence in the United States. The act of July 13th, 1832, only required the alien to be a resident at the time of the application, and to have declared his intention, according to law, to become a citizen.

But as every person was entitled to take out a patent, on complying with the prescribed terms, without any material inquiry, at least at the Patent Office, respecting the usefulness and importance of the invention or improvement, a great many worthless and fraudulent patents were issued, and the value of the privilege was degraded, and in a great degree destroyed. It became necessary to give a new organization to the Patent Office, and to elevate its character, and confer upon it more efficient power. This was done by the act of Congress of July 4th, 1836, which repealed all former laws on the subject, and re-enacted the patent system with essential improvements. A Patent Office is now attached to the Interior Department, and a commissioner of patents appointed. Applications for patents are to be made in writing to the commissioner, by any persons having discovered or invented any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement on any art, machine, manufacture, or composition of matter, not known or used by others before his discovery or invention thereof, and not at the time of his application for a patent in public use or on sale, with his consent or allowance, as the inventor or discoverer. The applicant must deliver a written description of his invention

or discovery, and of the manner and process of making, constructing, using and compounding the same, in full, clear, and exact terms, avoiding unnecessary prolixity, so as to enable any person skilled in the art or science to which it appertains, or is most nearly connected, to make, construct, compound, and use the same; and he must, in the case of a machine, fully explain the principle and the application of it, by which it may be distinguished from other inventions; and he must particularly specify the part, improvement, or combination which he claims as his own invention or discovery. He must accompany the same with drawings and written references, where the nature of the case admits of drawings or specimens of ingredients, and of the composition of matter sufficient in quantity for the purpose of experiment, where the invention or discovery is of a composition of matter. He must likewise furnish a model of his invention, in cases which admit of representation by model. The applicant also must make oath or affirmation that he believes he is the original and first inventor or discoverer of the art, machine, composition, or improvement for which he solicits a patent, and that he does not know or believe that the same was ever before known or used, and he must further state of what country he is a citizen.

If the applicant be a citizen, or an alien of one year's residence, he is to pay to the Treasury of the United States \$30; and if a British subject, \$500; and all other applicants, \$300. The original and true inventor is not to be deprived of the right to a patent for his invention, by reason of his having previously taken out letters patent therefor in a foreign country, and the same having been published at any time within six months next preceding the filing of his specification and drawing. The executors and administrators of persons dying before a patent is taken out, may apply and take it out in trust for the heirs or devisees, on due compliance with the terms of the statute. Patents are assignable, and may be granted in whole or in part by writing, to be recorded in the Patent Office. If invalid by reason of defective specifications, or by claiming too much, the patent may be surrendered, and a new patent taken out for the unexpired period, provided the error did not arise from any fraudulent intention. If the patentee be an alien, he forfeits his exclusive right, if he fails for eighteen months from the date of the patent to continue on sale to the public on reasonable terms the invention or discovery covered by the patent. The patentee does not lose his patent if it satisfactorily appears to the court, that at the time of his application he believed himself to be the first inventor or discoverer of the thing patented, though the invention or discovery, or any part thereof, had been before known or used in a foreign country; provided it does not appear that the same, or any substantial part thereof, had before been patented or described in any printed publication.

These are the principal existing statute provisions on the subject, and though the act of Congress of 1836 has made considerable alterations in the pre-existing laws respecting the organization of the Patent Office, and the limitations on the granting of patents, yet the essential and established doctrines concerning patents heretofore declared in the decisions of the courts remain unaffected. The act of 1793 declared that simply changing the form or the proportions of any machine or composition of matter in any degree was not a discovery. And also, that the person who had discovered an improvement in the principle of any machine, or in the process of any composition of matter, might obtain a patent for such improvement, but that he could not thereby make, use, or vend the original discovery, nor could the first inventor use the improvement. These declaratory provisions are omitted in the law of 1836, and I presume the construction was considered to be necessarily the same without the provision. In an age distinguished for an active and ar-

dent spirit of improvement in the arts of agriculture and manufactures, and in the machinery of every kind applied to their use, the doctrine of patent rights has attracted much discussion, and become a subject of deep interest both here and in Europe.—*KENT'S Commentaries*, vol. ii. p. 438; *DUNLAP'S Digest Laus U. S.*

Patras, or **Patrasso**, a sea-port in the northwest corner of the Morea, near the entrance of the Gulf of Lepanto, lat. 38° 14' 25" N., long. 21° 46' 20" E. Population variously estimated from 7000 to 8000. The port lies a little to the northward of the town; but the part fronting it is unsafe, and exposed to heavy seas, particularly in winter. Vessels, therefore, go a little farther up the gulf, where there is a mole or quay, and where they can lie close to the wharf. Patras has a more extensive trade than any other port of Greece. The principal exports are currants, oil, valonia, wine, raw silk, raw cotton, wool, skins, wax, etc. Of these, currants are by far the most important. The fruit is larger, and freer from sand and gravel, than that of the Ionian Islands. They are shipped in casks of various sizes; but as the weight of the cask is included in that of the fruit, it is said to be, for the most part, heavier and stronger than necessary. Morea currants are preferred in most countries, except England; but there the currants of Zante are held in equal, or perhaps greater, estimation. The export of currants from Patras may average from 70,000 to 80,000 cwts. a year; but the produce of the crop varies extremely in different seasons. Latterly the culture of currants in the Morea has been very greatly extended. Owing to the increase of their quantity, their price has been much reduced. But their cultivation would notwithstanding be extremely profitable were it not for the extraordinary risks by which it is attended. It is seldom, indeed, that the entire crop can be housed without serious damage; and very frequently it is all but entirely lost. This was the case with the crop of 1852, the loss of which occasioned much distress. The crops of oil, the next great article of export from Patras, are, if possible, still more fluctuating than those of currants. The imports at Patras, as at the other Greek ports, consist principally of sugar, coffee, and other colonial products; plain and printed cotton stuffs, woolen goods, salted fish, iron, tin plates, hardware, coal, cordage, hemp, deals, etc. Imported articles are brought principally from the Ionian Islands, Malta, Venice, Leghorn, Marseilles, and Trieste; but, from the want of authentic details, it is quite impossible to form any accurate estimate of their amount either as respects Patras or any other Greek port.

Commerce.—The Greeks have particularly distinguished themselves by the spirit and success with which they have engaged in naval and mercantile enterprises. Their commerce, next to their freedom, was the grand source of the prosperity of Athens, Corinth, and other Greek cities of antiquity. And in this respect the modern Greeks have been no unsuccessful imitators of their illustrious progenitors. The great articles of export from Greece consist of currants, silk, figs, wool, olive oil, valonia, wine, sponge, wax, tobacco, etc.; the principal imports being manufactured cotton and woolen goods, corn, with a great variety of subordinate articles, principally from England, but partly also from France and Germany. The mercantile navy of Greece was estimated in 1850 at 4000 vessels, of the aggregate burden of 150,000 tons, employing about 30,000 seamen. The Greeks have, in fact, attained to the distinction of being the carriers, factors, and traders of the Levant.

The advantage resulting to Greece from her being the seat of extensive trade is not so great as might have been anticipated. The import and export trade of the country is subjected to many troublesome regulations; there are no roads, which, however, are less wanted here than in most other countries. Manufactures on a large scale can not be said to exist, the bulk

of the population, but little removed from barbarism, using only those made at home; agriculture is also in the most backward condition, and is almost wholly carried on under the *metayer* system. Still, however, some improvements are taking place, especially in the islands; and it is probable that the progress toward a better state of things will be gradually accelerated. It is deeply to be regretted that Candia, or Crete, was not either added to the new kingdom of Greece, or made independent. We can not help considering it as disgraceful to the Christian nations of Europe, that this famous island, where European civilization first struck its roots, should be consigned to the barbarians by whom it is now laid waste. It is as well entitled to the favorable consideration of England, France, and Russia, as any part of Continental Greece; and we hope that measures may yet be devised for rescuing it from the atrocious despotism by which it has been so long weighed down.—See GREECE. For Commerce, etc., of Modern Greece, see *Living Age*, ii. 557; NILES's *Register*, xxv. 342 (DANIEL WEBSTER's *Speech*); HUNT's *Merchants' Magazine*, vii. 109; DE BOW's *Review*, xlii. 134; *Democratic Review*, viii. 204 (GEORGE SUMNER).

Patterns are specimens or samples of commodities, transmitted by manufacturers to their correspondents, or carried from town to town by travelers, in search of orders.

Pawnbrokers and Pawnbroking. A pawnbroker is a species of banker, who advances money, at a certain rate of interest, upon security of goods deposited in his hands; having power to sell the goods, if the principal sum and the interest thereon be not paid within a specified time. The origin of borrowing money by means of pledges deposited with lenders is referred, as a regular trade, to Perousa, in Italy, about A.D. 1458; and soon afterward in England. The business of pawnbrokers was regulated 30 Geo. II., 1756. Licenses were issued 24 Geo. III., 1783. In London there are 334 pawnbrokers; and in England, exclusively of London, 1127.

Advantages and Disadvantages of Pawnbroking.—The practice of impledging or pawning goods, in order to raise loans, is one that must necessarily always exist in civilized societies, and is in many cases productive of advantage to the parties. But it is a practice that is extremely liable to abuse. By far the largest proportion of the *bona fide* borrowers of money on pawn consist of the lowest and most indigent classes; and were the lenders not subjected to any species of regulation, advantage might be taken (as, indeed, it is frequently taken, in despite of every precaution) of their necessities, to subject them to the most grievous extortion. But, besides those whose wants compel them to resort to pawnbrokers, there is another class, who have recourse to them in order to get rid of the property they have unlawfully acquired. Not only, therefore, are pawnbrokers instrumental in relieving the pressing and urgent necessities of the poor, but they may also, even without intending it, become the most efficient allies of thieves and swindlers, by affording them ready and convenient outlets for the disposal of their ill-gotten gains. The policy of giving legislative protection to a business so liable to abuse has been doubted by many. But though it were suppressed by law, it would always really exist. An individual possessed of property which he may neither be able nor willing to dispose of, may be reduced to a state of extreme difficulty; and in such case, what can be more convenient or advantageous for him than to get a loan upon a deposit of such property, under condition that if he repay the loan and the interest upon it within a certain period, the property will be returned? It is said, indeed, that the facilities of raising money in this way foster habits of impudence; that the first resort for aid to a pawnbroker almost always leads to a second; and that it is impossible so to regulate the business as to prevent

the ignorant and the necessitous from being plundered. That this statement, though exaggerated, is to a certain extent true, no one can deny. On the other hand, however, the capacity of obtaining supplies on deposits of goods, by affording the means of meeting pressing exigencies, in so far tends to prevent crime, and to promote the security of property; and it would seem as if the desire to redeem property in pawn would be one of the most powerful motives to industry and economy. At the same time, too, it must be borne in mind that it is not possible, do what you will, to prevent those who are poor and uninstructed from borrowing; and that they must in all cases obtain loans at a great sacrifice, and be liable to be imposed upon. But the fair presumption is, that there is less chance of any improper advantage being taken of them by a licensed pawnbroker than by a private and irresponsible individual. Although, however, the business had all the inconveniences, without any portion whatever of the good which really belongs to it, it would be to no purpose to attempt its suppression. It is visionary to imagine that those who have property will submit to be reduced to the extremity of want, without endeavoring to raise money upon it. Any attempt to put down pawnbroking would merely drive respectable persons from the trade, and throw it entirely into the hands of those who have neither property nor character to lose. And hence the object of a wise Legislature ought not to be to abolish what must always exist, but to endeavor, so far at least as is possible, to free it from abuse, by enacting such regulations as may appear to be best calculated to prevent the ignorant and the unwary from becoming the prey of swindlers, and to facilitate the discovery of stolen property.

Obligations under which Pawnbrokers should be placed.—For this purpose it seems indispensable that the interest charged by pawnbrokers should be limited; that they should be obliged to give a receipt for the articles pledged, and to retain them for a reasonable time before selling them; that the sale, when it does take place, should be by public auction, or in such a way as may give the articles the best chance for being sold at a fair price; and that the excess of price, if there be any, after deducting the amount advanced, and the interest and expenses of sale, should be paid over to the original owner of the goods. To prevent pawnbrokers from becoming the receivers of stolen goods, they should be liable to penalties for making advances to any individual unable to give a satisfactory account of the mode in which he became possessed of the property he is desirous to pawn; the officers of police should at all times have free access to their premises; and they should be obliged carefully to describe and advertise the property they offer for sale.

Law as to Pawnbrokers.—It may appear singular that pawnbrokers should hardly have been named in any legislative enactment till after the middle of last century. It was enacted by the 30 Geo. II. that a duplicate or receipt should be given for goods pawned, and that such as were pawned for any sum less than £10 might be recovered any time within two years on payment of the principal and interest; but the rate of interest was not fixed.

Of the pledge of Mortgage and Chattels.—There is a material distinction to be noticed between a pledge and a mortgage. A pledge, or pawn, is a deposit of goods redeemable on certain terms, and either with or without a fixed period of redemption. Delivery accompanies a pledge, and is essential to its validity. The general property does not pass, as in the case of a mortgage, and the pawnee has only a special property. If no time of redemption be fixed by the contract, the pawnor may redeem at any time; and though a day of payment be fixed, he may redeem after the day. He has his whole lifetime to redeem, provided the pawnee does not call upon him to redeem, as he has a right to do at any time, in his discretion, if no time for redemption

be fixed; and if no such call be made, the representatives of the pawner may redeem after his death. As early as the time of Glauville, these just and plain principles of the law of pledges were essentially recognized, and it was declared, that if the pledge was not redeemed by the time appointed, the creditor might have recourse to the law, and compel the pawner to redeem by a given day, or be forever foreclosed and barred of his right. And if no time of redemption was fixed, the creditor might call upon the debtor at any time, by legal process, to redeem or lose his pledge. The distinction between a pawn and mortgage of chattels is equally well settled in the English and American law; and a mortgage of goods differs from a pledge and pawn in this, that the former is a conveyance of the title upon condition, and it becomes an absolute interest at law, if not redeemed by a given time, and it may be valid in certain cases without actual delivery. According to the civil law, a pledge could not be sold without judicial sanction, unless there was a special agreement to this effect; and this is, doubtless, the law at this day in most parts of Europe. The French *Civil Code* has adopted the law of Constantine, by which even an agreement at the time of the original contract of loan, that if the debtor did not pay at the day, the pledge should be absolutely forfeited, and become the property of the creditor, was declared to be void. While on this subject of pledges, it may be proper further to observe, that the pawnee, by bill in chancery, may bar the debtor's right of redemption and have the chattels sold. This has been done frequently in the case of stock bonds, plate, or other personal property pledged for the payment of debt. But without any bill to redeem, the creditor, on a pledge or mortgage of chattels, may sell at auction, on giving reasonable opportunity to the debtor to redeem, and apprising him of the time and place of sale; and this is the more convenient and usual practice. While the debtor's right in the pledge remains unextinguished, his interest is liable to be sold on execution; and the purchaser, like any other purchaser or assignee of the interest of the pawner, succeeds to all his rights, and becomes entitled to redeem.—See KENT's *Commentaries*, vol. iv.

Italy, France, &c.—The practice of advancing money to the poor, either with or without interest, seems to have been occasionally followed in antiquity.—BECKMANN, vol. iii. But the first public establishments of this sort were founded in Italy, under the name of *Monti di Pietà*, in the 14th and 15th centuries. As it was soon found to be impossible to procure the means of supporting such establishments from voluntary contributions, a bull for allowing interest to be charged upon the loans made to the poor was issued by Leo X. in 1521. These establishments, though differing in many respects, have universally for their object to protect the needy from the risk of being plundered by the irresponsible individuals to whom their necessities might oblige them to resort, by accommodating them with loans on comparatively reasonable terms. And though their practice has not, in all instances, corresponded with the professions they have made, there seems no reason to doubt that they have been, speaking generally, of essential service to the poor. From Italy these establishments have gradually spread over the Continent. The *Mont de Piété*, in Paris, was established by a royal ordinance in 1777; and after being destroyed by the Revolution, was again opened in 1797. In 1804 it obtained a monopoly of the business of pawnbroking in the capital. Loans are made by this establishment upon deposits of such goods as can be preserved, to the amount of two-thirds of the estimated value of all goods other than gold and silver, and to four-fifths of the value of the latter. No loan is for less than 3 francs. The advances are made for a year, but the borrower may renew the engagement. Interest is fixed at the rate of one per cent. per month.

The *Mont de Piété* has generally in deposit from

600,000 to 650,000 articles, worth from twelve million to thirteen million francs. The expense of management amounts to from 60 to 65 centimes for each article; so that a loan of 3 francs never defrays the expenses it occasions, and the profits are wholly derived from those that exceed 5 francs. At an average the profits amount to about 280,000 francs, of which only about 155,000 are derived from loans upon deposit, about 125,000 being the produce of other funds at the disposal of the company. In some respects, particularly the lowness of interest upon small loans, and the greater vigilance exercised with respect to the reception of stolen goods, the *Mont de Piété* has an advantage over the pawnbroking establishments in this country. It may be doubted, however, whether it is, on the whole, so well fitted to attain its objects. The limitation of the loans to 3 francs would be felt to be a serious grievance here, and it can hardly be otherwise in France; nor is it to be supposed that the servants of a great public establishment will be so ready to assist poor persons, having none but inferior articles to offer in security, as private individuals anxious to get business. And such, in point of fact, is found to be the case, not in Paris only, but in all those parts of the Continent where the business of pawnbroking is confined to a few establishments. And hence, though the question be not free from difficulty, it would seem that, were the modifications already suggested adopted, our system would be the best of any. For further information with respect to this curious and interesting subject, the reader is referred to the *Traité de la Bienfaisance Publique* of Degerando, iii. 1-55; besides giving a succinct historical notice of *Monts de Piété*, the learned author has discussed most part of the knotty questions connected with the proper organization of these establishments, and with their influence on society, with equal sagacity and ability.—See *Bankers' Magazine*, New York, August, 1850, p. 170; August, 1852, p. 124 (Sir F. HEAD), *Standard Lib. Cy.* London, 1849.

Peach-tree (*Amygdalus persica*). It is not certain in what part of the globe the peach-tree was originally produced; for although we have early accounts of its being brought to Europe from Persia, it does not follow from thence that it was one of the natural productions of that country. Pliny relates that it had been stated to have possessed venomous qualities, and that its fruit was sent into Egypt by the kings of Persia, by way of revenge, to poison the natives; but he treats this story as a mere fable, and considers it the most harmless fruit in the world; that it had the most juicy, and the least smell of any fruit, and yet caused thirst to those who ate of it. He expressly states that it was imported by the Romans from Persia; but whether it was indigenous to that country, or sent thither from a region still nearer to the equator, we have no information. He adds that it was not long since peaches were known in Rome, and that there was great difficulty in rearing them. He also informs us that this tree was brought from Egypt to the Isle of Rhodes, where it could never be made to produce fruit; and from thence to Italy. He says, moreover, that it was not a common fruit either in Greece or Natolia. No mention, however, is made of it by Cato. Powhall, in his *Roman Provinces*, makes it a Phœcean importation to Marseilles; and evidently it was cultivated in France at an early period, as Columella, in his account of this fruit, says:

"Those of small size to ripen make great haste;
Such as great Gaul bestows, observes due time
And season, not too early, nor too late."

The peach is said to have been first cultivated in Britain about the middle of the 16th century. Gerard describes several varieties of it as growing in his garden, in 1597. Tusser mentions it in his list of fruits in 1577; and in all probability it was introduced when the Romans had possession of that country.

The peach was introduced into North America by

the first European settlers, probably toward the close of the 16th or early in the 17th century, where it is cultivated in extensive plantations, which often grow with such luxuriance as to resemble forests of other trees. In New Jersey, Pennsylvania, Delaware, Maryland, Virginia, and several other States, much attention is paid to its culture, and the fruit is of an excellent quality. It is no uncommon circumstance for a planter to possess a peach orchard containing one thousand or more of standard trees. It is only in the Middle States of the Union where this fruit arrives at the greatest perfection. In favorable seasons, it matures in the open air as far north as Maine, New Hampshire, Vermont, and the Falls of Niagara; but its pulp is not so delicious as when grown some degrees farther south; it is also trained against walls at Montreal and Toronto, in Canada, where, in some seasons, fruit of a fine quality is obtained. In the Carolinas, Georgia, and Florida, the trees make much foliage and wood; still, if well cultivated and properly pruned, the fruit grows to a large size, and is juicy and well flavored. On the Mississippi, particularly in Louisiana, which lies in the same latitude as that part of Asia where this species is indigenous, it grows spontaneously, but is regarded as of foreign origin, having been introduced from Spain before that river was explored by the French. In the vicinity of Boston, Salem, New York, Philadelphia, and other populous cities of the United States, the peach is reared against walls and in hot-houses by numerous opulent citizens, and fruit of a large size and fine quality is produced. In some other parts of the American continent it also readily grows, and in great abundance. Sir Francis Head, in his *Rough Notes*, speaks in raptures of the beauty and luxuriance of this fruit, which was scattered over the corn-fields in the neighborhood of Mendoza, on the east side of the Andes; and the same traveler noticed dried peaches used as an article of food on the more elevated parts of those mountains, to which they must have been carried from the plains below. On the banks of Rio de la Plata, from Montevideo to Buenos Ayres, we have seen peach-trees growing spontaneously in the greatest perfection, and in such abundance as to form a considerable portion of the fuel of the provinces in which they grew. The fruit there is of a fine quality, large quantities of which are annually dried for domestic use, and the chief part of the remainder is consumed by cattle, or is suffered to decay upon the ground.

The wood of the peach-tree is hard, compact, of a roseate hue, and is susceptible of a fine polish; but owing to its inferior size and comparative scarcity, it is but little used in the arts, or for fuel, except in countries where other kinds of wood are rare. When obtained, however, of suitable dimensions, it may be employed for similar purposes as that of the almond. A color may also be extracted from it called *rose-pink*. Its leaves yield, by distillation, a volatile oil of a yellow color, containing hydrocyanic acid. Its bark, blossoms, and kernels of the fruit, also possess the same poisonous property. From the quantity of gum and sugar contained in the delicious pulp, the peach is nutritious, and is employed as a dessert, both fresh and preserved. From the malic acid contained in its juice, it is slightly refrigerant, and if eaten in moderate quantities it is generally considered as wholesome; but if taken too freely it is liable to disorder the bowels. When stewed with sugar, it may be given as a mild relaxative to convalescents. The kernels may be used for the same purpose as those of the bitter almond. The leaves are sometimes employed by the cook, the liquorist, and the confectioner, for flavoring, and they have also been substituted for Chinese tea; but, as fatal consequences have sometimes followed these uses, they should be looked upon with precaution. The preservation of peaches, plums, cherries, apricots, and other kinds of fruit in sirup occupies a prominent rank in the industry and commerce of France and of Ma-

jorca, and doubtless could be profitably carried on in those parts of the United States where these fruits are cultivated in abundance. To those who are desirous of entering into the business on an extensive scale, we would recommend the *Nouveau Manuel du Limonadier, du Glacier, du Chocolatier, et du Confiseur*, par MM. Cardelli, Lionnet-Clémandot, et Julia de Fontenelle, published at Paris in 1838; or, what would be still better, the employment of an intelligent *confiseur* who is practically acquainted with all its manipulations.—BROWNE'S *Trees of America*.

Peak, a name given to the upper corner of those sails which are extended by a gaff, or by a yard which crosses the mast obliquely, as the mizzen-yard of a ship, the main-yard of a bylander, etc. The upper extremity of these yards and gaffs is also denominated the *peak*.

Pear-tree (*Pyrus Communis*). The common pear-tree is indigenous to Europe, Western Asia, the Himalayas, and to China; but not to Africa nor America. It is found wild in most of the counties of Britain, as far north as Forfarshire; on the continent of Europe, from Sweden to the Mediterranean; and in Asia, as far east as China and Japan. It is always found on a dry soil, and more frequently on plains than on hills or mountains; and solitary, or in small groups, rather than in woods and forests. The varieties cultivated for their fruit succeed both in the temperate and transition zones of the two hemispheres, and it has been remarked that this tree, as well as the apple and the cherry, will grow in the open air wherever the oak will thrive.

The wood of the common pear-tree is heavy, strong, compact, of a fine grain, and slightly tinged with red. In common with that of all the Rosaceæ, it is liable to have its natural color changed by steeping in water, which, therefore, ought to be avoided when intended for particular purposes in the arts. When green, it weighs nearly eighty pounds to a cubic foot, and from forty-nine to fifty-three pounds when dry. According to Du Hamel, it is, next to the true service (*Pyrus sorbus*), the best wood that can be employed in wood-engraving, for which purpose, however, it is far inferior to that of the box. Yet it is allowed to be very hard and homogeneous, easy to cut, and, when perfectly dry, is not liable either to crack or warp. For the coarser kinds of engraving, such as large plans or diagrams, show-bills, etc., it serves a very good purpose. When it can be obtained, in Europe, it is much used by turners and pattern-makers; also for joiners' tools; and, as it can readily be stained, it is sometimes made into various articles, dyed black, in imitation of ebony. As fuel, the wood of this tree is excellent, producing a vivid and durable flame, accompanied by an intense heat. According to Withering, the leaves afford a yellow dye, and may be employed to impart a greenish shade to blue cloths. But the most important uses of the pear-tree are those which arise from its fruit. When ripe, it is employed at the table as a dessert, either raw, stewed, or preserved in sirup, and occasionally it is used in tarts. In most of the countries where it grows this fruit is very generally dried in ovens, or in the sun, in which state, when stewed, it is excellent, either as a substitute for puddings and pies, or as forming part of the dessert.

Another purpose to which the pear is applied is for making perry. It is extensively cultivated for this object in various parts of Britain, France, and Germany, where the trees are sometimes planted in rows eighteen or twenty yards apart, in order to admit a free access of light and air. Perry is made in the same manner as cider. The pears should be gathered before they begin to fall, and should be ground as soon after as possible. Should the perry not be sufficiently clear, when racked off, it may be fined in the usual manner of clarifying cider, by isinglass, in the proportion of about half an ounce to a barrel. The kinds of pears

used for making this liquor in Herefordshire are such as have an austere juice, as the "Squash," the "Old-field," the "Barland," the "Huff-cap," the "Sack," the "Red," and the "Longland" varieties. Pears were considered by the Romans as an antidote to the effect of eating poisonous mushrooms; and up to the present time perry is said to be the best remedy that can be employed for the same purpose. In Britain and France an agreeable wine is made from a mixture of crab-apples and pears, which in the latter country is called *piquette*. Pears, in general, produce flatulency, and consequently are unfit for weak stomachs; but when they are quite ripe, and contain a sweet juice, they seldom prove noxious, unless eaten to excess. Pears that are to be kept for winter use should hang as long on the trees as the state of the weather will admit. They should then be kept in heaps, in an open, dry situation, for about ten days, then wiped with a dry woollen cloth, and, lastly, packed up close from the air and moisture. But to keep the fruit in its greatest perfection, small earthen jars may be selected about the size of the pear, which should be packed separately, in clean oat chaff or wheaten bran, then tied down with oiled paper or skin, and cemented tight with wax or pitch. These jars should then be packed in a cask, chest, or some other secure place, with their bottoms upward, where they should remain until required for use.—BROWNE'S *Trees of America*.

Pearl-ash. See POTASH.

Pearls (Du. *Paarlen*; Fr. *Perles*; Ger. *Perlen*; It. *Perle*; Lat. *Margaritæ*; Russ. *Shemptschug, Perli*; Sp. *Perlas*; Arab. *Looloo*; Cyng. *Mootoo*; Hind. *Mootie*), are well-known globular concretions found in several species of shell-fish, but particularly the mother-of-pearl oyster (*Concha margaritifera*, Linn.). Pearls should be chosen round, of a bright, translucent, silvery whiteness, free from stains and roughness. Having these qualities, the largest are of course the most valuable. The larger ones have frequently the shape of a pear; and when these are otherwise perfect, they are in great demand for ear-rings. Ceylon pearls are most esteemed in England. The formation of the pearl has embarrassed both ancient and modern naturalists to explain, and has given occasion to a number of vain and absurd hypotheses. M. Réaumur, in 1717, alleged that pearls are formed like other stones in animals. An ancient pearl was valued by Pliny at £80,000 sterling. One which was brought, in 1574, to Philip II., of the size of a pigeon's egg, was valued at 14,400 ducats, equal to £13,996. A pearl spoken of by Boetius, named the *Incomparable*, weighed thirty carats, equal to five pennyweights, and was about the size of a muscadine pear. The pearl mentioned by Tavernier as being in possession of the Emperor of Persia was purchased of an Arab in 1633, and is valued at a sum equal to £110,400.—HAYDN.

Value of Pearls.—Pearls were in the highest possible estimation in ancient Rome, and bore an enormous price. *Principium culmenque omnium rerum pretii, margaritæ tenent.*—PLINY, *Hist. Nat.* Their price in modern times has very much declined; partly, no doubt, from changes of manners and fashions, but more probably from the admirable imitations of pearls that may be obtained at a very low price. According to Mr. Milburn, a handsome necklace of Ceylon pearls, smaller than a large pea, costs from £170 to £800; but one of pearls about the size of peppercorns may be had for £15. The pearls in the former sell at a guinea each, and those in the latter at about 1s. 6d. When the pearls dwindle to the size of small shot, they are denominated *seed pearls*, and are of little value. They are mostly sent to China. One of the most remarkable pearls of which we have any authentic account was bought by Tavernier at Catifa, in Arabia, a fishery famous in the days of Pliny, for the enormous sum of £110,000! It is pear-shaped, regular, and without blemish. The diameter is .63 inch at the largest part,

and the length from two to three inches. Much difference of opinion has existed among naturalists with respect to the production of pearls in the oyster; but it seems now to be generally believed that it is the result of disease, and is formed in the same manner as bezoar (see BEZOAR), pearls, like it, consisting of successive coats spread with perfect regularity round a foreign nucleus. In fact, the Chinese throw into a species of shell-fish (*mytilus cygneus*, or swan muscle), when it opens, five or six very minute mother-of-pearl beads strung on a thread; and in the course of a year they are found covered with a pearly crust, which perfectly resembles the real pearl.—MILBURN'S *Oriental Commerce*; AINSLIE'S *Materia Indica*.

Pearl Fisheries.—The pearl oyster is fished in various parts of the world, particularly on the west coast of Ceylon; at Tuticoreen, in the province of Tinnevelly, on the coast of Coromandel; at the Bahrein Islands, in the Gulf of Persia; at the Sooloo Islands; off the coast of Algiers; off St. Margarita; or Pearl Islands, in the West Indies, and other places on the coast of Colombia; and in the Bay of Panama, in the South Sea. Pearls have sometimes been found on the Scotch coast, and in various other places. The pearl fishery of Tuticoreen is monopolized by the East India Company, and that of Ceylon by government. But these monopolies are of no value; as in neither case does the sum for which the fishery is let equal the expenses incurred in guarding, surveying, and managing the banks. It is, therefore, sufficiently obvious that this system ought to be abolished, and every one allowed to fish on paying a moderate license duty. The fear of exhausting the banks is quite ludicrous. The fishery would be abandoned as unprofitable long before the breed of oysters had been injuriously diminished; and in a few years it would be as productive as ever. Besides giving fresh life to the fishery, the abolition of the monopoly would put an end to some very oppressive regulations enacted by the Dutch more than a century ago.

Persian Gulf.—The most extensive pearl fisheries are those on the several banks not far distant from the island of Bahrein, on the west side of the Persian Gulf, in lat. 26° 50' N., long. 51° 10' E.; but pearl oysters are found along the whole of the Arabian coast, and round almost all the islands of the Gulf. Such as are fished in the sea near the islands of Karak and Corgo contain pearls said to be of a superior color and description. They are formed of eight layers or folds, while others have only five, but the water is too deep to make fishing for them either very profitable or easy. Besides, the entire monopoly of the fishery is in the hands of the Sheik of Bushire, who seems to consider these islands as his immediate property. "The fishing season is divided into two portions—the one called the short and cold, the other the long and hot. In the cooler weather of the month of June, diving is practiced along the coast in shallow water; but it is not until the intensely hot months of July, August, and September, that the Bahrein banks are much frequented. The water on them is about seven fathoms deep, and the divers are much inconvenienced when it is cold; indeed, they can do little when it is not as warm as the air, and it frequently becomes even more so in the hottest months of the summer. When they dive, they compress the nostrils tightly with a small piece of horn, which keeps the water out, and stuff their ears with beeswax for the same purpose. They attach a net to their waists, to contain the oysters; and aid their descent by means of a stone, which they hold by a rope attached to a boat, and shake it when they wish to be drawn up. From what I could learn, two minutes may be considered as rather above the average time of their remaining under water. Although severe labor, and very exhausting at the time, diving is not considered particularly injurious to the constitution; even old men practice it. A person

usually dives from twelve to fifteen times a day in favorable weather; but when otherwise, three or four times only. The work is performed on an empty stomach. When the diver becomes fatigued, he goes to sleep, and does not eat until he has slept some time. At Bahrein alone the annual amount produced by the pearl fishery may be reckoned at from £200,000 to £240,000. If to this the purchases made by the Bahrein merchants or agents at Aboottabee Sharga, Ras-ul Khymack, etc., be added, which may amount to half as much more, there will be a total of about £300,000 or £360,000; but this is calculated to include the whole pearl trade of the Gulf; for it is believed that all the principal merchants of India, Arabia, and Persia who deal in pearls make their purchases, through agents, at Bahrein. I have not admitted in the above estimate much more than *one-sixth* of the amount some native merchants have stated it to be, as a good deal seemed to be matter of guess or opinion, and it is difficult to get at facts. My own estimate is in some measure checked by the estimated profits of the small boats. But even the sum which I have estimated is an enormous annual value for an article found in other parts of the world as well as here, and which is never used in its best and most valuable state except as an ornament. Large quantities of the seed pearls are used throughout Asia in the composition of majoons, or electuaries, to form which all kinds of precious stones are occasionally mixed, after being pounded, excepting, indeed, diamonds; these being considered, from their hardness, as utterly indigestible. The majoon in which there is a large quantity of pearls, is much sought for and valued, on account of its supposed stimulating and restorative qualities. The Bahrein pearl fishery boats are reckoned to amount to about 1500, and the trade is in the hands of merchants, some of whom possess considerable capital. They bear hard on the producers or fishers, and even those who make the greatest exertions in diving, hardly have food to eat. The merchant advances some money to the fishermen at cent. per cent., and a portion of dates, rice, and other necessary articles, all at the supplier's own price; he also lets a boat to them, for which he gets one share of the gross profits of all that is fished; and, finally, he purchases the pearls nearly at his own price, for the unhappy fishermen are generally in his debt, and therefore at his mercy."—*Manuscript Notes communicated by Major D. Wilson, late political Resident at Bushire.*

The fishery at Algiers was farmed by an English association in 1826, but we are ignorant of their success. The pearl fisheries on the coast of Colombia were at one time of very great value. In 1587 upward of 697 lbs. of pearls are said to have been imported into Seville. Philip II. had one from St. Margarita which weighed 250 carats, and was valued at 150,000 dollars. But for many years past the Colombian pearl fisheries have been of comparatively little importance. During the mania for joint-stock companies, in 1825, two were formed; one, on a large scale, for prosecuting the pearl fishery on the coast of Colombia; and another, on a smaller scale, for prosecuting it in the Bay of Panama and the Pacific. Both were abandoned in 1826. The best fishery ground is said to be in from six to eight fathoms water. The divers continue under water from a minute to a minute and a half, or at most two minutes. They have a sack or bag fastened to the neck, in which they bring up the oysters. The exertion is extremely violent; and the divers are unhealthy and short-lived.—For further information, see HUNT'S *Merchants' Magazine*, xviii. 565.

Pearl shells, commonly called *Mother-of-pearl shells*, are imported from various parts of the East, and consist principally of the shells of the pearl oyster from the Gulf of Persia and other places, particularly the Sooloo Islands, situate between Borneo and the Philip-

pinas the shores of which afford the largest and finest shells hitherto discovered. On the inside the shell is beautifully polished, and of the whiteness and water of pearl itself: it has the same lustre on the outside, after the external laminae have been removed. Mother-of-pearl shells are extensively used in the arts, particularly in inlaid work, and in the manufacture of handles for knives, buttons, toys, snuff-boxes, etc. The Chinese manufacture them into beads, fish, counters, spoons, etc.; giving them a finish to which European artists have not been able to attain. Shells for the European market should be chosen of the largest size, of a beautiful pearly lustre, thick and even, and free from stains. Reject such as are small, cracked or broken, or have lumps on them. When stowed loose as dunnage, they are sometimes allowed to pass free of freight.—MILBURN'S *Oriental Commerce*. The imports during the three years ending with 1842 amounted, at an average, to about 950,000 lbs. a year.

Artificial Pearls.—These are small globules or pear-shaped spheroids of thin glass, perforated with two opposite holes, through which they are strung, and mounted into necklaces, etc., like real pearl ornaments. They must not only be white and brilliant, but exhibit the iridescent reflections of mother-of-pearl. The liquor employed to imitate the pearly lustre is called the *essence of the East* (*essence d'Orient*), which is prepared by throwing into water of ammonia the brilliant scales, or rather the *lamellæ*, separated by washing and friction, of the scales of a small river fish, the blay, called in French *ablette*. These scales digested in ammonia, having acquired a degree of softness and flexibility which allow of their application to the inner surfaces of the glass globules, they are introduced by suction of the liquor containing them in suspension. The ammonia is volatilized in the act of drying the globules. It is said that some manufacturers employ ammonia merely to prevent the alteration of the scales; that when they wish to make use of them, they suspend them in a well-clarified solution of isinglass, then pour a drop of the mixture into each bead, and spread it round the inner surface. It is doubtful whether, by this method, the same lustre and play of colors can be obtained as by the former. It seems, moreover, to be of importance for the success of the imitation, that the globules be formed of a bluish, opalescent, very thin glass, containing but little potash and oxyd of lead. In every manufactory of artificial pearls there must be some workmen possessed of great experience and dexterity. The French are supposed to excel in this ingenious branch of industry. False pearls were invented in the time of Catherine de Medicis, by a person of the name of Jaquin. They are made of small globules of glass, blown by the ordinary lamp. The pearly lustre is communicated by introducing by means of a blow-pipe a small quantity of nacreous substances obtained from the surface of the scale of a small fish very common in the Seine and the Rhine, and also in the Thames. This substance preserved with sal ammoniac in a liquid state is commonly sold under the name of "*Oriental essence*." After having covered the inside of the pearl with this liquid, a coating of wax is added, which is colored to the required shade. The manufacture of pearls is principally carried on in the department of the Seine in France. There are also manufactories in Germany and Italy, but to a small extent. In Germany, or rather Saxony, a cheap but inferior quality is manufactured. The globe of glass forming the pearl in inferior ones being very thin, and coated with wax, they break on the slightest pressure. They are known by the name of German fish pearls. Italy also manufactures pearls by a method borrowed from the Chinese; they are known under the name of Roman pearls, and a very good imitation of natural ones; they have on their outside a coating of the nacreous liquid. The Chinese pearls are made of a kind of gum, and are covered likewise with the same liquid. In the year

1834 a French artisan discovered an opaline glass of a nacreous or pearly color, very heavy and fusible, which gave to the beads the different weights and varied forms found among real pearls: gum instead of wax is now used to fill them, by which they attain a high degree of transparency, and the glassy appearance has been lately obviated by the use of the vapor of hydro-fluoric acid. This acts in such a manner as to deaden the surface, and remove its otherwise glaring look.—*USE'S Dictionary.*

Peas (Ger. *Erbsen*; Fr. *Pois*; It. *Piselli*, *Bisi*; Sp. *Pesoles*, *Guisantes*; Russ. *Gorochi*). The pea is one of the most esteemed of the leguminous or pulse plants. There are many varieties; but the common garden pea (*Pisum sativum*), and the common gray or field pea (*Pisum arvense*), are the most generally cultivated; being reared in large quantities in all parts of the country. But since the introduction of the drill husbandry, the culture of the pea as a field-crop has been to a considerable extent superseded by the bean. Sometimes, however, it is drilled along with the latter; for, being a climbing plant, it attaches itself to the bean, so as to admit the ground being hoed, at the same time that the free admission of air about its roots promotes its growth. It is not possible to frame any estimate of the consumption of peas. The field pea is now hardly ever manufactured into meal for the purpose of being made into bread, as was formerly the case in many parts of the country; but there is reason to think that the garden pea is now more extensively used than ever.—*LOUBON'S Encyclopedia of Agriculture*; BROWN on *Rural Affairs*.

Various kinds of pulse, from the facility with which they are produced in almost every country of the globe, and the highly nutritive properties which they usually possess, have been a favorite food for man and animals among all nations, and in every age of the world. Thus we find that the Athenians employed soddan beans in their feasts dedicated to Apollo, and that the Romans presented them as an oblation in their solemn sacrifice called *Fabaria*. Pliny informs us that they offered bean-meal cakes to certain gods and goddesses in these ancient rites and ceremonies; and Lempriere states that bacon was added to beans in the offerings to Cama, not so much to gratify the palate of that goddess as to represent the simplicity of their ancestors. The bean came originally from the East, and was cultivated in Egypt and Barbary in the earliest ages of which we have any records. It was brought into Spain and Portugal in the early part of the eighth century, whence some of the best varieties were introduced into other parts of Europe, and finally into the United States. The first beans introduced from Europe into the British North American colonies were by Captain Gosnold, in 1602, who planted them on the Elizabeth Islands, near the coast of Massachusetts, where they flourished well. They were also cultivated in Newfoundland as early as 1622; in New Netherlands in 1644; and in Virginia prior to 1648. French, Indian, or kidney beans were extensively cultivated by the Indians of New York and New England long before their settlement by the whites; and both beans and peas (calavances), of various hues, were cultivated by the natives of Virginia prior to the first landing of Captain John Smith. Among these were embraced the celebrated cow-pea (*Phaseolus*), or Indian pea, at present so extensively cultivated at the South for feeding stock, as well as for the purposes of making into fodder, and for plowing under, like clover, as a fallow crop.

The varieties of beans at present cultivated in the United States, as field and garden crops, are too numerous to admit of repetition in this report. For field culture, the common small white, the red-eyed China, the turtle-soup, the Mohawk, and the refugee are preferred; for garden culture, the Mohawk, the early six-weeks, the early Valentine, the yellow six-weeks, the black Valentine, the royal white kidney,

the Carolina, or Sewee, the cranberry, the London horticultural, and the Dutch case-knife. The yield usually varies from thirty to sixty bushels per acre, weighing sixty-three pounds to the bushel. The common pea is supposed to have been indigenous to the South of Europe, and was cultivated both by the Greeks and Romans. Its introduction into the British North American colonies probably dates back to the early periods of their settlement by Europeans, as it is enumerated in several instances among the cultivated products of this country by our early historians. The cultivation of the pea as a field crop is principally confined to the Middle, Eastern, and Western States, the varieties of which are distinguished as the early and the late ripening. The early varieties are generally small and dark-colored, among which the gray and grass are the most common. The yield varies from twenty-five to forty bushels per acre, weighing sixty-four pounds to the bushel. The marrow-fats are among the richest of the field peas, which are much preferred for good lands. The small yellow are thought to be best for poorer soils. A very prolific "bush pea" is cultivated in the Southern States, bearing pods six or seven inches in length, which hang in clusters, and are filled with fine white peas, much esteemed for the table, either green or dry. The amount of peas exported from Savannah in 1755 was 400 bushels; in 1770, 601 bushels; from Charleston, in 1754, 9162 bushels; from North Carolina, in 1758, 10,000 bushels; annually from Virginia, before the Revolution, 5000 bushels; annually from the United States, twenty years preceding 1817, 90,000 bushels. The amount of beans annually exported during the last-named period, from 30,000 to 40,000 bushels.—*Patent Office Report.*

Peat, a well-known inflammable substance, employed in many parts of the world as fuel. There are two species of peat. The first is a yellowish brown or black peat, found in moorish grounds in Scotland, Holland, and Germany. When fresh, it is of a viscid consistence, but hardens by exposure to the air. It consists, according to Kirwan, of clay mixed with calcareous earth and pyrites; sometimes, also, it contains common salt. While soft, it is formed into oblong pieces for fuel, after the pyritaceous and stony matters are separated from it. By distillation, it yields water, acid, oil, and volatile alkali, the ashes containing a small proportion of fixed alkali, and being either white or red, according to the proportion of pyrites contained in the substance. The oil which is obtained from peat has a very pungent taste, and an empyreumatic smell, less fetid than that of animal substances, but more so than that of mineral bitumens. It congeals in the cold into a pitchy mass, which liquefies in a small heat; it readily catches fire from a candle, but burns less vehemently than other oils, and immediately goes out upon removing the external flame; and in rectified spirit of wine it dissolves almost totally into a dark, brownish red liquor. The second species is found near Newbury, in Berkshire. In the *Philosophical Transactions* for the year 1757, we have an account of this species, the substance of which is as follows: Peat is a composition of the branches, twigs, leaves, and roots of trees, with grass, straw, plants, and weeds, which having lain long in water, is formed into a mass soft enough to be cut through with a sharp spade. The color is a blackish brown, and it is used in many places for fuel. There is a stratum of this peat on each side of the Kennet, near Newbury, in Berks, which is from about a quarter to half a mile in width, and many miles in length. The depth below the surface of the ground is from one foot to eight. Great numbers of entire trees are found lying irregularly in the true peat. These are chiefly oaks, alders, willows, and firs, and appear to have been torn up by the roots; many horses' heads, and bones of several kinds of deer, the horns of the antelope, the heads and tusks of boars, and the heads of beavers, are also found imbedded in it.

Peck, a dry measure for grain, pulse, etc. The standard, or imperial peck, contains two gallons, or 554.55 cubic inches. Four pecks make a bushel, and four bushels a coomb.—See WEIGHTS and MEASURES.

Pecculation, the term, in the Roman law, for the embezzlement of public money belonging either to the government or to communities. Under *pecculation*, also, was comprised the adulteration of gold, silver, or any metal belonging to government. Connected with it, by a law of the dictator, Cæsar, were the *crimen de residuis* (if a person had received public money for a particular purpose, and did not apply it for the same), and the *sacrilgium* (the theft or misappropriation of money or other things sacred to a god). In most governments the embezzlement of public money by public officers is severely punished. Pecculation and treason were, by the French charter of 1814, the only crimes for which a minister was impeachable.—E. A.

Pellitory, the root of a perennial plant (*Anthemis pyrethrum*), a native of the Levant, Barbary, and the south of Europe. The root is long, tapering, about the thickness of the finger, with a brownish cuticle. It is imported packed in bales, sometimes mixed with other roots, from which, however, it is easily distinguished. It is inodorous. When chewed, it seems at first to be insipid, but after a few seconds it excites a glowing heat, and a pricking sensation on the tongue and lips, which remains for 10 or 12 minutes. The pieces break with a short, resinous fracture; the transverse section presenting a thick, brown bark, studded with black, shining points, and a pale yellow radiated inside. It is used in medicine as a stimulant.—Thomson's *Dispensatory*.

Peltry is the name given to the skins of different kinds of wild animals found in high northern latitudes, particularly in North America, such as the beaver, sable, wolf, bear, etc. When the skins of such animals have received no preparation they are termed *peltry*; but when the inner side has been tanned by an aluminous process they are denominated *furs*.

Pencils (Ger. *Pinzel*; Du. *Pinseelen*; Fr. *Pinceaux*; It. *Pennelli*; Sp. *Pinceles*). The word pencil is used in two senses. It signifies either a small hair brush employed by painters in oil and water colors—they are of various kinds, and made of various materials, some being formed of the bristles of the boar and others of camel's hair, the down of swans, etc.—or a slender cylinder, of black-lead or plumbago, either naked or inclosed in a wooden case, for drawing black lines upon paper. The last sort, which is the one to be considered here, corresponds nearly to the French term *crayon*, though this includes also pencils made of differently-colored earthy compositions. The best black-lead pencils of this country are formed of slender parallelepipeds, cut out by a saw from sound pieces of plumbago, which have been previously calcined in close vessels at a bright red heat. These parallelepipeds are generally inclosed in cases made of cedar wood, though of late years they are also used alone, in peculiar pencil-cases, under the name of ever-pointed pencils, provided with an iron wire and screw, to protrude a minute portion of the plumbago beyond the tubular metallic case, in proportion as it is wanted.

Pendant, or **Pennant**, a sort of long and narrow banner displayed from the mast-head of a ship-of-war, and usually terminating in two ends or points, called the *swallow's tail*. It denotes that the vessel is in actual service. A *broad pendant* is a kind of flag terminating in one or two points, used to distinguish the chief of a squadron. *Pendant* is also a short piece of rope, fixed on each side, under the shrouds, upon the heads of the main and foremasts.

Penknives (Gerin. *Federmesser*; Fr. *Cunifs*; It. *Temperini*; Sp. *Corta plumas*), small knives, too well known to need any particular description, used in making and mending pens. The best penknives are manufactured in London and Sheffield.

Pennsylvania, one of the central United States, lies between 39° 43' and 42° N. lat., and between 74° and 80° 40' W. long. It is 307 miles long and 160 broad, containing 47,000 square miles. Population in 1790 was 434,373; in 1800, 602,545; in 1810, 810,091; in 1820, 1,049,313; in 1830, 1,347,672; in 1840, 1,724,035; and in 1850, 2,311,786. The Alleghany Mountains cross the State from southwest to northeast, and there are many smaller ranges on each side of the principal ridge and parallel to it. The southeastern and northwestern parts of the State are either level or moderately hilly. The soil is generally fertile, and much of it is of a superior quality; the best land on the southeast is on both sides of the Susquehanna. Between the head-waters of the Alleghany and Lake Erie the soil is very fertile. The anthracite coal region is immense. The Mauch Chunk, Schuylkill, and Lyken's Valley coal-field extends from the Lehigh River across the head-waters of the Schuylkill, and is 65 miles in length, with an average breadth of five miles. The Lackawanna coal-field extends from Carbondale, on the Lackawannock; to 10 miles below Wilkesbarre, on the Susquehanna. The Shamokin field has been less explored. Iron ore exists in nearly every county, and in the vicinity of Pittsburgh vast quantities are manufactured. Beds of copper and lead exist, and quarries of marble and building-stone abound. There are in the south part valuable mineral springs. There were in the State, in 1850, 8,628,619 acres of improved and 6,294,728 acres of unimproved land in farms; cash value of farms, \$407,876,099; and the value of implements and machinery, \$14,722,541. *Live Stock*.—Horses, 350,398; asses and mules, 2259; milch cows, 580,224; working oxen, 61,527; other cattle, 562,195; sheep, 1,822,357; swine, 1,040,366; total value of live stock, \$41,500,053.

Early History of Pennsylvania.—The territory of this State was, before the year 1681, for the greater part comprised under the name *Northern Virginia*, and after 1616 under the name of *New England*. When Penn, in the year 1681, obtained from Charles II. a grant of a great tract of land, between 40° and 42° N. lat., he himself wished to give to it the name of *New Wales*; but the king, against Penn's wish, called it, in honor of Penn, *Pennsylvania*. The name is to be found for the first time in the King's charter of the 4th of March, of the year 1681. In the year 1682 Penn, desirous of approaching his province to the sea-coast, bought from the Duke of York the whole tract of land and settlements along the west side of Delaware Bay, the so-called *three lower counties*. This tract of land remained, however, in connection with Pennsylvania only until the year 1776, when the inhabitants of these lands declared themselves independent and founded the State of Delaware. By this the State of Pennsylvania was again excluded from the sea-coasts, and as a nearly entirely inland State the history of its limits is not of a great interest for our hydrographical researches.—J. G. KOHL.

The Delaware River washes the entire eastern border of the State, and is navigable for ships to Philadelphia. The Lehigh, after a course of 75 miles, enters it at Easton. The Schuylkill, 130 miles long, unites with it six miles below Philadelphia. The Susquehanna is a large river, which rises in New York; flows south through this State, and enters the Chesapeake Bay in Maryland. It is much obstructed by falls and rapids. The Juniata rises among the Alleghany Mountains, and, after a course of 180 miles, enters the Susquehanna 11 miles above Harrisburg. The Alleghany River, 400 miles long, from the north, and the Monongahela, 300 miles long, unite at Pittsburgh, and form the Ohio. The Youghiogheny is a small river which flows into the Monongahela.

Agricultural Products.—Wheat, 15,367,691 bushels; rye, 4,805,160 bushels; Indian corn, 19,835,214 bushels; oats, 21,538,156 bushels; barley, 165,584 bushels;

buckwheat, 2,193,692 bushels; peas and beans, 55,281 bushels; potatoes, 5,980,732 bushels; sweet potatoes, 52,172 bushels. Value of products of the orchard, \$723,389; produce of market gardens, \$688,714. Pounds of butter made, 39,878,418; of cheese, 2,505,034; maple sugar, 2,326,525; molasses, 50,652 gallons; beeswax and honey, 839,509 pounds; wool, pounds produced, 4,481,570; flax, 530,307; silk cocoons, 285; hops, 22,088; tobacco, 912,651; hay, tons of, 1,842,970; hemp, 44 tons; clover seeds, 125,080 bushels; other grass seeds, 53,913 bushels; flax seed, 41,728 bushels; and were made, 25,590 gallons of wine. Value of home-made manufactures, \$749,182; value of slaughtered animals, \$8,219,848.—*Census Report*, 1850.

Manufactures.—There were in the State in 1850, 136 cotton factories, with a capital invested of \$4,671,015, employing 4283 males and 4374 females, producing 59,532,000 yards of sheeting, etc.; 5,308,561 pounds of yarn; valued at \$5,812,126; 254 woolen factories, with a capital invested of \$1,776,268, employing 1747 males and 753 females, manufacturing articles valued at \$2,703,409; 178 establishments making pig iron, with a capital invested of \$8,357,525, employing 9264 persons, producing 322,752 tons pig iron, etc., valued at \$6,170,625; 320 establishments, with a capital of \$3,422,924, employing 4783 persons, and making 57,810 tons of castings, etc., valued at \$5,354,881; 131 establishments, with a capital of \$7,620,066, employing 6771 persons, manufacturing 182,506 tons of wrought iron, valued at \$8,902,907; 2380 flouring and grist mills, 2936 saw mills, 1540 tanneries; 103 printing-offices, 328 newspapers, 25 daily, three tri-weekly, one semi-weekly, 275 weekly, eight semi-monthly, 12 monthly, and two quarterly publications. Capital invested in manufactures, \$91,463,210; value of manufactured articles, \$154,944,698.

Canals.—The State of Pennsylvania as early as the

year 1791 initiated a system of inland water communication. William Penn, it is said, first conceived the idea. In 1792 two companies were formed, to build the Schuylkill and Susquehanna, and Delaware and Schuylkill canals. They constructed fifteen miles and abandoned the work. In 1821 the enterprise was renewed, and completed in 1827, when other works were started, and nearly all the present canals authorized and their routes surveyed. The State has now 848 miles of canals, which cost \$24,168,000, according to an estimate considered to be under rather than above the mark. Private companies have built 485 miles of canal, costing \$21,955,000. The State has therefore 1333 miles of canal, costing upward of \$46,000,000. Besides these it has 2164 miles of railroad, which cost some \$58,000,000. The totals of these important improvements added together, make 3497 miles, and their cost foots up \$104,000,000. Their value to the State is not represented by their cost, for without them Pennsylvania would be a wilderness. They unite her to the Great West, to the southern part of our State, and to the great metropolis; and enable her to send her coal and iron to distant marts, enriching her beyond estimate.

The following is presented as a comparison of the anthracite coal trade of Pennsylvania for two years:

	1855.	1856.
	Tons.	Tons.
Reading Railroad	2,213,292	2,148,903
Schuylkill Navigation Co.	1,105,263	1,169,286
Pine Grove	105,656	170,154
Little Schuylkill	437,550	454,514
Lehigh	1,274,906	1,361,332
Lackawanna	1,052,595	1,167,513
Wyoming	553,000	510,000
Shamokin	122,500	126,500
Lyken's Valley	112,000	100,000
Scranton .....	...	50,000
Total	6,626,288	7,258,591

FOREIGN COMMERCE OF THE STATE OF PENNSYLVANIA FROM OCTOBER 1, 1820, TO JULY 1, 1856, SHOWING ALSO THE DISTRICT TONNAGE IN 1821, 1831, 1841, AND 1851.

Years ending	Exports.			Imports.	Tonnage cleared.		District Tonnage.	
	Domestic	Foreign	Total.		American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821.....	\$2,332,387	\$4,550,380	\$7,331,767	\$3,158,922	69,436	3,641	59,295	25,081
1822.....	3,575,147	5,472,655	9,047,802	11,874,170	70,846	5,745	...	...
1823.....	3,139,809	6,477,933	9,617,192	13,696,770	75,630	5,293	...	...
1824.....	3,182,694	6,182,199	9,364,893	11,865,581	76,631	5,635	...	...
1825.....	3,936,133	7,333,848	11,269,981	15,041,797	82,435	2,385	...	...
1826.....	3,158,711	5,178,011	8,331,722	13,551,779	69,444	4,445	...	...
1827.....	3,391,296	4,184,537	7,575,833	11,212,935	68,753	4,097	...	...
1828.....	3,116,001	2,935,479	6,051,480	12,534,408	61,819	5,880	...	...
1829.....	2,617,152	1,472,738	4,089,935	10,100,152	52,341	4,625	...	...
1830.....	2,924,452	1,367,341	4,291,793	8,702,122	63,022	4,870	...	...
Total.....	\$61,873,782	\$45,188,616	\$77,032,398	\$117,088,593	690,857	46,616	...	...
Sept. 30, 1831.....	\$3,504,302	\$1,919,411	\$5,513,713	\$12,124,083	65,149	7,506	51,293	29,226
1832.....	2,008,991	1,571,075	3,516,066	10,678,353	46,726	14,131	...	...
1833.....	2,671,300	1,407,651	4,078,951	10,451,250	49,109	22,378	...	...
1834.....	2,091,303	1,957,948	8,989,746	10,479,268	46,411	16,236	...	...
1835.....	2,416,099	1,828,176	3,739,275	12,889,937	57,088	10,085	...	...
1836.....	2,627,651	1,843,904	3,971,555	15,068,233	49,670	14,349	...	...
1837.....	2,565,712	1,275,897	3,841,590	11,630,111	45,185	18,284	...	...
1838.....	2,431,543	905,606	3,477,151	9,360,371	75,342	8,359	...	...
1839.....	4,148,211	1,151,204	5,299,415	15,050,715	64,318	13,381	...	...
1840.....	5,736,456	1,083,689	6,820,145	8,464,882	72,288	11,340	...	...
Total.....	\$30,282,068	\$18,965,545	\$44,247,616	\$115,747,208	571,286	156,989	...	...
Sept. 30, 1841.....	\$4,404,863	\$747,638	\$5,152,501	\$10,346,678	74,201	9,392	52,267	67,046
1842.....	3,298,814	476,913	3,770,727	7,385,858	65,208	13,712	...	...
9 mos., 1843.....	2,071,945	288,005	2,359,948	2,760,630	41,673	5,899	...	...
June 30, 1844.....	3,265,027	270,229	3,535,256	7,217,267	70,650	8,627	...	...
1845.....	3,129,673	444,685	3,574,358	8,159,927	63,271	12,987	...	...
1846.....	4,157,918	598,087	4,751,005	7,989,396	77,272	7,627	...	...
1847.....	3,263,311	281,080	3,544,391	9,687,516	107,930	35,213	...	...
1848.....	5,428,309	304,024	5,732,333	12,147,584	77,870	20,218	...	...
1849.....	4,350,372	402,549	5,343,421	10,645,590	93,332	27,005	...	...
1850.....	4,049,464	452,142	4,501,606	12,066,154	81,276	30,342	...	...
Total.....	\$42,915,201	\$4,345,305	\$47,260,551	\$88,305,830	752,573	170,952	...	...
June 30, 1851.....	\$5,101,969	\$254,067	\$5,356,036	\$14,168,761	102,123	38,051	69,425	214,948
1852.....	5,592,449	306,122	5,828,571	14,785,917	90,951	43,881	...	...
1853.....	6,255,229	272,767	6,527,996	18,334,410	101,029	59,656	...	...
1854.....	9,846,810	257,606	10,104,416	21,839,306	120,649	53,567	...	...
1855.....	5,685,125	289,213	6,274,338	15,309,935	114,238	35,770	...	...
1856.....	7,043,408	189,164	7,232,572	16,590,045	112,087	31,245	...	...

* Nine months to June 30, and fiscal year begins July 1, 1843.

Philadelphia, near the confluence of the rivers Delaware and Schuylkill, in lat. $39^{\circ} 57' N.$, long. $75^{\circ} 10' W.$, and near the head of the Delaware Bay. Vessels of the largest burden ascend the river as far as New-castle, but those drawing above 18 or 20 feet of water can not reach Philadelphia, on account of a bar a little below the city. The entrance to the magnificent bay formed by the embouchure of the Delaware has Cape May on the north, and Cape Henlopen on its south side. The commerce of Philadelphia has not kept pace with her growth in other respects, especially in manufactures. The tonnage in 1856 was 197,228 tons.—See PHILADELPHIA.

Erie, port of entry, is beautifully situated on Presque Isle Bay, on Lake Erie, covers one mile square, and has one of the best harbors on the lake, the channel or entrance to which has lately been much improved; the water is from 11 to 20 feet deep, and the largest steamboats enter without difficulty. There is a light-house on the west side of the entrance of Presque Isle Bay, lat. $42^{\circ} 8' 14" N.$; shows a fixed light, elevated 93 feet above the surface of the lake, and visible for a distance of $14\frac{1}{2}$ miles. The beacon is on the east side of the bay; visible $8\frac{1}{2}$ miles.—For further information of the commerce and resources of Pennsylvania, see *Bankers' Magazine*, New York, 1851–1856; *North American Review*, xlii. 241 (C. CUSHING); HUNT's *Merchants' Magazine*, x. 308, xii. 237; DE BOW's *Review*, xii. 476. See also articles DELAWARE RIVER—COAL—CANALS and RAILROADS.

Penny, formerly a silver, but now a copper coin. This was the first silver coin struck in England by our Saxon ancestors, being the 240th part of their pound; so that its weight was about $22\frac{1}{2}$ grains Troy. Camden derives the word from the Latin, *pecunia*, money. The ancient English penny, penig, or pening, was the first silver coin struck in England, nay, the only one current among our Saxon ancestors, as is agreed by Camden, Spelman, Hickea, and others. The penny was equal in weight to our threepence; five of them made one shilling or scilling Saxon, and 30 a mark or mancuse, equal to 7s. 6d. Till the time of King Edward the First, the penny was struck with a cross, so deeply indented into it that it might be easily broken, and parted, on occasion, into two parts, which were thence called *half-pennies*, or into *four*, which were called *fourthings*, or *farthings*. But that prince coined it without indenture, instead of which he first struck round half-pence and farthings. He also reduced the weight of a penny to a standard, ordering that it should weigh 32 grains of wheat, taken out of the middle of the ear. This penny was called the penny *sterling*; and, as 20 of these pence were to weigh an ounce, the penny thus became a weight as well as a coin. The penny sterling was long disused as a coin, and was scarcely known, except as a money of account, containing the twelfth part of a shilling; but latterly it has been introduced into the British current coin.—See POST-OFFICE.

To ascertain the, as yet unknown, quality of the metal in the old British penny, the chief assayers in Philadelphia were addressed, to procure information from books of reference or actual assay. The answer decided: "The ancients intended fine silver and pure gold in their coins, refined them as well as they could, and issued them for fine metal. But the old silver pennies of Britain are now so few and expensive—one in the mint collection cost seven dollars—we can not afford to assay them." As this point was essential for accurate calculation, Mr. DuBois added, in a postscript, "Since writing the above I have assayed a silver penny of William the Conqueror. It gives a fineness of .950 thousandths, and contains gold equal to .0094 thousandths." This trial shows an alloy of some base metal exceeding .040 thousandths (.0404) contained in the silver penny, diminishing its standard in that degree from one of perfect purity. "The Mint remedy" of the United States, regarded to be a necessary allow-

ance for casual deviations in the quality of silver pieces, can not exceed .003 thousandths, instead of .040, on each side the standard. It is not now proposed at mints to have the coins of the highest quality, but the rule or standard of purity, ordered by law, must be exact, both in fine metal and alloy. By recent proof with wheat corn measure, the weight of the old penny may have varied from five grains in the red to eight grains in the white wheat. The modern "allowance" for variation in quantity is one-fourth or one-half a grain, in a coin approaching the value of the Anglo-Norman penny. The silver penny of old time—the only money except rings known to the native Britons—was at once a coin, a weight, and a measure. Its character of purity checked and ruled the values of all moneys, weights, and measures represented by or deduced from it. Such values do not depend solely on weight nor solely upon fineness, but on their combined powers, the product of both. The keystone of the so-called "system" of 1266 was conceived to be "the weight of the silver penny sterling." But defective quality caused this "keystone" to crumble. The superstructure erected upon such foundation failed, because metallurgical irregularity was not checked by metrical exactness. The measures were faulty throughout—"weighed in the balances, they were both found wanting." The bases for calculation in this ancient scale being inaccurate, no truth could be elicited by any increase of numbers—or quantities in progression. Some of the silver pennies of the early Britons were nearly divided by the impression of a cross, through the middle on the reverse, so they could be broken into half-pennies, and again into quarters, called "fourthings," or farthings. This practice of simple division had continued until silver half-pennies and farthings were specially coined by King John, in 1185—first in Ireland, where his principal Mint was. During the latter part of the reign of Henry the Third, of England, "a penny" of fine gold was ordered of the value of twenty pennies of silver. The word "penny" had its derivation from the French "denier," the "denarius" of the Latins. The French title, shortened into "denny" by the Normans, was easily changed on the English tongue to "penny"—at that time a common term for money in general, of whatever metal it might be. Golden deniers, coined sparingly in France, bearing the figure of a lamb, were called deniers d'agneau, or moutons d'or. During the reigns of the early Norman kings, their rents, though reserved in money, were answered in cattle, corn, and other provisions, because money was then scarce among the people. Coins of gold, named "nobles d'or," were first issued from the British Mint by Edward the Third, in 1344; but with so much difficulty that it was thought necessary to order by law, "no one should be obliged to receive them." It was decided to prove the standard of the silver penny of our remote ancestry, by the approval of English and other contemporaries, in wheat corn grains from "the Old North State of Carolina." Six different growths of the crop of 1856, intended for seed and consumption, selected in October from two prominent varieties, the red and the white, choosing grains of average quality, but perfect fullness, were antagonized by a penny-weight Troy of the purest silver, specially prepared from solution, for assays of gold. No two samples of thirty-two wheat corn grains were found of the same weight. Of early red—May wheat—from thirty-eight to forty and forty-three corns were required to balance the silver piece, while of white wheat from twenty-eight to thirty-five and thirty-six grains effected the same purpose, showing a disproportion equal to fifteen wheat grains in the six parcels; that is, from twenty-eight to forty-three corns—a deviation in the value of a silver penny equivalent to nearly one half the standard weight. An act of Henry the Third, in 1266, explains the primitive initials of these ancient British, Gallic, and German standards, to all which one common deri-

vation is imputed. "By consent of the whole realm, the measure of the king was made, that is to say, an English penny of silver, called a sterling, round, and without any clipping, shall weigh thirty-two wheat corns, taken from the middle of the ear. And twenty pence of silver do make one ounce. And twelve ounces of silver do make one pound. And eight pounds of silver do make a gallon of wine. And eight gallons of wine do make a London bushel, which is the eighth part of a quarter." This general arrangement for money weights and measures was that of the Eastern nations, by which Europe had been overrun. The term "easterlin" of the Norman French was transmuted on the English tongue, first to "easterling," and finally to "sterling."—*Report of Dr. J. H. GIBBON, United States Mint, North Carolina. See POUND.*

Penny-Post. First set up in London and its suburbs by a Mr. Murray, upholsterer, A.D. 1681. Mr. Murray afterward assigned his interest in the undertaking to Mr. Dockwra, a merchant, 1683; but on a trial at the King's Bench bar in the reign of Charles II., was adjudged to belong to the Duke of York as a branch of the general post, and was thereupon annexed to the revenue of the crown.—*DELAUNE, 1690.* This institution was considerably improved in and round London, July, 1794, *et seq.*, and was made a twopenny-post. A penny-post was first set up in Dublin in 1774.—*See POST-OFFICE.*

Pennyweight, a Troy weight, containing twenty-four grains, each grain weighing a grain of wheat, gathered out of the middle of the ear and well dried. The name took its rise from the circumstance that this was anciently the weight of one of our silver pennies.

Pens (Fr. *Plumes à écrire*; Ger. *Schreibfedern*; It. *Penne da Scrivere*; Russ. *Pera Stvoli*), well-known instruments for writing, usually formed of the quills of the goose, swan, or some other bird. Metallic pens have been occasionally employed for a lengthened period; but it is only within these few years that they have been extensively introduced. They are now, however, manufactured in vast quantities, and of an immense variety of forms. But though they have superseded to a very considerable extent the use of quills, and have some peculiar advantages, it does not appear possible to give them the elasticity of the quill, nor to fit them so well for quick and easy writing on common descriptions of paper. Quills are said to have been first used for pens in A.D. 553; but some say not before 635. Quills are for the most part plucked with great cruelty from living geese; and all persons, from convenience, economy, and feeling, ought to prefer metallic pens, which came into use in 1830.—*PHILLIPS.*

For the manufacture of steel pens the best metal, made from Dannemora or hoop (L) iron, is selected and laminated into slips about three feet long and four inches broad, of a thickness corresponding to the desired stiffness and flexibility of the pens. These slips are subjected to the action of a stamping-press, somewhat similar to that for making buttons. The point destined for the nib is next introduced into an appropriate gauged hole of a little machine, and pressed into the semi-cylindrical shape; where it is also pierced with the middle slit, and the lateral ones, provided the latter are to be given. The pens are now cleaned, by being tossed about among each other, in a tin cylinder, about three feet long, and nine inches in diameter; which is suspended at each end upon joints to two cranks, formed one on each of two shafts. The cylinder, by the rotation of a fly-wheel, acting upon the crank-shafts, is made to describe such revolutions as agitate the pens in all directions, and polish them by mutual attrition. In the course of four hours several thousand pens may be finished upon this machine. When steel pens have been punched out of the softened sheet of steel by the appropriate tool, fashioned in the desired form, and hardened by ignition in an oven and sudden quenching in cold water, they are best tempered

by being heated to the requisite spring elasticity in an oil bath. The heat of this bath is usually judged of by the appearance to the eye; but this point should be correctly determined by a thermometer, according to the scale; and then the pens would acquire a definite degree of flexibility or stiffness, adapted to the wants and wishes of the consumers. They are at present tempered too often at random.

IMPORTS OF METALLIC PENS INTO THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30, 1850.

Whence imported.	Value.
Bremen,	\$472
England,	113,587
France,	2,020
New Granada,	76
Total value,	\$116,155

Pepper (Fr. *Poivre*; Ger. *Pfeffer*; Du. *Peper*; It. *Pepe*; Sp. *Pimienta*; Russ. *Perez*; Lat. *Piper*), the berry or fruit of different species of plants, having an aromatic, extremely hot, pungent taste, used in seasoning, etc. The following sorts of pepper are met with in commerce: *Black Pepper* (Fr. *Poivre*; Ger. *Schwarzer Pfeffer*; It. *Pepe negro*; Sp. *Pimienta*; Sans. *Mercha*; Hind. *Gol-mirch*; Malay, *Lada*; Jav. *Mariha*), the fruit of a creeping plant (*Piper nigrum*), one of the pepper genus, of which there are upward of 80 species. It is cultivated extensively in India, Siam, the Eastern islands, etc. It requires the support of other trees, to which it readily adheres. It climbs to the height of 20 feet, but is said to bear best when restrained to the height of 12 feet. It begins to produce at about the third year, and is in perfection at the seventh; continues in this state for three or four years; and declines for about as many more, until it ceases to be worth keeping. The fruit grows abundantly from all the branches, in long small clusters of from 20 to 50 grains; when ripe, it is of a bright red color. After being gathered, it is spread on mats in the sun, when it loses its red color, and becomes black and shriveled as we see it. The grains are separated from the stalks by hand rubbing. That which has been gathered at the proper period shrivels the least; but if plucked too soon, it will become broken and dusty in its removal from place to place. The vine produces two crops in the year; but the seasons are subject to great irregularities. Pepper should be chosen of a pungent aromatic odor, an extremely hot and acid taste, in large grains, firm, sound, and with few wrinkles—for of these it always has some. Reject that which is shriveled, or small grained, or which on being rubbed will break to pieces. In point of quality, the pepper of Malabar is usually reckoned the best; but there is no material difference between it and that of Sumatra, and the other islands. In the market of Bengal, where they meet on equal terms, the produce of Malabar is generally about two per cent. higher than the other. In Europe there is generally a difference of $\frac{1}{4}$ d. per lb. in favor of Malabar; but in China they are held in equal estimation. Black pepper sold ground is said to be often adulterated with burned crust of bread.

White Pepper is made by blanching the finest grains of the common black pepper by steeping them for a while in water, and then gently rubbing them, so as to remove the dark outer coat. It is milder than the other, and is much prized by the Chinese; but very little is imported into England.

Cayenne Pepper is the produce of several varieties of the *Capsicum*, an annual plant, a native of both the Indies. The best is brought from the West Indies ready prepared, and is made from the *Capsicum baccatum* (bird pepper). It has an aromatic, extremely pungent, acrimonious taste, setting the mouth, as it were, on fire, and the impression remaining long on the palate. It is sometimes adulterated with muriate of soda; and sometimes with a very deleterious substance, the red oxyd of lead; but this fraud may be detected by its weight, and by chemical tests.

Long Pepper.—This species is the produce of a peren-

nial (*Piper longum*), a native of Malabar and Bengal. The fruit is hottest in its immature state, and is therefore gathered while green, and dried in the sun. It is imported in entire spikes, which are about one and a half inch long. It has a weak aromatic odor, an intensely fiery, pungent taste, and a dark gray color. The root of long pepper is a favorite medicine among the Hindoos. The quantities of the last three species of pepper imported are quite inconsiderable.—MILBURN'S *Oriental Commerce*; AINSLIE'S *Materia Indica*; THOMSON'S *Dispensatory*, &c.

Trade in Pepper.—Pepper is extensively used, all over Europe and the East, as a condiment. It was originally imported into England by way of the Levant; and for many years after the establishment of the East India Company it formed the most important article of their imports. In nothing has the beneficial effect of opening the Indian trade been so unequivocally displayed as in the instance of pepper. The private traders have resorted to new markets, and discovered new sources of supply, which had hitherto been wholly unexplored; so that there has been not only a very great increase in the quantity of pepper brought to market, but also a very great fall in its price, which does not now exceed a third part of what it amounted to in 1814!

Supply of Pepper.—The following instructive details with respect to the supply of pepper are taken from the *Singapore Chronicle*, to which they were contributed by John Crawford, Esq., than whom there can be no more competent authority as to such subjects. Of all the products of the Eastern islands, and of the countries immediately in their neighborhood, in demand among strangers, black pepper is the most important, both in value and quantity. The pepper countries extend from about the long. of 96° to that of 115° E., beyond which no pepper is to be found; and they reach from 5° S. lat. to about 12° N., where it again ceases. Within these limits we have Sumatra, Borneo, the Malayan peninsula, and certain countries lying on the east coast of the Gulf of Siam. The whole produce of the island of Sumatra is estimated not to fall short of 168,000 piculs of 133½ lbs. each; the southwest coast being said to produce 150,000, and the northeast coast 18,000 piculs. The pepper ports on the northeast coast of Sumatra are Lankat and Delli, with Sardang. The first two produce 15,000 piculs, and the latter 3000 annually. The cultivation is carried on by the Battanation in the interior. The ports on the southwest coast, and the amount of their produce, as given in a recent estimate, are as follows: viz., port and district of Trumah, 40,000; district of Pulo Dua, 4000; ditto of Cluat, 80,000; coast from Tampat. Tuan to Susu, 83,000; port of Susu, 1000; Kualla Batta, 20,000; Analabu, 2000; districts to the north of Analabu, 20,000; making in all, 150,000 piculs. Here it is of importance to remark that the culture and production are extremely fluctuating. During the last pepper season, there obtained cargoes on the west coast of Sumatra, 27 American ships, six country traders, four large French ships, besides the ships belonging to the East India Company, which generally take away 500 tons. Nearly the whole of this trade is in the hands of Europeans or Americans; the pepper finds its way to Europe, to America, and in a small proportion to China. The northeast coast of Sumatra, from Pedier down to the Carimons, is estimated, as already mentioned, to produce 18,000 piculs. Prince of Wales Island is the principal *dépôt* for this, from whence the greatest part is exported to India and China. The produce of Prince of Wales Island itself is about 15,000 piculs. Of the islands at the mouth of the Straits of Malacca and Singapore, Bintang, on which Rhio is situated, and adjacent islands, produce 10,000 piculs; and Lingga about 2000. A large proportion of this is brought to Singapore, which exported last year about 21,000 piculs; some part to Bengal and China, but

principally to Europe direct, in free traders. The west coast of the Malayan peninsula produces no pepper, with the exception of about 4000 piculs afforded by the territory of Malacca. On the east coast of the peninsula, the production of pepper is very considerable. The ports of Patani and Calantan—chiefly the latter—yield about 16,000 piculs annually, and Tringanu about 8000. A portion of this is brought to Singapore and Penang; but we believe the greater proportion goes direct to China in junks, of which three large ones frequent Tringanu annually, and one Calantan. The Americans, too, occasionally visit these ports. In the year 1821, three vessels of considerable burden obtained cargoes. The east coast of the Gulf of Siam, from the lat. of 10½° to that of 12½° N., affords an extensive produce of pepper. This coast is scarcely known, even by name, to the traders of Europe. The principal ports here are Chantibun, Tungyai, Pongsom, and Kampot—the first two being under the dominion of Siam, and the latter under that of Kamboja. The whole produce is estimated at not less than 60,000 piculs; 40,000 of which are brought at once to the capital of Siam as tribute to the king, and the whole finds its way to China in junks. It remains only to estimate the produce of the island of Borneo. The whole produce of Borneo is estimated at about 20,000 piculs; of which a large share is carried to China direct in junks, some by Portuguese vessels; and about 7000 piculs are now annually brought by the native craft of the country itself to Singapore in the course of that free trade which is happily flourishing at this settlement. The data which have been stated will enable us to estimate the whole production of the Malayan Archipelago, including that of the peninsula of Malacca, and that of the east coast of the Gulf of Siam, at 308,000 piculs; and as there is no other part of the world that affords pepper, excepting the western coast of the peninsula of India, and this affords but 30,000 piculs, or less than one-tenth part of what the places we have enumerated produce, we have, accordingly, at one view the whole production of the earth, being 338,000 piculs, or 45,066,666 lbs. avoirdupois. The average price of pepper has been lately about nine Spanish dollars a picul; so that the whole value drawn into India from Europe, China, and the New World, on account of this single commodity, is 3,042,000 dollars. The quantity given in this statement may appear enormous; but if meted out to the whole population of the globe, or to 1,000,000,000 of people, it would be found that the average annual consumption of an individual would amount to no more than 323 grains. Mr. Crawford has more recently supplied a revised estimate of the annual production of pepper as follows:

	Pounds
Sumatra (west coast)	20,000,000
" (east coast)	8,000,000
Islands in the Straits of Malacca	3,600,000
Malay peninsula	3,733,333
Borneo	2,666,667
Siam	8,000,000
Malabar	4,000,000
Total	50,000,000

IMPORTS OF PEPPER INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Pepper, black.		Pepper, red.	
	Pounds.	Value.	Pounds.	Value.
Hamburg	640	\$36	919	\$60
Holland	777,117	38,964	17,896	1133
Dutch West Indies	2,292,271	103,967	4,250	208
Dutch East Indies	9,224	65	703	110
England .....	.....	.....	23,337	771
British West Indies .....	.....	.....	5,466	416
British Poss. in Africa .....	.....	.....	16	81
British East Indies	3,628,961	169,130	581	1350
France on the Atlantic	69	197	790	74
Spain on the Atlantic .....	.....	.....	.....	.....
Spain on the Medit'ra. ....	.....	.....	.....	.....
Cuba	1,282	557	.....	.....
Ports in Africa	27,154	.....	.....	.....
Mexico .....	.....	.....	31,705	1687
China	600	29	.....	.....
Total	6,737,809	\$313,532	118,741	\$5849

Perch, or **Rod**, a long measure, 16½ feet in length.—*See* **WEIGHTS AND MEASURES**.

Perfume (Fr. *parfum*), a term used to denote the volatile effluvia from any body affecting the organ of smelling, or the substance emitting those effluvia. Perfumes were in general use among the ancients (see the *Quarterly Review*, vol. xxiii.); and in France, Germany, Spain, and Portugal, and even, though not to so considerable an extent, in England, they are regarded almost as necessities. In general they are made of musk, ambergris, civet, rose, and cedar woods, orange flowers, jessamines, jonquils, tuberose, and other odoriferous flowers. Aromatic drugs, such as storax, frankincense, benzoin, cloves, etc., enter into the composition of a perfume; and many perfumes are composed of aromatic herbs or leaves, as lavender, marjoram, sage, thyme, etc.

Perfumery. Many of the wares coming under this name were known to the ancients, and the Scriptures abound with instances of the use of incenses and perfumes. No such trade as a perfumer was known in Scotland in 1768.—**CREECH**. A stamp tax was laid on various articles of perfumery in England, and the vendor was obliged to take out a license, in 1786. At the corner of Beaufort Buildings, in the Strand, resided Lilly the perfumer, mentioned in the *Spectator*.—**LEIGH**.

Some of the most exquisite of perfumes are obtained from the most offensive substances. In olden times the most delicate perfumes were distilled from flowers, whose names they bore; but chemistry has shown how to obtain them from other sources. To give one example, a peculiarly fetid oil, called fusel-oil, is formed during the making of brandy and whisky. Now this loathsome oil, by a particular mode of treatment, is made to yield the fragrant oil of pears; by another process, oil of apples; and by others, oil of grapes and oil of cognac. The oil of pine-apples is produced from sugar and putrid cheese. The oil of bitter almonds is a resultant from aquafortis and the offensive oils from gas tar. The dainty eau de mille fleurs is made from the drainage of cow-houses. And in all these cases, there is not the same kind of fraud which is practiced in ordinary adulterations; for though the perfumes are not actually, in the present state of things, produced from the flowers and fruits which give them their names, yet they are really identical, or nearly so, in chemical composition with the original perfumes; nature mixes the ingredients in one case, man in the other, but the ingredients are the same. The passion for perfumes is increasing. British India and Europe consume about 150,000 gallons of handkerchief odors yearly; and the English revenue from eau de Cologne is about 8000 pounds sterling a year. The total revenue from imported perfumes in England is estimated at about £40,000 sterling per annum. The largest revenues of the estates on the borders of the Mediterranean are those which proceed from the sale of the orange blossoms and Parma violets. The house of Faguer, 83 Rue de Richelieu, and many of the other perfumers of Paris, pay a yearly sum, varying from 10 to 30,000 francs, to the proprietors, for their whole crop of orange blossoms or violets. The *fleurs de citronnier* of Faguer is one of the favorite and most delightful odors used for scenting the pocket handkerchief.

Periodical Publications. These, as the name implies, are publications which appear at fixed periods or stated intervals, and consequently include newspapers, monthly and other magazines, quarterly reviews, and journals, and all such books as appear at monthly or other intervals. But the term "periodical publications" is usually understood in a more confined sense, or as comprising only magazines and such political, literary, and scientific journals as appear at regular intervals, without including newspapers or works published in parts. Even when thus restricted, this is a very extensive and important department of literature. No doubt a vast deal of trash gets into print by

the agency of magazines that might not otherwise see the light; but most part of these publications contain at the same time some superior articles; and a few are ably conducted and embrace a wide range of topics. Since the establishment of the *Edinburgh Review* in 1802, the quarterly journals, especially those that embrace politics and literature, have risen to great eminence, and have had a powerful influence over the public mind. At present, however, and for some time past, the influence of this class of journals has been declining. An ably conducted daily paper is, at this moment, by far the most powerful engine the press can bring into the field.—*See* **NEWSPAPERS**. For further information refer to *American Almanac*, 1835, p. 97, 256, 1836, p. 92; *North American Review*, xxxix. 277 (J. G. PALFREY); *Southern Literary Messenger*, ii. 393; *Westminster Review*, i. 206, ii. 463; *Edinburgh Review*, xxxviii. 349; *American Quarterly Observer*, iii. 185.

Pernambuco Province. This is one of the most important provinces in Brazil. It abounds with many good harbors, and possesses an exceedingly fertile soil. Its chief staples are sugar, cotton, and hides. Of these its average annual exports from 1840 to 1845 were as follows: Sugar, 34,177 tons; cotton, 32,279 bags (160 lbs. each); hides, 72,500. The city of Pernambuco maintains the third rank in the empire. There are in this province about six hundred "engenhos," or sugar estates, each covering about one square league. On each engenho are produced annually about fifty cases of white, and five of brown, or muscovado sugar—or forty tons of the former, and four and a half tons of the latter—equal to about 24,000 tons of white, and 2550 tons of brown, for the whole province. The province is estimated to be capable of yielding 396,800 tons of white, and 40,800 tons of muscovado sugar. Imports from the United States consist chiefly of cotton domestics. Fabrics of this kind, thirty yards in length, and twenty-seven to twenty-eight inches in width, are in demand, and bring much better prices than similar goods from England. Of late years the manufacturers of Lancashire have imitated these cloths, and have succeeded in sharing the advantages which the American article had secured. In printed cottons Manchester and Glasgow almost monopolize the markets of Pernambuco. The quality as well as the cheapness of their goods have secured this privilege. The importation of butter, hitherto almost exclusively in the hands of the French, might be advantageously shared by the citizens of the United States.

In 1840 the French imported.....	4100½	firkins.
" 1841	5549	"
" 1842	5366	"
" 1843	7981	"
" 1844	8962	"
In 1840 were imported from Great Britain	4487	"
" 1841	3889	"
" 1842	3249	"
" 1843	4022	"
" 1844	3616	"

The production of cotton has diminished, owing mainly to the expense attending its transportation to market; but the production of sugar has increased. From 1828 to 1831, the average annual export was 1,607,389 arrobas, and in the years 1841 to 1844 it was augmented to 2,083,212 arrobas; being an annual increase of 475,823 arrobas, or 6797¾ tons. The number of hides exported during the two periods of four years above-named increased in a still greater ratio than sugar. From 1828 to 1831 the annual average export was 60,272 hides; and during the latter four years, from 1841 to 1844, the same average augmented to 122,573 hides per annum; showing an annual increase of 62,301 hides. It has already been observed that if the export duty levied upon the produce of Brazil transmitted to foreign ports were modified or repealed, a vast augmentation in agricultural productions would unquestionably follow. While an export duty of ten per cent. on the weekly average price of

sugar continues, and a similar duty on cotton, coffee, tobacco, rum, hides, and, with one or two unimportant exceptions, on all other articles produced in the country, the producing interests must remain crippled, and exportations either continue to be stationary or decrease. The cotton and sugar-growing districts suffer most under these heavy taxes upon their industry and capital. The planters are obliged to carry cotton and sugar to Pernambuco by horse conveyance, a distance of from twenty to one hundred leagues, during the dry season, when food and water are difficult to be obtained. These charges are such, in addition to those imposed by law, that when the planter reaches market his cotton hardly yields him net four cents per lb. And so with his sugar, and all other heavy produce.

The navigation and trade of Pernambuco in 1845 stood as follows: Inward from all nations—Vessels, 242; tonnage, 49,796; value of cargoes, \$4,136,075. Of which from the United States: Vessels, 35; tonnage, 6117; value of cargoes, \$602,075. Outward to all nations—Vessels, 226; tonnage, 48,539; value of cargoes, \$4,567,870. Of which to the United States: Vessels, 19; tonnage, 3216; value of cargoes, \$283,460. During the year 1845 two United States vessels went south with cargoes; two were sold, and four remained in port. This will, to a certain extent, account for the difference between the values of imports and exports to and from the United States, as above shown.

The vessels from the United States imported as follows:

Cottons	1018 packages.
Silks	3 "
Woolens and silks	1 "
Flour	24,918 barrels.
Do.	648 half-barrels.

And on return voyage home, exported—

Sugar	9,104 barrels.
Do.	23,410 bags.

Total quantity of sugar produced and entered in the market of Pernambuco in the years 1844 and 1845:

In 1844	Arrobas, 2,146,683 = Pounds, 68,624,027
In 1845	" 2,465,824 = " 78,906,371

Of which were sent, in 1845, to the United States, 184,417 arrobas 26 lbs. = (at 32 lbs. to arroba) 5,901,344 lbs.

Hides.—Total number exported to all countries: In 1844, 124,074; in 1845, 163,935. Of which to the United States, 10,888.

TOTAL EXPORTS OF COTTON, SUGAR, AND HIDES FROM PERNAMBUCO FROM 1828 TO 1845, BOTH INCLUSIVE.

Years.	Cotton. Bags.	Sugar. Arrobas.	Hides. Number.
1928	70,785	1,460,628	52,444
1929	54,820	1,463,392	46,573
1830	61,151	1,705,614	65,489
1831	53,157	1,799,983	76,584
1832	31,520	1,518,300	68,656
1833	58,564	1,801,612	84,743
1834	42,799	854,088	86,350
1835	52,142	1,388,838	91,492
1836	62,532	1,825,392	90,701
1837	43,847	1,450,420	93,771
1838	60,648	1,750,380	105,851
1839	39,173	1,878,675	111,052
1840	35,840	2,191,063	132,993
1841	26,990	2,261,699	136,494
1842	21,357	1,906,936	125,296
1843	35,906	2,017,522	104,428
1844	41,385	2,146,683	124,074
1845	26,562	2,565,824	163,935

Number of vessels to and from the United States in Pernambuco in 1846: Vessels, 117, of 30,801 tons.

VALUE OF IMPORTS FROM AND EXPORTS TO ALL COUNTRIES.

	1845.	1846.
Imports	Francs, 24,567,000	17,936,000
Exports	" 20,327,000	19,851,000

Value of imports and exports from the United States in 1846: Imports, 1,928,000 francs; exports, 641,000 francs; total, 2,569,000 francs.

PRODUCTS EXPORTED TO ALL COUNTRIES IN 1846, COMPARED WITH 1847, IN FRANCE.

Years.	Sugar.	Hides.	Cotton.	Tobacco.
1846	15,107,000	2,750,000	1,055,000	644,000
1847	17,478,000	1,124,000	1,326,000	82,000

From the preceding table it will be seen that the market at Pernambuco was more brisk in 1847 than during the preceding year. Sugar is the leading article in this market, and is exported to England, Trieste, Genoa, Portugal, the north of Europe, and to the United States. The total exports of sugar from Brazil are thus distributed throughout the ports of the empire. The exports for 1846 are taken as a basis for calculation:

	Kilo.	Pounds.
Bahia	62,447,000	137,383,400
Pernambuco	40,570,000	8,254,000
Rio de Janeiro	8,244,000	9,825,000
Total kilo. and pounds.	111,261,000	236,533,200

EXPORT OF SUGAR FROM PERNAMBUCO FROM 1852 TO 1854.

Exported to	1851-'52. Tons.	1852-'53. Tons.	1853-'54. Tons.
Great Britain	11,838	15,096	18,505
France—Nantes .....	.....	.....	1,173
" Havre	1,194	855	308
" Marseilles	2,277	5,799	2,755
Northern Europe	1,416	2,046	1,663
Genoa	1,726	4,824	2,245
Trieste	5,315	6,979	2,426
Gibraltar (for a market)	3,662	4,744	3,044
Portugal and possessions	5,571	4,083	2,675
United States	6,535	10,487	2,738
La Plata	2,564	3,048	4,205
Valparaiso	584	1,349	1,901
Australia .....	.....	.....	423
Brazilian ports	5,274	5,519	6,063
Total	47,156	64,829	50,549

The sugar produced in the province of Pernambuco amounts to about 80,000 tons a year, of which 60,000 are exported to foreign countries, 5000 coastwise, and 15,000 are retained for home consumption. There are about 1000 eugenhos or sugar estates, 257 of which have been established within the last ten years. They average in extent about two square miles, and their crops vary from 200 tons as a maximum to 30 as a minimum; or at an average of about 75 tons each. Very few eugenhos possess 150 slaves, and the smallest not more than 10 or 12; the average number of slaves employed on each eugenho is about 50, so that 50,000 may be said to be here employed in sugar cultivation. They are badly treated and hard worked.

Pernambuco has many of the privileges of a sovereign state; it has its own president, provincial and municipal chambers, levies a portion of its own taxes, and maintains a militia which can not be removed from the province. It sends four senators and fifteen representatives to the imperial government—elected, the former for life, and the latter for four years, by almost universal but indirect suffrage. The imperial revenue levied within the province in 1849-'50 amounted to £512,423; in 1850-'51 to £690,526; and as these sums are derived chiefly from imports and exports, and no additional duties have been imposed, the increase is a proof of its commercial prosperity. The details of the latter year's general revenue were as follows:

Duties upon imports	£426,105
Duties upon exports	61,705
Port charges	7,883
Post-office, crown lands, etc.	34,737
Extraordinaries	1,066
Deposits for charities, restitution unclaimed estates	3,573
Remittance of funds to the imperial treasury	155,354
Total	£690,526

In 1841 the receipt of imperial taxes from the province of Pernambuco amounted to only £273,852 11s. 2d.; so that in the course of ten years it has nearly trebled. Provincial taxes are levied upon sugar, coffee, tobacco, cattle, horses, spirits, passports, licenses for potteries, saw-mills, cigar shops, auctions, etc.; upon houses, legacies, inheritances, slaves, the tolls of bridges, etc., etc. Total amount in 1850-'51, £173,997 5s. The municipal

taxes are derived from the stamping of weights and measures, licenses to public houses, and places of entertainment, etc. They amounted in 1850-'51 to 123,650 reals, or £12,506 11s. 3d., making the total taxation of the province as follows:

Imperial taxes.....	£690,526
Provincial.....	173,997
Municipal.....	12,506
Total.....	£877,030

Of these sums nearly two-thirds are expended by the imperial government; and to this is chiefly to be attributed the many attempts which have been made by Pernambuco to free herself from the imperial connection; and if the weight of a country's taxation may be judged of by its relation to the number of its inhabitants, the province of Pernambuco is as heavily taxed as most European states. The population of the province of Pernambuco amounted, according to the last census, to 606,936; of these 143,102 are white, and 463,834 colored; viz., 4078 Indians, 322,685 mulattoes, and 137,071 blacks. 506,702 were free, and 106,234 are slaves; 315,749 males, and 291,157 females. But the population must have increased considerably of late years.

Pernambuco, a city and sea-port of Brazil, inferior only to Rio Janeiro and Bahia in commercial importance; capital of the province of its own name, on the Atlantic, at the mouth of the Capabaribe, 210 miles northeast from Bahia; latitude of light-house, 8° 3' 25" S.; longitude, 34° 52' W. Population estimated in 1852 at 100,000. It consists of the separate towns of Olinda, Recife, Boa-Vista, and St. Antonio: the first of which is on the main land, and the others lie south from it on a succession of low sandy banks, separated by salt-water creeks and different arms of the river, but connected with each other by two bridges. Recife, or Pernambuco proper, the most southerly, about four miles southwest from Olinda, is defended by the principal forts, and comprises the dock-yard and the large merchants' warehouses. In St. Antonio are the governor's palace, formerly the Jesuits' convent; the treasury, town-hall, prison, barracks, with convents, churches, and several good squares. A long embankment connects this town with the main land. Boa-Vista is extensive, but irregularly laid out; it has one handsome street, and comprises the residences of many of the richer inhabitants of the city, with gardens, various churches and convents, etc. Olinda, though beautifully situated, is in a state of decay, having been deserted by many of its population for Recife and the other parts of the city. The harbor of Pernambuco is defended from the swell of the ocean by an extensive reef (*recife*), which, according to Koster, continues along the whole coast from Maranham, at a variable distance from the shore, and has numberless breaks, through which ships approach the land. This reef, which is said to be of coral, "is scarcely sixteen feet broad at top; it slopes off more rapidly than the Plymouth breakwater, to a great depth on the outside, and is perpendicular within to many fathoms."—*GRAHAM*, in *Modern Traveler*, xxx., 228. This natural breakwater forms the harbor; for though at high-water the waves beat over it, they strike the quays and buildings of the town with diminished force. Along the sandy neck of land between Olinda and Boa-Vista, however, which is not covered by the reef, the surf is very violent; but the harbor itself is quite safe for vessels that are well-found and well-moored. It consists of two parts—the Poco, capable of receiving vessels of 400 tons and upward, entered across a bar on which there are from seventeen to thirty feet of water, and the Mosqueiras, much better protected than the former, but on the bar of which there are but seven feet of water at ebb-tide. Vessels trading with Pernambuco should not, however, draw more than from ten to twelve feet of water.—*BLUNT'S American Coast Pilot*, 51b. The harbor is defended by several strong military works, the principal

being the stone forts of Do Buraco and Do Brum. The light-house, on a reef at the entrance to the harbor, has a revolving light.—See PROVINCE OF PERNAMBUCO; also BRAZIL.

Foreign vessels are not allowed to engage in the coasting trade, but they can load here for any foreign port. Vessels from the United States can discharge part of their cargo, and, if desired, they can proceed on with the remainder to Bahia, Rio de Janeiro, etc.

There are no insurance offices here, all business of that kind being done either in the United States or England. With funds in hand, a commission of 2½ per cent. is charged. Vessels are generally chartered both ways, arriving with flour, the charterer stipulating for a return cargo of sugar. Vessels coming out on their own account have been chartered back this season as low as 60 cents a bag of 160 lbs. Usually, however, the freight ranges from 80 cents to \$1 per bag. There is no business done in exchange between this port and the United States, except the few whalers' drafts that are purchased at from two to twelve per cent. discount. The value of the milreis is governed by the state of exchange on England. The principal articles imported from the United States are flour and tea. The former pays a duty of 3 milreis (\$1 50) per barrel, and the latter pays 600 reis (30 cents) per lb.; hams pay 60 reis (3 cents) per lb.; tobacco pays 180 reis (9 cents) per lb. Sugar and hides are the only articles of export worth mentioning. Sugar pays an export duty of eight per cent. The export duty on hides is ten per cent. on a valuation fixed weekly by a committee appointed for the purpose. The only articles on which this government levies a consumers' tax are, all spirituous and malt liquors, cigars, tobacco, soap, and snuff. Wines and liquors pay 1½ cents a canada (1½ gallons); 56 cents, in addition to this, is levied on each pipe for what the decree terms "charitable purposes." Cigars pay 56 cents per 1000; tobacco, 1 cent per lb.; soap, 1½ cents per lb. This tax affects the United States only in tobacco and snuff.—*Consular Returns for the United States*, 1854.

Perry, a fermented liquor made from pears, in the same manner as cider from apples. The pears best fitted for producing this liquor are exceedingly harsh and tart; but it is itself pleasant and wholesome.—See CIDER; PEARS.

Peru, a republic of South America, between lat. 3° 25' and 21° 48' S., and long. 68° and 81° 20' W. Area, 520,000 square miles. Peru is bounded north by Ecuador, east by Brazil, southeast and south by Bolivia, and west by the Pacific Ocean. Its coast reaches from the mouth of the Rio Tumbez to that of the Loa, 1240 miles; capital, Lima. All the mountains of Peru form part of the great chain (cordillera) of the Andes. From Porco, in Bolivia, it is separated into two chains—that of Ancumar, which runs from the east between the provinces of Carabaya and Azangaro, in the department of Puno, and that which runs to the west through Tacna, Moquegua, and Arequipa. Both reunite afterward near the city of Cusco, and again separate, the one running to the east of the provinces of Huanta and Tarma, and the other to the west of those of Castrovireyna, Huancavelica, and Huarochiri, reuniting themselves again in Pasco. From Pasco three chains detach themselves—the eastern between the Rio Guallaga and the Pachitea, the central one between the Guallaga and the Upper Marañon, and the western one between the latter and the coast of Trujillo and Paita. These several chains reunite in the province of Loja, in Ecuador. The direction of these chains of mountains determines the great valleys of the interior of Peru. The lakes most notable in Peru are those of Titicaca, between the departments of Puno and La Paz, the latter in Bolivia; of Uraos to the south of the city of Cuzco; of Pleyes or Junin; and of Lauricocha, in the department of Junin. Lake Titicaca has a periphery of ninety leagues, and that of Junin of ten leagues. The other two are

smaller. In that of Lauricocha the Rio Marañon has its birth; in that of Junin, the Rio Janja, which runs into the Ucayali; and in that of Titicaca, the Desaguadero (anglice, *outlet*), which empties into the Lake of Paria, in the Republic of Bolivia. The rivers of Peru flow, some to the Pacific Ocean, others into the Amazon, and others into Lake Titicaca. Those that empty into the Pacific are the Tumbes, Chira, Sechura, Jequetepeque, Saña, Viru, Santa, Patavilla, Huaura, Chillon, Rimac, Mala, Cañete, Pesco, Ocoña, Camana, Quilca, Tambo, and Loa; and those flowing to the Amazon are the Tungaragua or Marañon, which takes the name of Amazon at its confluence with the Ucayali, the Guallaga, the Ucayali (formed by the rivers Pachitea, Apurimac, and Beni), and the Rio Yavari. The mineral resources of Peru, like those of Mexico, are inexhaustible. The very name of the country is associated in the mind with ideas of gold and silver. Besides the precious metals, however, the country produces copper, tin, iron, coal, saltpetre, etc., in abundance—the latter, under the name of nitrate of soda, has become an important export. The agricultural staples of the country are sugar, rice, tobacco, etc., which grow in the warmer situations; the vine, wheat, etc., in the milder. Potatoes are cultivated in all parts. Maize is cultivated, and is the common diet of the people. Medicinal plants, drugs, and dye-stuffs form a large part of the exports; and some of the hard woods abound in the forests. The Cinchona, or Peruvian bark, is indigenous to the country: it grows at the elevation of 10,000 or 12,000 feet, and abounds most in the northern provinces. Among the wild animals of Peru are the puma, the utrunca (a species of tiger), the acumari (a black bear), and great varieties of deer, wild bears, armadillos, etc. The llama, alpaca, guanaco, vicuña, etc., are the most valuable animals. Four varieties of condor are indigenous. Of acclimated animals the sheep has succeeded best, and goats, hogs, etc., thrive well. In the mountains cattle and horses find a congenial climate, but on the coast speedily pine and die away. The wool of Peru is among the best in the markets. The political divisions of Peru consist of eleven departments, and two provinces called "litorales." The departments are subdivided into sixty-one provinces, the provinces into districts, and these into parishes. The government, civil and economical, of each department is in charge of a Prefect, dependent directly on the President of the Republic; that of the provinces is in charge of Sub-prefects, dependent on the Prefects; that of the districts is in charge of Governors, and that of parishes is in charge of Sub-governors. The departments and the population in 1852 were as follows:

Departments.	Population.	Capitals.
Amazonas	43,074	Chachapoyas.
Ancash	219,145	Huarez.
Arequipa	119,336	Arequipa.
Ayacucho	132,921	Utamanga.
Cuzco	349,718	Cusco.
Huancavelica	70,117	Huancavelica.
Junin	222,949	Cerro de Pasco.
Libertad	263,553	Trujillo.
Lima	253,801	Lima.
Moquegua	61,432	Tacna.
Puno	285,661	Puno.
Provincia Littoral de Callao	8,453	
Provincia Littoral de Plura	76,932	
Total population	2,106,492	

The most eastern parts of the departments of Amazonas, Junin, Ayacucho, and Cuzco have not been well explored, and are inhabited by diverse tribes of savage Indians, for whose civilization different missions have been established, and to whom belongs entirely all the territory to the east of the Ucayali, and where the Prefects of the departments above-named do not exercise their authority.

Peru is an integral republic. The Constitution, which was finally settled in 1839, recognizes legislative, judicial, and executive powers entirely separate and independent of each other. The legislative power is vested in a Senate and Assembly, chosen by the peo-

ple through electoral colleges; the deputies are apportioned in the ratio of one to every 20,000 inhabitants. The judiciary is appointed by the President, and judges are not removable except for cause. The Constitution provides for sub-judiciaries, having separate qualifications, for departments, districts, towns, and parishes. The executive power is delegated to a President, whose term is six years. There is no Vice-president, but the President of the Executive Council supplies the place of President in case of the removal, inability, or death of that officer. The Council consists of the Ministers and members of the Senate. The established religion is the Roman Catholic. The Church is presided over by an Archbishop and several suffragans. It is immensely rich. The Inquisition has been entirely abolished throughout the Republic.

Peru was conquered in 1532 by the Spaniards, under Pizarro and Almagro, and remained a colony of Spain for nearly three hundred years. The independence of the country was proclaimed at Lima, 28th July, 1821. Since that period the following parties have exercised supreme power: General San Martín, to 21st September, 1822; thence a "Junta Gubernativa," composed of General Lamar and Señors Salazar-y-Baquijano and Alvarado; thence General Don José de la Riva Agüero, as President, to July, 1823; thence José Bernardo Tagle; thence General Simon Bolivar, to July, 1835; thence a "Council of Government," to the end of 1826; thence General Bolivar, as President; thence General Lamar, as Constitutional President, to June, 1829; thence General Gamarra, to 1833; thence General Orbegoso; thence General Salaberry, as "Supreme Chief," to 1836; thence General Santa Cruz, to 20th January, 1839; thence General Gamarra, to November, 1841; thence Señor Menendez, to August, 1842; thence Vidal, Figuerola, and Vivanco, successively, to 1844; thence Menendez (restored), to 1st April, 1845; thence General Ramon Castilla, to 1st April, 1851; and thence General Rufino Echenique, the present President.

The following is a statement of the public debt of Peru, as given by Señor E. Escobar de Bedoya, attaché to the Legation of Peru at Paris, 26th October, 1853:

Loans on the four-and-a-half in England	\$13,000,000	£2,600,000
Loans on the three per cents. in England	8,500,000	1,700,000
Interior debt	23,200,000	
Debt to Chili	2,000,000	
Debt to the Republics of Old Columbia	3,600,000	
Total	\$50,300,000	

The deposits of Chincha alone are worth three hundred millions of dollars (piastres). The Chincha and Lobos Islands, off the coasts of Peru, are of immense value to the country, on account of their guano deposits. This substance is the most potent of fertilizers, and until lately the islands above-named were the only sources whence it was derived. According to a report made by Señor Villa in 1842, the deposits in these islands were estimated to be 46,632,280 tons. Assuming the consumption to be 300,000 tons a year, valued at \$20 a ton, it would produce \$6,000,000 annually, and require 160 years for its total consumption. This resource has been an efficient aid to the national treasury, and has made Peru the most apparently prosperous of all the South American republics. The exports in 1852 amounted to 220,500 tons—32,000 of which went to the United States, and the remainder to France and England.—See article GUANO.

According to a treaty between Peru and the United States signed July, 1857, it is agreed that the permission to the whale ships of the United States by the treaty of 1851, to barter or sell their supplies and goods to the value of two hundred dollars, *ad valorem*, without being obliged to pay port or tonnage dues or other imposts, should not be understood to comprehend every kind of merchandise without limitation, but those only that whale ships are usually provided with for their long

voyages. That in the said exemption from duties of every kind are included the following articles in addition to the produce of their fishery, viz., white unbleached domestics, white bleached domestics, wide cotton cloths, blue drills, twilled cottons, shirting stripes, ticking, cotton, prints, shirtings, sailors' clothing of all kinds, soap, slush, boots, shoes, and brogans, axes, hatchets, biscuit of every kind, flour, lard, butter, rum, beef, pork, spermaceti and composition candles, canvas, rope, tobacco.

The principal ports of Peru are Paita, San José, Huanchaco, Callao, Islay, Arica, and Iquique. These are ports of entry for foreign commerce. There are other ports open to the coasting trade, and for the exportation of the produce of the country. These are Ylo, Chala, Pisco, Huacho, Casma, Pacasmayo, and Tumbes, and the small harbors of Secura, Samano, Santa, Supe, Huarnes, Echenique, Chancay, Ancon, Cerro, Azul, Chinca, Cancato, Nasca, Quilca, Cocotea, Morro de Sama, and Písacue.

The commercial relations of the United States with Peru are regulated by the treaty already cited, bearing date July 26, 1851, and by such decrees and orders as are issued from time to time by the Supreme Government of that republic. The treaty guarantees entire liberty of commerce and navigation, and perfect reciprocity between the flags of the two countries in the ports of the other.

The trade between the two nations (Peruvian guano excepted) is not, however, very extensive, as appears from the official returns of the United States Treasury Department. Before entering into the details of the commerce between the United States and Peru, the following summary of the general foreign trade of that republic is given, with a view to show the relative rank held by the United States and other nations in that trade. The figures are derived from the official returns of the Peruvian government for the years 1851 from all nations, and in 1851 and 1853 from the United States.—See *Commercial Relations of United States*.

IMPORTS INTO PERU IN 1851-1853.

Articles.	1851.	1851.	1853.
Textiles of silk.....	\$768,075	\$1,155	\$232
Textiles of linen.....	234,743	13,098	6,005
Textiles of cotton.....	2,254,343	252,667	268,190
Textiles of wool.....	2,403,846	11,004	730
Gold and silver ware..	360,373	32,422	270
Fruits.....	30,570	614	64
Provisions.....	573,545	58,900	115,600
Timber.....	145,895	11,506	10,495
Furniture.....	105,663	34,200	49,901
Wines and liquors.....	176,869	2,526	1,615
Sundries.....	2,403,552	99,962	132,306
Ready-made clothing..	.....	.....	618
Total, 3 years...	\$9,447,465	\$518,042	\$586,024

RÉSUMÉ DE IMPORTS FROM ALL NATIONS BY PORTS.

Ports.	1851.	1853.
Callao.....	\$6,517,926	\$6,076,474
Arica.....	891,698	860,170
Islay.....	1,376,492	1,454,353
Huanchaco.....	336,228	235,746
San José.....	236,439	180,738
Paita.....	288,678	253,918
Loreto.....	.....	26,494
Total.....	\$9,447,465	\$9,037,898

EXPORTS FROM PERU TO THE UNITED STATES.

Articles.	1851.	1852.	1853.
Cotton.....	\$7,440	\$6,800	.....
Cascarilla.....	41,364	30	11,840
Hides.....	231	1,031	2,681
Hats.....	.....	13,665	600
Sundries.....	5,972	75	5,643
Fruits.....	190	.....	.....
Guano.....	1,722,195	1,038,280	4,713,660
Wool.....	20,736	17,724	69,020
Gold.....	4,104	57,579	.....
Silver.....	.....	16,000	8,644
Tobacco.....	3,048	.....	.....
Saltpetre.....	.....	38,900	85,204
Provisions.....	31,160	23,664	1,088
Total, 3 years..	\$1,830,440	\$1,263,748	\$4,898,380

RECAPITULATION OF FOREIGN COMMERCE OF PERU FOR THREE YEARS.

Years.	Imports.	Exports.
1851.....	\$9,447,465	\$13,085,715
1852.....	9,316,242	10,173,216
1853.....	9,087,838	16,883,630
Total.....	\$27,851,546	\$40,142,562

Balance of foreign trade in favor of Peru, during these three years, \$12,290,956; making an annual average in favor of Peru of \$4,096,985. The number of vessels employed in the steam navigation of Peru is: six steamships belonging to the British mail line, which ply semi-monthly between Valparaiso and Panama. The aggregate tonnage of these six steamers is 3506 tons. There is also a seventh steamer of 500 tons on the same line. One Peruvian steamer, of 250 tons burden, coasts regularly between Callao and Valparaiso. The two latter are screw-propellers; the other six have paddle-wheels. The merchant marine of Peru in 1852 consisted of nine ships, with an aggregate of 3194 tons; ten barks, measuring in all 4156 tons; and eight brigs, of 1681 tons; making a total of twenty-seven vessels, with an aggregate of 9031 tons. The total number of Peruvian vessels employed in the coasting trade during the same year was 141, with an aggregate of 14,705 tons. The number of seamen engaged in this service is about 4000, of which 2150 are natives, and 285 citizens of the United States—1260 being employed in the foreign trade, and 2750 in the coasting trade. The tables on next page, transcribed from French official authorities (the dollars having been reduced to francs by multiplying by 5), exhibit in detail the general import and export trade of Peru in 1853.

Callao is the chief port in Peru for foreign commerce. The aggregate tonnage of Peruvian vessels, belonging to and employed in foreign trade at Callao, in 1852, was 67 vessels, measuring an aggregate of 15,031 tons; in the coasting trade the number of vessels was 181, with a tonnage of 17,705 tons; making a total of 248 vessels, and 32,736 tons. Besides the above, there were employed, during the same year, at the port of Pisco, six vessels of 1200 tons aggregate; and at the port of Huacho (both ports being in the consular district of Callao), eight vessels, with an aggregate of 400 tons; making a total in both ports of 1600 tons. The total number of Peruvian vessels which entered at Callao (in foreign trade) in 1852 was 150, with a tonnage of 19,478 tons; and the number cleared, 157 vessels, with a tonnage of 19,326 tons. The number and tonnage of United States vessels which entered Callao during the same year was: vessels, 69; tonnage, 27,360 tons; and the number and tonnage of those cleared was: vessels, 56; tonnage, 23,660 tons. The following comparative table shows the rank which the United States held, relatively with other foreign nations, in the navigation of this port in 1852, including British mail steamships:

Nationality.	Entered.		Cleared.	
	Vessels.	Tons.	Vessels.	Tons.
United States.....	69	27,360	56	23,660
English.....	210	108,000	260	151,000
French.....	42	16,000	39	16,200
Spanish.....	9	3,500	11	4,000
Italian.....	17	6,500	20	8,100
German.....	35	13,800	30	12,400
Chilian.....	40	4,400	40	4,400
Others.....	20	4,000	20	600

The following statement exhibits the number and tonnage of United States vessels which entered at Callao during the years specified:

Years.	Vessels.	Tons.
1852.....	69	27,360
1853.....	235	150,321
1854.....	246	168,585

The general features of commercial transactions at Callao, and at the ports of Peru generally, are set forth in a communication of late date from the consul of the

NATURE AND VALUE, IN FRANCE, OF GENERAL MERCHANDISE IMPORTED INTO AND EXPORTED FROM PERU IN 1853.

IMPORTS OF LEADING ARTICLES—AND THE TOTAL VALUES OF ALL IMPORTS—[FRANCE].									
Countries from which.	Silk Goods.	Linen Goods.	Cotton Goods.	Woolen Goods.	Jewelry.	Wearing Apparel.	Furniture.	Provisions and Spices.	Total.
Germany.....	.....	41,620	.....	.....	.....	.....	.....	.....	54,385
England.....	841,065	1,190,455	11,177,900	4,532,010	319,280	151,415	510,155	178,565	28,081,455
Central America.....	.....	.....	.....	.....	.....	.....	.....	.....	385,525
Australia.....	.....	.....	.....	.....	.....	.....	.....	.....	585
Bolivia.....	.....	.....	.....	.....	.....	.....	.....	155	155
Brazil.....	2,250	2,500	18,750	.....	320	.....	.....	.....	126,940
Buenos Ayres.....	.....	.....	.....	.....	.....	.....	.....	2,250	57,910
China.....	620,445	.....	.....	.....	7,800	1,000	71,390	167,670	1,447,480
Chili.....	.....	.....	.....	.....	.....	1,200	.....	2,487,365	3,270,035
Denmark.....	.....	.....	.....	.....	.....	.....	.....	.....	320
Spain.....	69,755	.....	.....	.....	.....	.....	.....	56,210	811,895
Equador.....	.....	.....	.....	.....	9,890	.....	.....	4,960	981,140
United States.....	1,160	30,025	1,340,950	3,650	1,250	3,090	249,505	578,000	2,950,120
France.....	1,727,000	111,935	743,670	1,532,325	486,925	421,010	274,015	112,385	9,418,985
Hamburg.....	111,755	29,180	519,005	338,410	6,295	12,540	139,800	11,065	2,431,605
Holland.....	.....	.....	.....	.....	.....	.....	.....	.....	1,910
Italy.....	2,825	29,060	1,135	245	.....	.....	2,435	52,365	214,515
Mexico.....	.....	.....	.....	.....	.....	.....	.....	.....	75
New Granada.....	.....	.....	.....	.....	140,170	.....	.....	.....	214,100
Paraguay.....	.....	.....	.....	.....	.....	.....	.....	400	400
Prussia.....	.....	.....	.....	.....	.....	.....	.....	.....	6,535
Switzerland.....	.....	.....	.....	.....	510	.....	.....	.....	510
Total francs.....	3,976,285	1,434,725	18,801,500	6,466,640	972,490	590,255	1,246,860	3,651,400	45,459,470
EXPORTS OF LEADING ARTICLES—AND THE TOTALS OF ALL EXPORTS FOR THE YEAR 1853 [FRANCE].									
Countries to which.	Cascarilla Bark.	Cochineal.	Hides.	Guano.	Wool.	Gold.	Silver.	Saltpetre.	Total.
Germany.....	.....	.....	.....	.....	.....	.....	.....	138,405	138,405
England.....	254,550	66,925	23,280	25,089,300	2,543,530	1,226,475	10,861,680	4,010,115	44,004,135
West Indies.....	.....	.....	.....	1,321,200	.....	.....	.....	.....	1,321,200
Bolivia.....	.....	.....	.....	.....	.....	57,970	.....	.....	57,970
Brazil.....	.....	.....	.....	.....	.....	6,510	.....	.....	134,535
Chili.....	.....	5,250	39,360	.....	.....	51,000	186,550	17,515	2,487,185
China.....	.....	.....	.....	294,525	.....	26,945	382,000	.....	703,470
Denmark.....	.....	.....	.....	.....	.....	.....	.....	70,000	70,000
Spain.....	.....	.....	.....	920,475	.....	28,560	54,730	141,205	1,144,970
Equador.....	.....	.....	675	.....	.....	11,900	9,070	.....	41,415
United States.....	59,200	.....	13,405	23,568,300	245,100	.....	43,220	426,020	24,491,890
France.....	11,760	.....	2,845	2,112,975	560	343,775	3,546,905	1,189,210	7,208,030
Hamburg.....	7,200	.....	6,250	.....	.....	.....	.....	1,010,320	1,074,070
Holland.....	.....	.....	.....	.....	.....	.....	.....	122,500	122,500
Italy.....	.....	.....	750	176,400	.....	12,760	1,730	111,125	303,575
Mauritius.....	.....	.....	.....	400,275	.....	.....	.....	.....	400,275
Mexico.....	.....	.....	.....	.....	.....	.....	.....	.....	177,450
New Granada.....	.....	.....	.....	.....	.....	.....	3,000	.....	248,025
Sweden.....	.....	.....	.....	.....	.....	.....	.....	192,785	192,785
Total francs.....	332,710	72,185	86,565	53,886,450	2,889,250	1,765,895	15,083,885	7,419,100	84,401,685

United States at that port, as follows: "The most valuable of the articles imported into this consulate are assorted merchandises from England, France, Italy, the United States, Chili, Spain, and Equador; viz., Cotton, linens, silks, wines, hardware, etc. From the United States, domestic cottons, furniture, lumber, provisions, etc. The export trade of Peru consists chiefly of guano, which is sent to England, the United States, France, and Spain, and in smaller quantities to Italy, India, and the West Indies. The export was forced during the revolution, and a diminution has taken place under the present government, owing to over-supplies in Europe and the United States, and a wish on the part of Peru to raise the price of this article abroad to its consumers. It is valued on board the ships at the islands where laden at \$5 per ton—that is, at the cost attending its shipment. The average rate of freights to the United States during the year past (1855) has been \$22 per ton of 2240 lbs. This much of the product of guano goes into the hands of our ship-owners, who carry nearly all of it to the United States, and part of it to other places, from Callao and the Chincha Islands. No prohibitions exist, in fact, upon imports; but arms and munitions of war are difficult of introduction during revolutions. Powder is strictly prohibited. The general trade regulations are liberal. Goods lie in bond at the option of the merchant; paying only, after the first month, storage and labor, until entered for consumption, or else exported abroad, and then no charges further. There are at present no differential or discriminating duties on any foreign vessels or goods. A quarantine exists in the case of coolies from China, who usually arrive sick; and this district, during the last three years, has become subject to fatal epidemic fevers, etc. United States capital is employed in the

ice trade, and in repairing ships; in the humbler trades, and in commerce, and upon the public works. The English at present enjoy the largest share of the import and export trade; but the activity and intelligence of all commercial nations are occupied in seeking a share, and the tendency is gradually toward a more equal participation.

Crude wools are largely exported; but the high duty on them in the United States throws nearly all that trade into Europe, mostly to England, where wool is free under the tariff. Of late they have been paying good profits. This remark applies also to the barks of Peru, and to copper. The bar silver exported all goes to England, because there is no direct steam communication with the United States. Some supplies of wheat, flour, and other agricultural products begin to be imported into this consular district from California, such as barley, potatoes, etc.; and about 2500 flasks of quicksilver, valued at nearly \$100,000, have been imported during this last quarter. Whale ships, while cruising, call at times for refreshments, and to change their crews. The agricultural industry of the country has been obstructed by the liberation of the slaves in 1855, to replace whom Chinese coolies are being imported. Such laborers are also now being employed by the government at the Chincha guano islands, near Pisco. The army of Peru employs about 7000 Cholo half-breed Indian soldiers, the tendency of which policy is to hinder population. There is a perceptible increase in the number of Americans in this consulate—seamen, artisans, and tradesmen, who come to reside. Nitrate of soda is largely exported—at least a million and a half of quintals annually, valued at \$2 per 100 lbs.; a considerable part of which goes to the United States. Dry and salted hides, and straw

hats, are exported in small quantities. The circulating currency of Peru, representing silver, and now the only money in common use, is below the nominal standard about three-eighths, or $37\frac{1}{2}$ per cent. The rate of exchange fluctuates from five to fifteen per cent. on the dollar. The dollar of Peru, in invoices of export to the United States, is now usually valued at from 80 to 85 cents of United States currency. The Peruvian dollar, of pure silver, not in circulation, is worth about $87\frac{1}{2}$ cents of United States currency. Gold coins of Peru are not now seen in common use. Patriot doubloons pass current at \$17, and of late are worth 3 per cent. premium, and but few to be obtained."

Paita.—The chief staples of export from the port of Paita are straw (Panama) hats and Peruvian bark. The exports consist chiefly of cotton manufactures, of iron, and assorted sundries. The official navigation returns for this port, for a period later than 1852, are not at hand. There entered from all foreign nations in that year 185 vessels, with an aggregate of 61,624 tons; of which there were from the United States 42 vessels, measuring an aggregate of 10,256 tons. The direct trade between the United States and this port is limited, owing to the facilities afforded in the coasting trade between this point and Callao.

Arica.—The staple exports from the port of Arica are tin, copper ore, Peruvian bark, and alpaca wool. With the exception of the latter, all these exports are of Bolivian produce. Indeed, the port of Arica is merely a transit port for Bolivian produce and trade. Owing, however, to some misunderstanding between the governments of Peru and Bolivia, which resulted in the imposition by the former, in 1853, of 40 per cent. duty on the produce of the latter passing through this port, this transit trade is now conducted through the port of Cobija (Port La Mar), the only port open for foreign commerce in Bolivia. The imports from the United States are cotton domestics, blue drills, chairs, and shoes, on which last-named article a duty of 40 per cent. is levied.

Iquique.—This port possesses a harbor safe and commodious, and is well protected by the island of Iquique from the heavy swells which, in the winter season, set in from the southwest. With the exception of a few months during the late revolution in Peru, up to the month of July, 1855, when it was declared a *puerto mayor*, Iquique ranked as a *puerto menor*, with some extra privileges. The province of Iquique is the great centre of the nitrate of soda trade, and to this article alone it owes its present position. Out of a population of about 15,000 four-fifths are more or less interested in this trade. At the works, the nitrate of soda varies in value from $81\frac{1}{2}$ cents to \$1 06 $\frac{1}{2}$ per quintal. The rate of carriage to the coast varies from 68 $\frac{1}{2}$ cents to 93 $\frac{1}{2}$ cents per quintal. The average rate paid for the article placed on the beach is \$1 75 per quintal; and this price gives the makers a profit of 9 $\frac{1}{2}$ cents per quintal.

Nitrate of soda is always sold deliverable along side the ship's launch, outside the surf. The merchant has to bag and embark it, which costs him about 21 $\frac{1}{2}$ cents per quintal. Selling it, therefore, at \$1 87 $\frac{1}{2}$, would yield him a profit of 15 $\frac{1}{2}$ cents per quintal.

Nitrate of soda is used in the manufacture of sulphuric and nitric acids, and as a fertilizer. Between 1820 and 1830, attempts were made to export it to the United States and England, but the cargoes were unsalable. Soon afterward, however, its value became known, and at this time the quantity annually exported reaches nearly 1,500,000 quintals, valued at about \$1 25 to \$2 per 100 lbs. The following statement will show the total amount of nitrate of soda exported since 1830, when the trade began:

1830 to 1834, inclusive	Quintals.	361,385
1835 to 1839, " "	" "	761,349
1840 to 1844, " "	" "	1,592,306
1845 to 1849, " "	" "	2,060,575
1850 to 1854, " "	" "	3,269,473
Total	" "	8,046,108

QUANTITIES OF NITRATE OF SODA, IN QUINTALS, EXPORTED FROM 1850 TO 1854, BOTH INCLUSIVE, AND THE COUNTRIES TO WHICH EXPORTED.

Countries.	1850.	1851.	1852.	1853.	1854.
Australia.....	.....	.....	.....	.....	7,000
Belgium.....	.....	6,447	.....	.....	.....
California.....	.....	.....	.....	.....	5,242
Chile.....	4,985	3,180	8,348	12,000	14,085
France.....	87,827	154,331	60,561	150,428	96,416
Germany.....	33,630	44,671	44,627	188,258	89,609
Great Britain.....	304,459	271,137	360,703	406,361	431,635
Holland.....	40,642	26,912	7,579	.....	14,631
Italy.....	10,654	7,399	.....	10,200	.....
Spain.....	.....	.....	.....	16,138	.....
Sweden.....	.....	.....	4,700	.....	.....
United States.....	25,180	33,136	35,436	58,562	48,555
West Indies.....	.....	9,709	2,257	.....	.....
Peru (North).....	3,542	3,178	6,010	1,465	1,198
For orders.....	.....	39,807	29,647	23,665	11,418
Total.....	510,879	639,907	563,276	866,532	719,879

Before Iquique was constituted a *puerto mayor*, foreign vessels from any foreign port could call and anchor, provided their cargoes consisted of nothing but the following articles: Peas, beans, lentils, Indian corn, wheat, barley, nuts, raisins, almonds, cocoa-nuts, flour, bran, biscuit, macaroni, frangallo, cococa, dried potatoes, fat, butter, tallow, lard, jerked beef, cheese, live and dead stock, salted meats, and all kinds of vegetables and roots, candles and soap, fire-wood, timber for building, coals, bricks, iron, steel, nails, tools for mines, empty sacks, twine, machines for making nitrate or distilling water. It is now open to general commerce, and will necessarily become a port of much importance. Being the most windward of the Peruvian ports, vessels proceeding from the south, having other goods on board than those above specified, were obliged to go to Arica, the first *puerto mayor*, and, after dispatching at the custom-house there, beat back again to Iquique, at a cost of from five to fifteen days' sailing. The consequence of this restriction was, that but few vessels entered this port with cargoes direct from foreign countries. Another advantage to be derived from making Iquique a *puerto mayor* is, that it will open a transit trade into Bolivia, and thus render this port an entrepôt for an extensive trade with that republic. The distance to Potosi is much less—less, it is stated by three or four days' journey, than by the way of Cobija. The mules would only have to travel fifteen leagues without water, and the pass in the Cordillera is equally as favorable as by the latter route.

Tumbez.—No vessels except whale ships are allowed to enter at this port. The privileges to which American whalers are entitled by the twelfth article of the treaty of Peru with the United States, have already been stated. The market of Tumbez is supplied chiefly by American whale ships, which usually import small quantities of American manufactured goods, flour, etc. Other foreign whale ships must conform to the general regulations of commerce, which allow them to anchor, provided they have on board only the products of the fishery, provisions and supplies necessary for the use of the vessel and crew, and to sell oil and candles to any amount, in exchange for provisions, free of import duty. The following summary exhibits the number and tonnage of American whaling vessels which arrived at the port of Tumbez, from August, 1852, to June 30th, 1855:

Years.	Number of Vessels.	Tons.
1852.....	28	7,717
1853.....	57	17,179
1854.....	64	19,042
1855 (first six months).....	32	9,740

—United States Commercial Relations.

No deposits of guano which will at all compare with those of Peru seem as yet to have been discovered, although most extensive explorations have been prosecuted; nor has science yet succeeded, though inventive skill has been tasked to the utmost, in manufacturing a substitute which would supersede the use or lower the price of the Peruvian fertilizer.—See GUANO.

COMMERCE OF THE UNITED STATES WITH PERU FROM OCTOBER 1, 1824, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.		Export.	Import.	American.	Foreign.
Sept. 30, 1825.....	\$359,854	\$374,944	\$734,798	\$346,883	....	\$323,157	2,919	....
1826.....	278,724	231,176	509,899	715,194	....	408,622	5,171	....
1827.....	203,944	70,077	273,921	1,035,462	\$5000*	665,783	2,454	....
1828.....	159,389	100,555	259,944	843,199	....	629,350	2,814	....
1829.....	91,542	119,615	211,157	1,004,458	....	602,079	749	....
1830.....	32,400	39,408	71,808	972,884	....	591,521	732	....
Total...	\$1,124,853	\$985,774	\$2,060,627	\$5,098,080	\$5000	\$3,220,517	12,339	....
Sept. 30, 1831.....	\$8,560	\$7,616	\$16,176	\$917,788	....	\$331,711	523	....
1832.....	7,126	10,834	17,960	720,068	....	165,122	72	....
1833.....	....	....	....	654,630	....	182,872	78	....
1834.....	49,767	16,096	65,863	619,412	....	263,231	655	....
1835.....	....	....	....	1,118,278	....	669,877	....	....
1836.....	....	918	918	155,831	....	38,203	....	....
1837.....	99,757	11,601	111,358	909,418	....	440,109	1,221	....
1838.....	163,808	29,531	203,399	633,437	....	164,375	1,674	....
1839.....	....	....	....	242,813	....	87,696	1,019	....
1840.....	....	....	....	498,495	....	146,521	667	....
Total...	\$922,073	\$36,596	\$408,674	\$6,409,200	....	\$2,439,717	5,934	....
Sept. 30, 1841.....	....	....	....	\$524,376	....	\$129,161	....	....
1842.....	....	....	....	204,768	....	14,380	....	....
9 mos., 1843*.....	....	....	....	185,568	....	34,441	446	....
June 30, 1844.....	\$14,053	\$2,754	\$16,807	184,424	....	21,839	704	....
1845.....	33,424	....	33,424	336,112	....	18,221	435	....
1846.....	....	....	....	252,599	....	9,500	291	....
1847.....	192,978	34,550	227,527	396,223	....	32,520	1,208	532
1848.....	124,618	16,731	141,349	317,759	....	57,991	2,732	1,419
1849.....	93,195	18,041	111,236	446,953	....	17,408	5,611	2,291
1850.....	253,939	16,789	275,728	170,753	....	3,250	10,332	7,340
Total...	\$717,207	\$83,874	\$806,081	\$2,969,530	....	\$338,711	21,759	11,612
June 30, 1851.....	\$249,760	\$22,388	\$272,098	\$34,733	\$344	....	18,920	13,519
1852.....	333,794	22,043	355,842	694,892	....	\$975	5,179	11,331
1853.....	657,316	40,261	697,577	173,441	3000	16,679	63,246	37,410
1854.....	651,707	53,443	695,155	1,005,496	5000	....	121,825	36,635
1855.....	756,328	114,223	870,546	597,618	....	....	85,151	25,377
1856.....	1,150,232	84,991	1,244,223	217,759	7600	....	61,561	20,107

* Nine months to June 30, and the fiscal year from this time begins July 1.

A treaty of friendship, commerce, and navigation exists between the United States and the Republic of Peru, the terms of which treaty are adhered to in good faith at the ports of Peru; and although questions sometimes arise in police cases regarding seamen belonging to American vessels, the authorities assist readily in arranging such questions as they occur. The present existing regulations are fixed and definite as regards commerce. Changes in parts of these regulations are made by decrees issued by the President and Congress, when that body is in session, and by the President and Council of State during the recess of Congress, as required by the public exigencies. At present (August, 1855) the government is undergoing the process of a revision of its fundamental laws, now being made by a convention of deputies elected from all sections of the country, and holding its sessions in the hall of Congress at the city of Lima. There are no privileges permitted to the commerce of other nations which are denied or not allowed to the United States. There are no restrictions imposed on the commerce of other nations and not on that of the United States. But a line of eight fine British steamers, carrying the mails and running between the ports of Panama and Talcahuano, under the provisions of a postal convention existing between Great Britain and Peru, are exempted from all tonnage duties and port charges whatsoever in the ports of Peru, in consideration for the transmission of the mails of Peru to and from the various ports of Peru at which they touch in making passages to and from Talcahuano and Panama. The whaling vessels of the United States, also, are allowed certain privileges in the port of Tumbes and all the open ports of Peru, in virtue of the treaty now existing. Some question has been made by Peru as to whether this privilege should allow whale ships to avail themselves of its provisions in one port only, while on a cruise, or at each or any port or ports, and every time they visit such port or other port or ports of Peru. The amount of the port charges made upon the vessels of the United States in the ports of Peru is as follows, namely: Tonnage duty, 25 cents per

ton; anchorage fee, \$8 on vessels to Callao only; anchorage fee on vessels to Callao and the Chincha Islands is \$4 more, making \$12; inspector's fee, \$4 25; custom-house fee, \$4 25. The various stamped papers cost from \$5 to \$12, according to the operations made by the vessel. There are no light-house dues nor any light-houses, and no hospital money is exacted. The tonnage duty is only payable in one port, and only once in six months. There are no pilots nor any pilot system in Peru—the nature of the ports rendering pilots unnecessary. National vessels that measure less than 200 tons do not pay any tonnage duty, but pay the other port charges. National vessels over 200 tons register pay 25 cents per ton, being the same duty that the vessels of all nations are made subject to. The line of eight British mail steamers is exempted from all port charges whatsoever, under the conditions of the postal convention now existing between Great Britain and Peru. The transhipment of goods is permitted in the vessels of the United States, either to another port in Peru or to a foreign port. This privilege is allowed also to the vessels of all nations. By the *Reglamento de Comercio* for 1852, the latest yet published, it is allowed to vessels of all nations to take coastwise, from one open port (mayor) to another, any foreign goods in bond; that is, which have not paid duty; for example, from Arica or Isly to Callao. It is also allowed to take the productions of Peru, and any foreign merchandise free of duty, in the same manner, from any port to another port or ports in Peru. All vessels may go loaded with free goods, and the productions of Peru, not only from one open port to another, but from an open port to a minor port (menor), or from a minor port to an open port (mayor), or in any manner. Vessels of all nations are permitted to go to the port Iquique, to load with nitrate of soda and other articles, and also to proceed from Callao to the Chincha Islands to load with guano.

The moneys, weights, and measures, known and in common use in Peru, are those of Spain, having remained the same as when Peru was a colony of Spain.

The difference between the vara and the yard in the custom-house is eight per cent. additional, the vara being about 83 inches of the English yard of 36 inches. The gross and dozen are the same as in the United States. The gallon of oil, of wine, and of spirits, are each taken at $7\frac{1}{4}$ pounds to the gallon. The fanega is an arbitrary ideal measure, and is regulated by weight; namely, one fanega of wheat is 185 pounds; one fanega of millet is 180 pounds; one fanega of beans is 182 pounds; one fanega of peas is 182 pounds; one fanega of corn is 156 pounds; one fanega of Lima beans is 156 pounds; one fanega of tallow is 180 pounds. But these measures do not come into use in foreign intercourse, or in any large transactions. There is no measure of bulk in use, such as a bushel or a gallon; articles measured in bushels or in gallons in the United States are sold by the pound or quintal of 100 pounds in Peru. The difference between the pound and quintal (of 100 pounds) of Peru and those quantities in the United States is two per cent., the pound of Spain and Peru being two per cent. heavier than the pound avoirdupois of the United States and England.

Insurance to the United States, one and a half to two per cent. Freight, \$20 to \$30 per ton of 2240 pounds, guano, delivered; and the same price on 40 cubic feet measurement of other articles. Commission, two and a half to five per cent. on the invoice. Cash in all cases on exports. Average rate of exchange, five to seven per cent. premium for a bill on the United States, and eight to ten per cent. on United States currency. The true par of exchange is: Specie, six to ten per cent. premium; by exchange, six to seven per cent. Bills, six to seven per cent. premium; by the currency, ten per cent. No duty is charged on merchandise exported. No internal or other taxes are levied on exports. Guano belongs to the government and people of Peru, and is sold by itself.

PRICES OF EXPORTS.

Articles.		Wholesale Price.
Guano from the Chinch Islands.....	Per ton of 2240 lbs.	
Nitrate of soda, a sort of saltpetre.....	Per 100 lbs.....	\$1 25
Hides, ox and cow.....	Each.....	2 00
Bark, Peruvian.....	Per 100 lbs.....	40 60
Tin, block.....	".....	18 00
Hats, straw.....	Dozen.....	12 00, etc.
Horns, ox and cow.....	1000.....	20 00
Wool, sheep's.....	100 lbs.....	12 00
Chocolate.....	".....	14 00
Vanilla.....	Pound.....	6 00 to \$7 00
Balsam.....	".....	1 50

Peruvian Bark. The trees yielding Peruvian bark, which grow at an elevation of 7000 to 8000 feet on the Andes, have for a long series of years been felled for the sake of their bark, and no pains were taken to replace them. Fears have been naturally entertained that ere long the supply of bark, and consequently of quinine, would fail. Efforts have consequently been made to transplant the tree into countries where it is supposed the climate would be suitable. Dr. Royle has taken measures for introducing Cinchona Calisaya, or the yellow-bark tree, into the higher regions of India; and of late years the Dutch government have employed Mr. Hasskari to transport plants of various species of cinchona from South America to Java and other parts of the Dutch East Indies. These attempts have been successful; and the reports in regard to the growth of the plant are such as to lead to the expectation that ere long the Peruvian bark trees will be scattered over extensive districts, and will thus be saved from destruction.—*Edin. New Phil. Journ.*, No. 9.

Pewter (Ger. *Zinn*, *Zinngeisserzinn*; Fr. *Etain*; It. *Stagno*; Sp. *Estano*, *Peltre*; Russ. *Olovo*), a factitious metal used in making plates, dishes, and other domestic utensils. It is a compound, the basis of which is tin. The best sort consists of tin alloyed with about one-twentieth or less of copper, or other metallic bodies, as the experience of the workmen has shown to be most conducive to the improvement of its hardness and

color, such as lead, zinc, bismuth, and antimony. There are three sorts of pewter, distinguished by the names of plate, trifle, and ley pewter. The first was formerly much used for plates and dishes; of the second are made the pints, quarts, and other measures for beer; and of the ley-pewter, wine measures and large measures. A fine pewter is made, according to Aiken, by fusing together 100 parts of tin, 8 of antimony, 1 of bismuth, and $\frac{1}{4}$ of copper. The use of these additions to tin is to harden it and preserve its color; and a good pewter, when clean and polished, has a silvery lustre, and does not readily tarnish. Common pewter, of which measures and pewter pots are made, is an alloy of lead and tin.

Philadelphia, the metropolis of Pennsylvania, and the second city in the United States of America in population and in manufactures, is in lat. $39^{\circ} 56' 39''$ N., and long. $75^{\circ} 10' 54''$ W., 130 miles from Washington, and 87 from New York. Population in 1800 was 70,287; in 1810, 96,287; in 1820, 119,325; in 1830, 167,325; in 1840, 258,037; in 1850, 408,762; and in 1854, 480,000. It is situated between the Delaware and Schuylkill rivers, five miles above their junction, and extends from the one to the other. The rivers bounding it lie about two miles apart in the narrowest place. The city is 100 miles distant from the ocean by the course of the Delaware. Its principal harbor is on the east, or Delaware River side, where ships come up, and its foreign commerce centres. Philadelphia has an extensive foreign, and a still greater domestic trade; by means of railroads and canals it possesses facilities for communication with a great extent of country. The city is built upon a plain rising gradually from the Delaware on the east, and the Schuylkill on the west, to the height of about 65 feet above the surface of the rivers at highest water. The portion most densely built upon has an outline of about ten miles, and extends along the Delaware River five miles. Philadelphia is laid out with great regularity, the streets, with but few exceptions, crossing each other at right angles. High Street, extending from river to river, and Broad Street, which extends south and north from Penn Square, are very wide and spacious thoroughfares; the other streets are, many of them, neat and cleanly kept. The public buildings are generally tasty and well built edifices, and the private residences have a neat and cheerful appearance. It was surveyed and laid out in 1682 by Thomas Holmes; the ground selected was claimed by three Swedes by the name of Swenson, who held a title to it obtained of the Dutch Governor of New York in 1664. This claim was purchased by Penn.—*Harper's and Lippincott's Gazetteers*.

Manufactures.—This branch of the industry of Philadelphia is very important both as regards value and extent. The vicinity abounds with water-power of great magnitude, and coal is obtained at an easy and cheap rate, so that steam can be applied as a motive power to a great advantage over other places, and which has been made extensively available. Machinery, locomotives, hardware, sugar-refining, cordage, and a variety of wares are produced here.—*Census Report*, 1850.

CAPITAL INVESTED, THE NUMBER OF HANDS EMPLOYED, AND THE VALUE OF THE ANNUAL PRODUCT OF THIS BRANCH OF INDUSTRY, IN THE CITY AND COUNTY OF PHILADELPHIA DURING THE YEAR ENDING JUNE 30, 1850.

Districts.	Capital invested.	Hands emp'd.		Annual Products.
		Males.	Fem.	
Philadelphia City.....	\$13,407,655	17,020	4036	\$26,309,265
Northern Liberties.....	3,922,251	4,463	1181	7,073,023
Spring Garden.....	2,913,445	4,336	854	5,376,781
Kensington.....	3,765,711	6,773	1850	10,083,904
Southwark.....	2,171,065	2,080	167	3,734,730
Moyamensing.....	530,364	1,970	288	1,299,201
Townships, etc.....	7,237,380	6,705	2377	10,237,308
Total.....	\$33,737,911	59,106		\$64,114,112

Coal Trade, etc.—The coal trade during the year 1853 amounted in value to over \$16,000,000, and the quantity brought to market about 6,000,000 tons. The

commerce of Philadelphia is rapidly on the increase, amounting in value the same year to \$14,500,000, and employing a tonnage of 252,451 tons. In 1854 there was a line of first-class steamships and four lines of sailing-vessels plying between this port and Liverpool; two steamships to Charleston, South Carolina; one to Richmond, Virginia, *via* Norfolk and Petersburg; one to Boston; one to Hartford; two to New York; and one to Baltimore. These vessels were substantial and well built, and most of them constructed in this city. The total number of steamships, ships, barks, brigs, schooners, barges, etc., entering the port during the year 1856, was 27,044.—*See* COAL; COINAGE.

The following railroads centre here: The Camden and Amboy; Philadelphia and Trenton, connecting with the New Jersey; the Camden and Atlantic; Philadelphia and Germantown; Philadelphia, Reading, and Pottsville; the Great Central Railroad of Pennsylvania, with its extensive connections; Philadelphia and Westchester; Philadelphia, Wilmington, and Baltimore, etc. The Schuylkill Navigation Canal, 108 miles long, extends to Port Carbon; and the Chesapeake and Delaware Canal, 14 miles long, extending from the Delaware River at Delaware city to Back Creek, Maryland. These great arteries of traffic contribute much to the trade of Philadelphia.

The city, as consolidated by the act of January, 1854, embraces a territory $2\frac{3}{4}$ miles long, and $5\frac{1}{2}$ average breadth, coextensive with the county. It is divided into 24 wards, and is governed by a mayor, elected for two years, a select council of 24 members for the same period, and a common council of 72 members, elected annually.

Philadelphia was first surveyed and regulated in 1682. It had previously been in possession of the Swedes, some of whom came into the country bordering on Delaware Bay as early as 1627. It was named after a city in Asia Minor, and the plan is said to have been suggested by that of ancient Babylon, and according to the original design of William Penn, its original founder and proprietor, was designed to have equaled that ancient capital in extent; but the idea was soon abandoned, and the charter of 1701 restricted it to the boundaries of the late city proper. Penn's country residence was at Pennsburg Manor, above Bristol, in which was a large Hall of Audience, where he held treaties with the Indians; and the oak arm-chair in which he sat is now in the Pennsylvania Hospital. The first Congress assembled in Philadelphia September 5th, 1774, and adopted a declaration of rights; on July 4th, 1776, the Declaration of Independence; in the autumn of 1776 retired to Baltimore; September 26th, 1777, the city fell into the hands of the British, who occupied it until the 18th of June following. May 17th, 1787, a convention met here, and in September 17th, following, agreed on a Constitution for the United States, when it became the seat of Government of the United States until 1800.

Harbor, Light-houses, Pilotage, etc.—Vessels of the largest burden ascend the river as far as Newcastle, but those drawing above 18 or 20 feet water can not reach Philadelphia on account of a bar a little below the city. The entrance to the magnificent bay formed by the embouchure of the Delaware, has Cape May on its north, and Cape Henlopen on its south side. The former, in lat. $38^{\circ} 57' N.$, long. $75^{\circ} 47' 45'' W.$, is a sandy headland, rising about 12 feet above the level of the sea. It has recently been surmounted by a light-house 60 feet in height. The light revolves once a minute; an eclipse of 50 seconds being succeeded by a brilliant flash of 10 seconds. It is seen in clear weather from 20 to 25 miles off. Cape Henlopen, marking the southern boundary of the bay, is in lat. $38^{\circ} 47' N.$, long. $75^{\circ} 4' 45'' W.$ A little south from it is a hill, elevated about 60 feet above the level of the sea; and on it is erected a light-house 72 feet in height, furnished with a powerful fixed light visible in clear weather.

er ten leagues off. To the north of this principal light, and close to the extremity of the Cape, a second light-house has been constructed, 86 feet above the level of the sea, which is also furnished with a *fixed* light, which may be seen about six leagues off. The channel for large ships is between Cape Henlopen and the banks called the Overfalls. The navigation is, however, a little difficult, and it is compulsory on ships to take pilots. The latter frequently board them at sea; but, if not, as soon as a ship comes between the Capes, she must hoist the signal for a pilot, and heave to as soon as one offers to come on board.

PHILADELPHIA TO THE OCEAN.—DISTANCES, IN STATUTE MILES, FROM PHILADELPHIA (MARKET STREET WHARF) TO THE CAPE, BY THE USUAL STEAMBOAT CHANNEL, AS LAID DOWN ON THE CHART OF THE DELAWARE BY THE UNITED STATES COAST SURVEY.

From Philadelphia (Market Street Wharf) to	Miles
Fort Mifflin landing (broad off in channel).....	8 3/8
Chester landing	16 5/8
Marcus Hook landing	20 1/4
Quarryville	24 3/4
Duport's	26 3/8
Wilmington, by the Christiana, to bridge	31 3/4
New Castle, railroad wharf (broad off in channel)...	34
Delaware City landing	39 5/8
Reedy Island	44 1/4
Fort Penn landing	44 7/8
Liston's Tree (broad off in channel)	51 8-16
Liston's Point	51 8-8
Black Creek Landing (broad off in channel)	55 8-8
Bombay Hook Light	60 1/2
Buoy of the Middle	71 9/16
Ledge Light Boat	76 1/4
Buoy of the Lower (qr.)	83 5/8
Brandywine Light-house	89 9-16
Buoy of the Brown	93 1-16
Breakwater	102 8-8
Cape Henlopen	102 5-8
Cape May landing, by channel east of Pea Patch...	\$6

Exports of Breadstuffs.—The annexed statement shows the quantity and value of breadstuffs exported from Philadelphia to foreign ports during 1855 and 1856:

		1855.		1856.	
		Quantity.	Value.	Quantity.	Value.
Flour . . .	Barrels.	218,197	\$1,962,618	343,335	\$2,400,113
Corn meal	"	95,168	485,204	91,249	290,400
Rye meal.	"	12,757	86,238	16,298	68,612
Wheat . . .	Bushels.	226,071	451,921	662,338	1,049,777
Corn . . .	"	636,252	683,752	1,093,621	711,999
Rye, Oats, etc. . . .	"	67,807	100,000	100,000	232,485
Total.			\$3,677,507		\$4,753,336

These figures show a marked difference in the prices of breadstuffs in the years specified, as follows:

	Average Price 1855.	Average Price 1856.
Flour.....	\$8 90½ per barrel.	\$6 90 per barrel.
Corn Meal.....	4 57½ “	3 18½ “
Rye Meal....	6 76 “	4 21 “
Wheat.....	1 99½ per bushel.	1 53½ per bushel.
Corn.....	5 99½ “	6 4½ “

It will be observed also that, had the articles enumerated brought the prices in 1856 that were paid for them in 1855, the value of breadstuffs exported in 1856 would have aggregated \$6,123,216 instead of \$4,753,336, the real cost.

Receipts of Cattle in Philadelphia.—The following tabular statement presents the number of cattle received here during each of the last twelve years, with the exception of the large number brought in by butchers, of which no account can be obtained :

Years.	Bees.	Cows.	Swine.	Sheep.	Total.
1845	51,298	18 8 5	26,455	56,348	153,506
1846	47,500	14,480	18,670	55,810	136,460
1847	50,270	16,700	22,450	67,800	147,220
1848	67,211	14,168	47,690	76,820	205,829
1849	68,120	14,320	46,700	77,110	206,250
1850	68,750	15,120	46,900	82,500	213,270
1851	60,100	15,400	46,700	83,000	215,200
1852	71,200	14,420	49,200	81,200	216,020
1853	71,900	15,100	53,300	72,300	212,600
1854	73,400	15,350	78,000	61,000	227,750
1855	55,250	11,530	65,300	132,500	264,580
1856	61,978	12,900	103,350	240,700	418,928

The following table shows the measurement of grain, seeds, salt, and coal, in Philadelphia, annually, for the last sixteen years. This statement, of course, does not include all the receipts of grain, seeds, etc., at this port.

Years.	Wheat.	Corn.	Rye.	Barley.	Oats.	Seeds.	Beans.	Bit. Coal.	Salt.
1841	467,243½	781,278½	51,371½	44,386	167,508½	19,704½	3040½	118,108	326,132
1842	462,770	472,951	36,334	35,978½	194,908	25,198½	1616½	9,068	151,250
1843	481,384½	518,671½	68,013½	20,012	372,713½	27,773½	1580½	131,909	174,134½
1844	526,667½	640,459	95,227½	58,600	375,578½	42,358	1402½	17,000	217,815½
1845	792,502½	768,486½	85,357½	46,630½	357,677½	31,434	3930½	261,888	146,451
1846	983,923	665,178	30,329	40,389	350,942	15,864	2895	348,261	237,463
1847	947,58	1,093,264	73,572	38,210	369,171	7,528	676	268,760	246,438
1848	723,614½	1,302,318½	46,900½	62,554½	327,733½	9,770½	459	357,827	200,474
1849	945,465	1,283,692	64,446	27,642	424,316	7,690	1270	235,092	451,157
1850	1,103,236	1,163,666	68,905	70,288	401,396	5,261	1808	100,395	172,712
1851	1,051,088	1,378,491	89,219	41,450	359,066	8,705	258	553,902	242,917
1852	977,544½	799,199½	59,637	37,119	427,538	23,774	.....	61,767	168,096
1853	950,339½	967,514½	49,968	31,250	406,529	11,541	.....	.....	17,870
1854	731,333	1,182,178	41,496½	39,705	272,946	18,040	.....	500	5,814
1855	1,046,096	1,433,458	147,889	31,918	686,924	410	.....	6,504	.....
1856	1,051,591	1,801,992	233,389	84,962	466,540	629	.....	.....	.....

IMPORTATION OF HIDES AT PHILADELPHIA.

Years.	Foreign.	Coastwise.	Total.
1831	132,492	No return.	132,492
1832	173,761	51,060	224,821
1833	63,455	84,593	148,078
1834	93,691	51,879	145,576
1837	127,057	20,166	147,253
1838	95,853	29,372	125,225
1839	124,208	23,905	148,113
1840	127,526	13,050	140,576
1841	143,440	14,084	157,524
1842	123,674	19,570	143,244
1843	84,606	9,370	93,979
1844	127,632	19,012	146,724
1845	90,725	8,555	99,280
1846	17,815	17,742	62,557
1847	76,139	75,818	151,957
1848	52,414	72,300	124,714
1849	102,698	88,284	190,928
1850	103,882	47,791	151,673
1851	134,225	35,727	169,952
1852	130,154	37,164	167,308
1853	119,977	24,434	144,411
1854	174,537	10,451	185,048
1855	156,102	12,300	168,402
1856	109,755	9,399	119,154

FOREIGN HIDES IMPORTED INTO PHILADELPHIA IN 1856.

	Number.	Bales.
Buenos Ayres and Laguayra	79,829	.....
Brazil	13,215	.....
Spanish Main	4,772	.....
Africa	5,540	.....
Total	103,356	.....
Calcutta, kips.	50	.....
Total coastwise	9,399	380

The following is the aggregate exports from Philadelphia to foreign ports in 1856:

Countries.	Domestic.	Foreign.	Total.
Swedish West Indies	\$81,372	\$3,410	\$84,783
Danish West Indies	66,911	416	67,327
British East Indies	278	2,632	8,010
Belgium	26,097	.....	26,097
Bremen	34,415	.....	34,415
England	3,552,212	18,066	3,577,273
Canada	3,972	21,766	25,738
Other Br. N. A. Colonies	349,333	3,931	353,264
Cuba	793,687	21,011	814,698
British West Indies	742,622	6,399	749,021
British Guiana	134,589	.....	134,589
Africa	28,494	290	28,784
French West Indies	1,260	.....	1,260
Porto Rico	18,635	152	18,847
Haiti	79,430	1,490	80,920
Central Republic and New Granada	14,000	.....	14,000
Venezuela	617,947	.....	617,947
Brazils	450,031	62,814	512,845
B. Ayres & Montevideo	105,101	2,374	107,425
Sandwich Islands	102,055	6,029	108,084
France	131,279	4,817	136,096
Colombian ports	.....	19,178	19,178
Mexico	.....	7,947	7,947
Madeira	6,360	.....	6,360
Holland	41,578	.....	41,578
Hamburg	10,568	.....	10,568
Gibraltar	13,757	.....	13,757
Total	\$7,711,285	\$188,592	\$7,899,977

The following is a comparative statement of some of the principal articles of produce exported from the port of Philadelphia to foreign ports for the years 1855-'56:

	1855.	1856.
Flour, barrels	220,479	342,035
Wheat, bushels	266,069	684,092
Corn, bushels	685,897	1,057,283
Corn meal, barrels	98,973	92,693
Rye meal, "	13,460	15,367
Rye, bushels	45,762	238,363
Ship-bread, barrels	21,856	26,486
Rice, tierces	2,122	4,587
Beef, tierces and barrels	6,615	7,635
Pork, "	7,872	11,141
Butter, pounds	344,682	439,608
Cheese, "	389,504	989,703
Naval stores, barrels	23,083	14,517
Oil, gallons	59,129	61,305
Pean and beans, bushels	1,900,733	1,934,686
Lard, pounds	19,925	13,387
Coal, tons	705,700	391,463
Tallow, pounds	554,514	709,146
Candles, "	1,089,001	1,256,086
Bacon, "	4,210,616	4,988,716
Bark, hhds.	651	1,373

Cash Duties.—The following is an official statement of the amount of cash duties received at the custom-house at this port during the past three years:

Months.	1854.	1855.	1856.
January	\$539,292	\$337,437	\$214,848
February	525,693	280,316	64,904
March	316,333	340,916	673,002
April	379,471	228,583	385,236
May	328,422	225,388	435,623
June	304,754	249,445	376,420
July	485,168	311,649	472,879
August	601,153	441,422	533,499
September	325,077	275,033	345,613
October	257,187	216,018	285,588
November	215,615	311,592	243,162
December	100,944	235,202	271,943
Total	\$4,368,515	\$3,353,517	\$4,301,123

The following is an official statement of the value of exports from the district of Philadelphia from 1791 to 1816. For subsequent trade see *ante*, p. 1510.

Years.	Foreign.	Domestic.	Total.
1791	.....	\$3,436,093	\$3,436,093
1792	.....	3,820,662	3,820,662
1793	.....	6,558,836	6,558,836
1794	.....	6,643,092	6,643,092
1795	.....	11,518,260	11,518,260
1796	.....	17,513,866	17,513,866
1797	.....	11,446,291	11,446,291
1798	.....	8,915,463	8,915,463
1799	.....	12,431,967	12,431,967
1800	.....	11,949,679	11,949,679
1801	.....	17,438,193	17,438,193
1802	.....	12,677,475	12,677,475
1803	\$3,504,496	7,525,710	11,030,206
1804	6,851,444	11,030,157	17,881,601
1805	9,397,012	13,762,252	23,159,264
1806	13,800,389	17,574,702	31,384,091
1807	12,055,128	16,864,744	28,919,872
1808	2,046,803	4,013,330	6,060,133
1809	4,810,883	9,049,241	13,860,124
1810	6,241,764	10,933,838	17,175,602
1811	3,865,670	5,601,447	9,500,117
1812	1,313,293	4,661,457	5,973,750
1813	327,494	3,240,623	3,577,117
1814	.....	.....	.....
1815	1,024,368	3,569,551	4,593,919
1816	2,709,917	4,486,329	7,196,246
Total	\$68,657,861	\$287,220,818	\$317,051,474

ACCOUNT SHOWING THE NUMBER OF VESSELS, DISCRIMINATING BETWEEN ARRIVALS FOREIGN AND COASTWISE, WHICH ENTERED THE PORT OF PHILADELPHIA FROM THE 1ST OF JANUARY, 1825, TO THE 1ST OF JANUARY, 1840.

Years.	Foreign.	Coastwise.	Total.
1825	484	1,195	1,679
1826	482	1,195	1,677
1827	469	1,320	1,789
1828	450	1,247	1,697
1829	374	2,210	2,584
1830	415	3,287	3,702
1831	340	3,262	3,608
1832	428	2,849	3,277
1833	474	2,573	3,047
1834	430	2,686	3,116
1835	429	3,573	4,002
1836	421	3,764	4,185
1837	409	7,776	8,185
1838	464	10,860	11,324
1839	521	11,188	11,709

ARRIVAL OF VESSELS AT THE PORT OF PHILADELPHIA DURING THE YEARS 1848, 1849, AND 1850.

	1848.	1849.	1850.
Ships	101	115	106
Barks	352	325	342
Brigs	965	888	834
Schooners	5,907	6,480	7,681
Sloops	3,629	4,486	5,200
Steamers	464	661	1,043
Barges	3,265	3,686	3,850
Boats	9,800	8,528	8,490
Total	24,483	25,169	27,555

COMPARATIVE STATEMENT OF THE NUMBER OF VESSELS, FOREIGN AND COASTWISE, WHICH HAVE ARRIVED AT PHILADELPHIA DURING FIVE YEARS.

Total in 1852	25,169
Total in 1853	30,120
Total in 1854	29,001
Total in 1855	30,223
Total in 1856	27,044

The following are abstracts of the vessels entered and cleared at the port of Philadelphia, from and to foreign ports, during the year ending June 30th, 1856; from which it appears that the total number of vessels entered under the American flag during the year was 452, and the tonnage 198,253 tons, being an increase of 32 vessels and 8432 tons over the year 1855. The total number of vessels entered under foreign flags was 125, and the tonnage 37,696 tons, an increase of 10 vessels and 17,497 tons over 1855; making a total increase over the preceding year of 42 vessels and 25,929 tons. The total number of vessels cleared under the American flag was 304, and the tonnage 110,581 tons, a decrease of 22 vessels and 7849 tonnage under 1855; and the total number of vessels cleared under foreign flags was 127, and the tonnage 38,409 tons, an increase of nine vessels and 18,362 tons, making a total decrease from that of the preceding year of 13 vessels, and an increase of 513 tons. See PENNSYLVANIA.

Countries.	Flag, American.		Flag, Foreign.	
	No. of Vessels.	Tonnage.	No. of Vessels.	Tonnage.
Swedish West Indies	2	287	..	..
Danish West Indies	2	404	1	191
Bremen	..	..	5	2,382
Holland	1	367	1	134
England	68	60,847	19	21,057
Scotland	2	56	..	..
Ireland	1	795	8	2,059
British N. A. Possessions	55	10,193	25	2,470
British West Indies	37	8,772	28	2,609
British Honduras	1	170	..	..
British Guiana	1	412	..	..
British Poss. in Africa	2	370	..	..
British East Indies	1	1,350	..	..
France on the Atlantic	8	2,666	3	752
France on the Medit'n	1	366	..	..
Spain on the Medit'n	1	177	2	325
Cuba	138	30,076	5	1,958
Porto Rico	11	2,58	6	928
Cape de Verdes	1	197	1	138
Azores	1	118	..	..
Sardinia	1	574	1	319
Tuscany	6	1,982	..	..
Sicily	16	5,124	8	1,887
Hayti	16	2,943	2	183
Mexico	1	213	..	..
New Granada	1	293	..	..
Venezuela	31	6,158	1	136
Brazil	32	8,054	1	218
Chili	1	594	..	..
Peru	11	13,236	..	..
Ecuador	8	825	..	..
Total	452	160,557	125	37,696

Countries.	Flag, American.		Flag, Foreign.	
	No. of Vessels.	Tonnage.	No. of Vessels.	Tonnage.
Swedish West Indies	5	1,409	..	..
Danish West Indies	2	738	3	508
Hamburg	..	..	1	251
Bremen	..	..	3	1,526
Holland	1	500	1	218
Dutch West Indies	..	..	1	94
Belgium	1	457	1	299
England	46	42,096	17	20,115
Scotland	1	390	1	283
Ireland	5	2,681	9	3,148
Gibraltar	1	198	..	..
Canada	2	1,435	1	335
Other British N. A. Poss.	19	6,116	58	7,176
British West Indies	55	11,736	19	1,816
British Guiana	1	2,114	1	118
British Poss. in Africa	2	370	..	..
British East Indies	1	731	..	..
France on the Atlantic	3	1,043	2	480
France on the Med'n	2	587	..	..
French West Indies	1	243	..	..
Philippine Islands	1	847	..	..
Cuba	32	19,762	5	1,178
Porto Rico	8	53	..	..
Madeira	1	197	..	..
Hayti	7	1,248	1	175
Central Republic	1	35	..	..
New Granada	1	139	3	684
Venezuela	25	6,727	..	..
Brazil	25	6,228	..	..
Uruguay	2	448	..	..
Buenos Ayres	11	1,868	..	..
Total	304	110,581	127	38,409

Philippine Islands, a large and important group in the Asiatic Archipelago, forming its northern division, and next to Cuba the most valuable colonial possession of Spain, chiefly between lat. 5° 32' and 19° 38' N., and long. 117° and 127° E., having north and east the Pacific Ocean, west the China Sea, and south the seas of Sooloo and Celebes. There are at least 1200 islands, great and small. Principal islands, Luzon, Mindano, and Palawan, with Mindoro, Panay, Marindique, Negros, Zebu, Bohol, Leyte, Samar, Masbate, and many of less size. Total area estimated at 120,000 square miles. The Spanish dominion is stated to extend over only 52,148 sq. miles. Population, in 1850, 3,815,878, consisting of Europeans, native whites, the Papuan negro race, and independent tribes, Malay Indians, half castes, and Chinese. The islands are of volcanic formation, and contain a chain of active volcanoes. Earthquakes also are of frequent occurrence. The group is within the range of the monsoons, and violent hurricanes are common. From May to September the

western coasts are deluged with rain, while the October monsoon brings rain to the eastern coasts, at other seasons dry. The high temperature and abundance of moisture produce a luxuriant vegetation; so that they are capable of yielding all kinds of colonial, and probably European produce. Rice, millet, maize, sugar, indigo, hemp, tobacco, coffee, and cotton, are raised; and sago, cocoa-nuts, bananas, cinamon, betel, numerous fine fruits, and timber for ship-building are among the products. Buffaloes and most of the domestic animals common in Europe are reared. There are no predaceous quadrupeds; the cayman is found in the rivers. Pearls, pearl-oyster shell, the sea-slug, edible birds' nests, and sapan-wood, are important articles of export hence to China. Domestic weaving is pretty generally carried on by the females, and straw hats, cigar cases, and earthen-wares, are made; but the chief manufacture is that of "Government Manilla" cigars, which occupies 2000 hands at a royal factory in Manilla. The wretched colonial policy of Old Spain excluded all for-

eign ships and Chinese settlers from these islands, and the trade with the Spanish dominion in America was also confined to that conducted annually by a single ship. But such restrictions have vanished since the revolution, and the colony is now making commensurate progress toward prosperity. In 1842, 149 ships, aggregate burden 46,869 tons, entered, and 162 do., burden 50,226, cleared, at the different ports. Imports amounted in value to £900,080, one-third from England, and more than another third from China, the United States, and British India. Exports amounted in value to £974,160, chiefly sent to England, Spain, the United States, China, and Australia. Manilla (which see) is the principal seat of the trade, and also the seat of the government, it being the residence of the captain general. In each of the larger islands is a lieutenant governor; and each of the 30 provinces, governed by an alcalde, is divided into pueblos, or communes. The Roman Catholic religion has been extensively diffused among the Malay population. Public revenue is derived chiefly from duties on exports and imports, the tobacco monopoly, and a capitation tax, which in 1837 was paid by 1,805,142 adults, of whom 901,924 belonged to the island Luzon. Armed force amounts to about 7000 men, one-tenth Spaniards, and the rest Malays. These islands were discovered by Magalhaens in 1521, and settled by the Spaniards in the reign of Philip II., after whom they were named.

The commercial intercourse generally is under the laws and regulations of the mother country, but, in fact, is in some degree dependent upon the local authority, the power being with the governor to order the departure from the colony of any person who may become obnoxious to himself or his government. The regulations are fixed for an indefinite time; amendments are constantly proposed, and, for several years past, a total revision of the tariff of duties on foreign produce has been, from time to time, discussed. Any such changes, though they may be proposed and discussed in Manilla, can only be made law by the home government. In fact, the reins are held very tightly in Madrid, and the governor general is constantly made to feel his dependence upon the minister in power. Citizens of the United States enjoy the privileges of all other foreigners. There is no distinction made in the privileges or restrictions permitted or imposed on the commerce of foreign nations. The port charges consist of tonnage dues, river-cleaning dues, and light dues. The tonnage dues are 25 cents per ton register, if the vessel discharges or takes in cargo; and one-half, or 12½ cents per ton, if she departs without having broke bulk or received cargo. A vessel may land specie without being subjected to the full dues. The river dues, for the support of a mud-boat, are: on a vessel discharging and loading any cargo, 6½ cents per ton; entering in ballast and sailing with cargo, or *vice versa*, 3½ cents per ton; entering with cargo and sailing with same, 3½ cents per ton; entering and sailing in ballast, nothing. The light dues are, on all foreign vessels, 6½ cents per ton register. Spanish vessels pay one half these rates. The transshipment of goods is strictly prohibited. In order to effect a transshipment, the goods must be entered in deposit, actually brought on shore to the custom-house, and then shipped under fresh documents from deposit. There is but one port, this of Manilla, open to foreign shipping, and foreigners are excluded from all internal and coasting trade.

The moneys, weights, and measures in common use in Manilla are authorized by the laws of Spain, but can not be said to correspond with those of the mother country, inasmuch as in Spain the weight and measures are not the same throughout the kingdom. The moneys current here are specie only. Of gold, the doubloon of Spain, Mexico, and the republics of South America, of full weight, is current at \$16. The smaller coins—halves, quarters, and eighths—at their proportionate value. Of silver, the dollar of Spain, Mex-

ico, and the other South American republics, of full weight, is current at \$1 United States currency. The relative smaller coins pass at their relative value. Copper coin is of three sizes; 1 cuarto, 2 cuartos, and 4 cuartos; 160 cuartos are equal to a dollar. Accounts are kept by Spanish merchants in dollars, reals, and cuartos; 20 cuartos equal 1 real; 8 reals equal 1 dollar. Foreigners generally keep their accounts in dollars and cents. The value of these coins is about the same in the United States as here; but not being fixed by the United States laws, there is a fluctuation which can not be reduced to regular limits.

The weights in common use are piculs, quintals, arrobas, and pounds. The pound is about 1½ per cent. heavier than that of the United States. 25 pounds equal 1 arroba, or, at the United States standard, about 25½ pounds; 4 arrobas=1 quintal=101½ lbs.; 5½ arrobas=1 picul=140 lbs. The measures are long measure—inches, feet, yards, fathoms, miles, and leagues. 12 inches make 1 foot; 3 feet make one yard; 2 yards make 1 fathom; 1111 fathoms and 6 inches make 1 mile; 3 miles make one league. The yard (or vara) in use here is about 33 inches of the United States. Grain is usually sold in the country by the cavan. 4 apatanes equal 1 chupo; 8 chupos equal 1 ganto; 25 gantos equal 1 cavan. These differ, however, in the different provinces. In Manilla, a cavan of rice weighs 127 lbs.; of coffee, about 52 lbs.; of wheat, about 150 lbs. A tinaja of oil contains 16 gantos; of wine, 17 gantos.

The rate of insurance to the United States from Manilla is charged 3 to 3½ per cent.; but little is done, however, there being but one local insurance office with a trifling capital, the policies issued by which contain so many exceptions as to make them of very little value. The shipments of produce to the United States are covered by insurance made in the United States or in England. Freight varies constantly, being governed by the supply of tonnage and quantity of produce waiting shipment. At present, \$20 per ton of 40 cubic feet of hemp and other measurement goods, and \$12 or \$13 per ton of 2240 pounds of sugar, are current. These are considered full rates. Commission is charged 2½ per cent. on all purchases for the United States. When a broker is employed he is paid a brokerage commission of 6½ cents per picul on hemp, 6½ per picul on sugar, 3½ cents per picul on rice, and on other articles as may be agreed upon. All articles of produce are bought for cash, and paid for on delivery. Oftentimes payment is made in part before delivery, and in the hemp trade the advances made are very large. The rate of exchange between this and the United States is not quoted, there being no transactions in the regular course of trade. All exchange transactions per American account (and the greater portion of the exports to the United States is paid for in bills) are made through England, bills being drawn here on London bankers, by virtue of credits granted by the bankers themselves in London, or by their agents in the United States. The average rate of exchange during the past year has been, for bills on London, drawn at six months' sight, 5s. 0¼d. per dollar. The par of exchange is about 4s. 2d., the same as in the United States; the currency in silver being about equivalent that of one country with the other. The dollar current here, being of the Mexican and South American currency, is worth one hundred cents in the United States.

Duties on exports are, on hemp, 2 per cent.; on tortoise shell, mother-of-pearl shell, and ratans, 1 per cent. (these three articles last named are, in fact, not productions of this island, but brought from the Sooloo Islands, and pay 1 per cent. import duty); all other articles, 3 per cent. On all imports direct from the United States, 14 per cent. There are no internal taxes of any kind on produce. The rates of wages in agricultural pursuits are very low, generally paid in produce sufficing for the subsistence of the laborer, and difficult

to be reduced to a money standard. Artisans obtain 50 cents per day, and if expert workmen as high as \$1, or even \$1 50 per day. Laborers in and about Manila, 25 cents to 37½ cents per day. On board ships in the bay they are paid 62½ cents per day. At these rates labor is much dearer than in the Atlantic cities of the United States—the quantity and quality of the work done by a Manila workman comparing very unfavorably with that of a man in New York.—See MANILLA, SPAIN. For further information refer to *Quarterly Review*, vii. 235, xvii. 530, xxxv. 323.

The chief exports from Manila (the seat of government, and the chief port of the islands) are hemp, sugar, sapan-wood, cigars, cordage, indigo, coffee, rice, hides, mother-of-pearl shell, almaciga, grass-cloth, and tortoise-shell. The principal imports are cotton fabrics, silks, woollens, haberdashery, drugs, clocks, jewelry, etc.

The leading exports to the United States in 1844 were:

Sugar.....	francs	1,080,000	=	\$205,200
Coffee.....	"	149,000	=	28,310
Hemp.....	"	1,444,000	=	274,360
Indigo.....	"	384,000	=	72,960
Hides.....	"	108,000	=	20,520

QUANTITIES OF HEMP AND SUGAR EXPORTED FROM MANILLA TO THE UNITED STATES AND EUROPE, RESPECTIVELY, FROM 1844 TO 1853.

	HEMP.									
	1844.	1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.
To the United States.	89,132	45,283	92,696	100,285	123,040	113,404	102,194	143,133	220,514	204,534
To Europe.....	5,934	7,202	16,500	16,739	20,543	39,948	21,216	30,805	27,743	16,934
Piculs (133½ lbs. each)	95,066	102,400	109,196	117,024	143,583	153,352	123,410	173,938	248,257	221,518

	SUGAR.									
	1844.	1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.
To the United States.	90,106	72,100	35,050	91,435	77,350	89,122	78,489	116,412	143,140	194,115
To Europe.....	127,420	103,000	176,208	111,447	68,402	184,839	211,774	127,715	123,732	198,922
Piculs (133½ lbs. each)	217,516	175,100	211,258	202,882	145,738	273,961	290,254	244,137	166,932	393,117

The average price of hemp at Manila is from \$7 to \$7 06½ per picul, though in 1854-'55 it ascended as high as \$10, owing to the Eastern war. The average price of sugar is \$3 37½.

The preceding table shows that the quantity of hemp exported from Manila to the United States in 1853 amounted to 204,534 piculs=27,277,866 pounds; and the quantity of sugar to 194,195 piculs=25,892,667 pounds. The following condensed summary exhibits the total export trade from Manila to the United States during the same year: Hemp, 204,534 piculs; sugar, 194,195 piculs; indigo, 9050 quintals; sapan-wood, 8602 piculs; coffee, 172½ piculs; mother-of-pearl shell, 712 piculs; hide cuttings, 3291 piculs; ratans, 763 piculs; hides, 4,886 piculs, grass-cloth, 19,598 piculs; gum almaciga, 2556 piculs; tortoise-shell, 214 cattie; cigars, 148 thousand. The merchandise above specified was floated in 41 vessels; of which 21 cleared for New York, 17 for Boston, 2 for Salem, and 1 for Philadelphia. The preceding summary exhibits the general character of the imports into the United States from the Philippine Islands. In the official reports published at Manila the trade with San Francisco is given separately from that with the United States. During the year under review (1853), the exports to California consisted of: Sugar, 3976 piculs; coffee, 7548 piculs; rice, 16,876 piculs; cordage, 2285 piculs; cigars, 812 thousand; paddy, 2949 cavanas; panocha, 1818 baskets; Indian corn, 8922 lbs.; garlic, 46 piculs; lime, 78 cavanas; hats, 1200. The total exports from Manila to all countries in 1853 were: Sugar, 566,371 piculs; hemp, 222,689 piculs; sapan-wood, 31,963 piculs; rice, 303,902 piculs; cordage, 12,119 piculs; coffee, 18,080 piculs; cigars, 79,311 thousand; indigo, 9123 quintals; mother-of-pearl, 2040 piculs; hides, 5874 piculs; hide cuttings, 3697 piculs. In cotton goods (the principal import of the Philippine Islands) England and the United States are the chief competitors.

Formerly, if the master of a vessel touching at these islands desired to ship native sailors, he was obliged to give his bond for their return to Manila. This, it is

IMPORTS AND EXPORTS OF THE PHILIPPINE ISLANDS IN 1844.

Countries	Imports.	Exports.	Total.
	France	France	France
China.....	8,944,000	5,843,000	14,827,000
England.....	4,234,000	2,759,000	6,993,000
Singapore.....	4,375,000	476,000	4,851,000
United States.....	1,122,000	8,335,000	4,457,000
Spain.....	1,018,000	2,970,000	3,988,000
Java and Molucca.	1,119,000	620,000	1,739,000
Australia.....	349,000	925,000	1,274,000
East Indies.....	146,000	984,000	1,135,000
France.....	290,000	461,000	751,000
Soulon Isles.....	340,000	281,000	621,000
Belgium.....	109,000	304,000	413,000
Hanse Towns.....	32,000	330,000	362,000
Cape of Good Hope	267,000	....	267,000
South America.....	23,000	....	23,000
Total francs.....	22,368,000	19,333,000	41,701,000
Dols. at 19 c. per fr.	4,249,920	3,673,270	7,923,190

Imports.—National commerce, \$125,011; foreign commerce, \$3,176,325; imports for deposit, \$718,631.

Exports.—National commerce, \$3,834,069; foreign commerce, \$388,204; exports from deposit, \$436,638. Total imports, \$4,019,967; total exports, \$4,608,911.

The Manila picul is estimated at 133½ lbs.

obvious, was but a mere matter of form, and hence but few of the sailors thus taken away ever returned. After the discovery of gold in California, it was found extremely difficult to procure sailors at any of the Malayan islands; and this difficulty was increased by a new regulation at the Philippines, which requires the consignee to sign the captain's bond for the return of such sailors as should be shipped at Manila. This the consignees are, in most cases, unwilling to do. Hence the trade between the United States and the Philippines remains so long stationary. For a number of years the United States has enjoyed about one fifth of the entire trade of the islands. Were this difficulty in regard to the employment of native sailors removed, this one fifth of the trade would in a short time ascend to one half.

In ship-building at Manila, the timber used is all the growth of the country. The timbers and knees are of "molare;" planking above water is of "mangachapuy," and below of "banaba" in the northern provinces, and "batitanan" in the south; deck beams, molare, or "dougou;" keel of dougon, and waterways of the same. All these woods are very excellent, and, if well seasoned before using, are very durable. The molare is a hard, close-grained, strong wood, but is very heavy; dougon is next in value, and the mangachapuy ranks third. There are many other kinds of wood which are used, according to the caprice of builders. The cost where grown is trifling, but if brought to Manila the addition of freight makes it expensive. The preservation or seasoning of ship-timber is not attended to here; and there are no depositories of ship-timber, properly speaking, though it may always be had in sufficient quantities for repairs to vessels frequenting the islands.

Port-charges.—Vessels arriving in ballast, and not breaking bulk, pay 12½ cents per ton (register tonnage). If cargo is landed or stripped, 25 cents per ton. Mud-machine, 6½ cents per ton; light-house dues, 6½ cents per ton. Spanish vessels pay only one half of the above rates.—*United States Commercial Relations.*

COMMERCE OF THE UNITED STATES WITH MANILLA AND PHILIPPINE ISLANDS, FROM OCTOBER 1, 1820, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	\$1,359	\$209,964	\$211,323	\$114,861	\$190,000	....	632	....
1822.....	....	11,799	11,799	....	....	....	370	....
1823.....	5,449	41,275	46,724	168,285	....	....	370	....
1824.....	8,958	210,562	219,520	168,472	186,000	\$3,000	804	....
1825.....	23,169	185,554	208,723	229,371	122,500	30,500	3,067	119
1826.....	14,133	53,207	72,340	348,375	30,000	12,215	724	....
1827.....	....	....	....	150,813	....	26,685	....	....
1828.....	19,914	141,938	161,752	60,381	101,000	....	809	....
1829.....	10,802	66,430	77,232	209,206	20,032	....	594	....
1830.....	39,129	54,539	93,668	384,887	....	16,243	458	....
Total...	\$122,913	\$980,168	\$1,103,081	\$1,809,651	\$599,552	\$68,648	1,826	119
Sept. 30, 1831.....	\$15,994	\$16,830	\$32,824	\$348,995	\$3,000	\$1,220	249	....
1832.....	20,906	113,414	134,320	332,280	59,000	114	1,286	....
1833.....	1,021	8,376	9,397	504,498	....	....	994	....
1834.....	3,662	12,257	15,919	283,085	....	....	222	....
1835.....	38,947	50,152	89,099	413,815	48,000	....	1,972	....
1836.....	7,361	52,672	60,033	803,330	15,000	465	1,908	....
1837.....	....	....	....	1,346,435	....	....	....	....
1838.....	33,214	140,303	242,517	386,528	148,460	....	1,780	....
1839.....	38,553	38,255	136,808	876,477	36,200	1,026	1,674	....
1840.....	90,539	30,927	121,516	450,251	30,000	....	809	....
Total...	\$370,247	\$472,186	\$842,433	\$5,746,244	\$335,660	\$2,825	10,594	....
Sept. 30, 1841.....	\$75,450	\$187,336	\$262,786	\$733,906	\$165,344	....	3,794	....
1842.....	235,732	100,444	336,176	772,372	94,536	....	4,797	....
9 mos., 1843.....	57,743	54,435	112,178	409,290	48,006	....	1,401	....
June 30, 1844.....	91,769	131,228	222,997	724,811	129,335	....	6,233	....
1845.....	119,263	35,315	154,578	633,059	31,200	....	3,230	....
1846.....	100,954	9,285	110,239	865,866	9,008	....	3,030	....
1847.....	32,480	44,760	77,240	494,056	44,760	....	3,189	....
1848.....	36,949	13,543	50,492	1,197,027	10,332	8,520	3,318	....
1849.....	137,803	8,669	146,537	1,127,114	....	5,182	3,826	....
1850.....	16,817	1,450	18,267	1,386,806	....	4,423	3,165	2592
Total...	\$905,025	\$586,465	\$1,491,490	\$8,294,367	\$532,521	\$18,125	35,983	2592
June 30, 1851.....	\$125,544	\$7,000	\$132,544	\$1,254,688	\$2,200	192	15,134	4805
1852.....	211,791	9,927	221,718	1,522,646	....	523	11,639	6362
1853.....	64,375	1,000	65,375	2,465,083	....	....	20,598	2003
1854.....	27,852	46,650	74,502	2,965,282	42,522	....	16,798	843
1855.....	94,203	33,708	127,911	2,867,441	13,420	109,455	12,430	600
1856.....	204,608	64,689	269,297	2,926,870	127,303	....	21,786	363

* Nine months to June 30, and fiscal year begins July 1, 1843.

Phosphorus, a substance of a light amber color, and semi-transparent; but, when carefully prepared, nearly colorless and transparent. When kept some time, it becomes opaque externally, and has then a great resemblance to white wax. It may be cut with a knife, or twisted to pieces with the fingers. It is insoluble in water; its specific gravity is 1.77. When exposed to the atmosphere, it emits a white smoke, and is luminous in the dark. When heated to 148° it takes fire, and burns with a very bright flame. When phosphorus is inflamed in oxygen, the light and heat are incomparably more intense—the former dazzling the eye, and the latter cracking the glass vessel.—*Thomson's Chemistry*.

Piano-forte. Invented by J. C. Schroeder, of Dresden, in 1717. He presented a model of his invention to the court of Saxony; and some time after, G. Silverman, a musical-instrument maker, began to manufacture piano-fortes with considerable success. The invention has also been ascribed to an instrument-maker of Florence. The square piano-forte was first made by Freiderica, an organ-builder of Saxony, about 1758. Piano-fortes were made in London by M. Zumpe, a German, 1766, and have been since greatly improved by others here. They are now extensively manufactured in Boston, New York, Philadelphia, Baltimore, Albany, Buffalo, Cincinnati, Chicago, and St. Louis, and other cities of the United States.—For "Origin of the Piano-forte" see *Westminster Review*, xxxii. 306.

Piastres, or **Dollars**, Spanish and American silver coins in very extensive circulation. They are used in Spain, Italy, Turkey, South America, the East Indies, etc., varying in value in every country.—See **COINS**.

Pickles are various kinds of vegetables and fruits preserved in vinegar. The substances are first well cleaned with water, then steeped for some time in brine,

and afterward transferred to bottles, which are filled up with good vinegar. Certain fruits, like walnuts, require to be pickled with scalding-hot vinegar; others, as red-cabbage, with cold vinegar; but onions, to preserve their whiteness, with distilled vinegar. Wood vinegar is never used by the principal pickle-manufacturers, but the best malt or white-wine vinegar, No. 22 or 24. Kitchener says that, by parboiling the pickles in brine, they will be ready in half the time of what they require when done cold. Cabbage, however, cauliflowers, and such articles, would thereby become flabby, and lose that crispness which many people relish. When removed from the brine, they should be cooled, drained, and even dried, before being put into the vinegar. To assist the preservation of pickles, a portion of salt is also added, and likewise, to give flavor, various spices, such as long pepper, black pepper, white pepper, allspice, ginger, cloves, mace, garlic, mustard, horseradish, shallots, capsicum. When the spices are bruised they are most efficacious, but they are apt to render the pickle turbid and discolored. The flavoring ingredients of Indian pickle are Curry powder mixed with a large proportion of mustard and garlic. Green peaches are said to make the best imitation of the Indian mango.

Pilchards, fishes closely resembling the common herring, but smaller, and at the same time thicker and rounder. They are rarely found on the British shores, except on the coasts of Cornwall and Devon, particularly the former, where they are taken in great numbers from the middle of July to the end of November, or even the middle of December. It is a saying of the Cornish fishermen, that the pilchard is the least fish in size, most in number, and greatest for gain, taken from the sea.

Pilchard Fishery.—This is carried on along the British coasts of Cornwall and Devon, from the Bolt Head in the latter, round by the Land's End to Padstow and

Bossiney in the former. Its principal seats are St. Ives, Mount's Bay, and Mevagissey. The fish usually make their appearance in vast shoals in the early part of July, and disappear about the middle of October; but they sometimes reappear in large quantities in November and December. They are taken either by seines or by drift-nets, but principally, perhaps, by the former. A seine is a net, varying from 200 to 300 fathoms in length, and from 10 to 14½ feet in depth, having cork buoys on one edge and lead weights on the other. Three boats are attached to each seine, viz., a boat (*seine-boat*) of about 15 tons burden, for carrying the seine; another (*follower*) of about the same size, to assist in mooring it; and a smaller boat (*lurker*) for general purposes. The number of hands employed in these three boats varies from about 13 to 18, but may be taken at an average at about 16. When the shoals of fish come so near the shore that the water is about the depth of the seine, it is employed to encircle them; the fishermen being directed to the proper place for casting or shooting the nets by persons (*huers*) stationed for that purpose on the cliffs and in the boats. The practice is to row the boat with the seine on board gently round the shoal; and the seine being, at the same time, thrown gradually into the water, assumes, by means of its buoys and weights, a vertical position, its loaded edge being at the bottom, and the other floating on the surface. Its two ends are then fastened together, and, being brought into a convenient situation, it is moored by small anchors or grapnels; sometimes, however, one or two smaller seines are employed to assist in securing the fish. At low water the inclosed fish are taken out by a *tuck-net*, and carried to the shore. A single seine has been known to inclose at once as many as 4200 hogsheads (1200 tons) of fish! But this was the greatest quantity ever taken, and it is but seldom that as many as 1200 hogsheads are caught at a time. The "take," in fact, depends on so many accidental circumstances, that while one seine may catch and cure in a season from 1000 to 2000 hogsheads, others in the neighborhood may not get a single fish. In some places the tides are so strong as to break the seines and set the fish at liberty. When the quantity inclosed is large, it requires several days to take them out, as they must not be removed in greater numbers than those who salt them can conveniently manage. Drift-nets are usually about half a mile in length, by about 4½ fathoms in depth; they are shot in the open sea, and entangle the fish in their meshes in the same way as the herring-nets. The fish thus taken are said to be superior to those taken by the seine, though it be doubtful, from their being strangled in the nets, whether they are so good for curing. As soon as the fish are brought on shore, they are carried to cellars or warehouses, where they are piled in large heaps, having a sufficient quantity of salt interspersed between the layers. Having remained in this state for about 35 days, they are, after being carefully washed and cleaned, packed in hogsheads, each containing, at an average, about 2600 fish; they are then subjected to a pressure sufficient to extract the oil, of which each hogshead yields, provided the fish be caught in summer, about three gallons; but those that are taken late in the season do not yield above half this quantity. This oil usually sells for from 12 to 15 per cent. under the price of brown seal oil. The broken and refuse fish and salt are sold to the farmers, and are used as manure with excellent effect. The skimmings which float on the water in which the pilchards are washed are called *dregs*, and are chiefly sold as grease for machinery. The fresh fish in a hogshead of pilchards weigh about 6 cwt., and the salt about 3½ cwt.; but the weight of the hogshead when cured and pressed is reduced to about 4½ cwt.; including the weight of the cask, from 20 to 24 lbs. Four-fifths of the persons employed on shore in the salting, curing, packing, etc., of the fish are women.—Dr. PARIS's *Guide to Mount's Bay*.

Pilots and Pilotage. The name of pilot or steersman is applied either to a particular officer, serving on board a ship during the course of a voyage, and having charge of the helm and the ship's route; or to a person taken on board at any particular place, for the purpose of conducting a ship through a river, road, or channel, or from or into a port. Masters and mates of merchant vessels, after having passed an examination before legally constituted authorities, and possessing a certificate to that effect, may pilot their own vessels within the prescribed limits for which they have passed, without being liable to any penalty. In all other cases, when a master is by law subject to a penalty for not taking a pilot, he is bound to do so when he has the opportunity; and after the pilot is taken on board, the master has no longer any command of the ship, nor is he responsible for the management of her while she continues in the district for which the pilot is authorized to act. When beyond that district, the master again resumes the government of the vessel, the pilot being then no longer liable, although for his own convenience he may still remain on board. In such case he is only to be considered as a passenger, and is not entitled to any remuneration for whatever service he may choose to perform on the voyage, beyond that for which he was originally engaged; but should he remain on board at the request of the master, he is entitled, besides his pilotage, to a further remuneration per day or per month, according to the rules of the respective ports, from the day when he has passed the limits of his license to the day of his return to the port from which he was taken on board. If a master of a vessel in any district within which pilots are appointed to act (usually denominated "Pilots' Water") should, except under the circumstances before stated, refuse the service of a pilot offering to come on board, he immediately renders himself liable to his owners, freighters, or insurers for any damage that may occur to the vessel or cargo, arising from the want of such service. When the law does not compel a master to take a pilot on board, and he nevertheless, of his own discretion, chooses to do so, the pilot is considered to be the servant of the owners, who under such circumstances would be responsible to strangers for the management of the ship during the time he continued in charge. If the master at a foreign port attempt to obtain a pilot and fail, and then, in the exercise of his best discretion, endeavor to enter the port and fail, the insurer is not discharged. If the vessel approach a port in the night, he must make signals for a pilot, and wait a reasonable time for one; and if he attempt to enter the port without one, except in case of extreme necessity, the insurers are discharged. Pilotage constitutes a lien upon the vessel, and may be prosecuted in admiralty. But the pilot must be employed by some person rightfully in possession of the vessel. A pilot can not recover for piloting into an enemy's port.

Great Britain.—Under most charter parties, with the exception of those made for vessels in the coal trade in England, the charge for pilotage is paid by the charterers. Many ports enjoy separate and distinct jurisdictions for the appointment and government of pilots, and the regulations of the rates of pilotage. These jurisdictions are exercised by corporations and other bodies, the privileges of which have been granted either by ancient charters or by parliamentary. Among the many corporations so established, the most important are those of the Trinity House of Deptford Strand, whose jurisdiction is the most extensive; and of the Trinity Houses of Hull and Newcastle. The bodies are authorized within their districts to determine the qualifications of pilots, license them, make regulations for their government, fix and alter pilotage rates, and arrange the limits of the pilotage districts, subject, however, to the special provisions contained in the Merchants' Shipping Act of 1854. The regulations of which are given in summary, as follows:

It is questionable whether the Trinity House may revoke a pilot's license without hearing him; but if, after hearing him, it revoke his license, its decision is binding. The application of the Merchants' Shipping Act of 1854 applies only to the United Kingdom.

Powers of Pilotage Authorities.—Every pilotage authority shall retain all powers and jurisdiction which it now possesses, so far, and only so far, as they are consistent with the provision of the general act. Every pilotage authority has the power to exempt ships from being compelled to employ pilots; also to license pilots; to make regulations as to pilot-boats; to make regulations for the government of pilots; to alter rates of pilotage; to limit pilotage districts—all being within their district.

Power of Appeal to Board of Trade.—If the greater number of qualified pilots belonging to any port, or the local marine board, or any number of owners of ships, masters or insurers, consider themselves aggrieved by any regulations enforced by the pilotage authority, they may appeal to the Board of Trade; and the consequent decision shall be deemed conclusive.

Spain.—No one can be a pilot or officer of a merchant ship without having obtained a license. In case of decease, absence, or illness of the captain, the pilot takes his place, and incurs all his responsibility. The pilot can not change the course, unless the captain agrees to it. In case of difference of opinion, the pilot shall explain his reasons to the other officers; and if the captain persists in his orders, the pilot shall enter his protest in the navigation book.

Russia.—The pilot should look after the vessel, the embarkation and debarkation of merchandise, keep a registry of all that passes on board and of the observations. He owes obedience only to the captain, and should never quit the vessel when the captain is absent unless forced to do so.

Portugal.—The pilot who from ignorance, negligence, or design, loses, or exposes a vessel to damage, is bound to repair her, and is liable to be revoked and pursued by criminal process.

United States.—An act of Congress authorizes all States to make their own pilotage laws, and questions under these laws are cognizable in the State courts. No one can act as pilot, and claim the compensation allowed by law for the service, unless duly appointed. And he should always have with him his commission, which usually designates the largest vessel he may pilot, or that which draws the most water. If a pilot offers himself to a ship that has no pilot, and is entering or leaving a harbor, and has not reached certain geographical limits, the ship must pay him pilotage fees, whether his services are accepted or not. As soon as the pilot stands on deck he has command of the ship. But it remains the master's duty and power, in case of obvious and certain disability, or dangerous ignorance or error, to disobey the pilot, and dispossess him of his authority. If a ship neglect to take a pilot when it should and can do so, the owners will be answerable in damages to shippers and others for any loss which may be caused by such neglect or refusal. Pilots are answerable for any damage resulting from their own negligence or default, and have been held strictly to this liability. The owner is also liable on general principles for the default of the pilot, who is his servant.

The laws passed by the United States concerning pilots are comprehended in the following: August 7, 1789—"That all pilots in the bays, inlets, rivers, harbors, and ports of the United States shall continue to be regulated in conformity with the existing laws of the States respectively wherein such pilots may be, or with such laws as the States may respectively hereafter enact for the purpose, until further provision shall be made by Congress." March 2, 1837—"That it shall be lawful for the master or commander of any vessel coming into or going out of any port situated upon

waters which are the boundary between two States, to employ any pilot duly licensed or authorized by the laws of either of the States bounded on the said waters, to pilot said vessels to or from said port; any law, usage, or custom to the contrary notwithstanding."

Maine.—Pilots are appointed by the Governor and Council upon the recommendation of a majority of the ship-owners and masters in the port for which they are appointed. Bonds are required to the amount of \$5000 for the faithful discharge of the duties, and the pilots are liable for damages from neglect or unskillfulness. Any master may pilot his own vessel.

New Hampshire.—The appointment of pilots is the same as in Maine. Pilots must take charge of vessels drawing over nine feet, except coasting vessels. Bonds for \$1000 are required for a faithful performance of duties. Masters may pilot their vessels when outward bound, and pay no pilotage. But vessels inward bound must pay half pilotage if they refuse a pilot, unless the vessel be within the light-house before a pilot offers, in which case no pilotage is due unless a pilot is employed. The Governor and Council regulate the fees for pilotage, and suspend or remove pilots for misconduct.

Massachusetts.—The Governor appoints pilots, except for the ports of Boston, where two commissioners, and New Bedford, where five commissioners, have the appointing power. The pilots give bonds for \$2000 for the faithful performance of their duties. All vessels, except fishing-vessels and coasting vessels of less than two hundred tons, and vessels trading within the State limits, are bound to employ pilots or pay full pilotage, unless no pilots offer before vessels have arrived within the following limits: viz., within the chops of the harbors of Salem, Marblehead, or Gloucester; within the garnet of Plymouth harbor, or within the bar of any barrel harbor, or within the entrance of Boston harbor, being a line drawn from Harding Rocks to the Outer Graves, and thence to Nahant Head. In such case the master may refuse pilot.

New York.—In this State, Sandy Hook pilots are appointed and regulated by the Pilot Commissioners, who are chosen by the Underwriters and Chamber of Commerce. Hell Gate pilots are appointed by the Governor, and subject to the regulations of the Port Wardens.

The rates of pilotage in and out of New York are as follows: For vessels drawing

14 feet or less...	Inward, \$2 44 ..	Outward, \$1 81 per foot.
14 to 18 feet ...	" 3 06 ..	" 2 12 1/2 "
18 to 21 feet ...	" 3 69 ..	" 2 75 "
21 feet or more ..	" 4 31 1/2 ..	" 3 15 1/2 "

New Jersey.—Sandy Hook pilots for the ports of Jersey City, Newark, and Perth Amboy are appointed by commissioners. The regulations do not differ materially from those enacted in regard to the New York pilots.

Pennsylvania.—Pilots for Philadelphia are appointed by a Board of Wardens. There are three classes of pilots: the first for vessels of any description; the second for vessels drawing less than twelve feet; the third for vessels drawing less than nine feet. Unlicensed pilots are subject to fine and imprisonment. New Jersey and Delaware pilots have power to act without a special license. The first qualified pilot that offers is entitled to take charge of the vessel. A second or third grade pilot may act unless a superior pilot offers before the vessel passes Reedy Island. Coasting vessels pay no half pilotage.

Delaware.—Vessels of 75 tons and upward, unless owned in Delaware, must take a pilot or pay half pilotage.

Maryland.—Pilots for the Chesapeake Bay are appointed by a Pilot Board. Pilots are divided into the same classes as in Pennsylvania. Pilots must take the nearest vessel to shore, or in the most distress. Foreign vessels must take a pilot, if one offers, or pay full pilotage.

Virginia.—Pilots are appointed by a Board. Pilots are divided into three classes, as in Pennsylvania. Vessels other than coasters must take a pilot or pay full pilotage.

North Carolina.—Pilots are appointed by commissioners for each port. Vessels pay full pilotage when refusing a pilot.

South Carolina.—Pilots are appointed by commissioners. Pilots who bring vessels into port are entitled to carry them out. Vessels pay full pilotage to the first pilot offering, whether his services are accepted or not.

Alabama.—Pilots are licensed by the harbor-master and port wardens. Vessels pay half pilotage, if pilot is not accepted.

Louisiana.—The harbor-master and port warden of New Orleans appoint pilots. There are no river pilots. Vessels pay half pilotage to the pilot if his services are not accepted. If the Balize, or regular pilots, carry the vessel to New Orleans, the compensation is a matter of agreement.

Florida.—Pilots are appointed by Pilot Commissioners. Vessels pay half pilotage, refusing a pilot, if outward bound, and full pilotage when inward bound.—See KENT'S *Commentaries*, vol. iii.; PARSONS'S *Mercantile Law*; *Mercantile and Maritime Guide*; BLUNT'S *Shipmaster's Assistant*.

Pimento, Allspice, or Jamaica Pepper (Fr. *Poire de Jamaïque*; Ger. *Nelkenpfeffer*; It. *Piment*), the fruit of the *Myrtus pimenta*, a beautiful tree which grows in great plenty on the hills on the north side of Jamaica. The berries are spherical, and, when ripe, of a black or dark purple color. But, as the pulp is in this state moist and glutinous, the berries are plucked when green; and being exposed in the sun to dry, they lose their green color, and become of a reddish brown. They are packed in bags and hogsheds for the European market. The more fragrant and smaller they are, the better are they accounted. They have an aromatic, agreeable odor, resembling that of a mixture of cinnamon, cloves, and nutmegs, with the warm, pungent taste of the clove. Pimento is used in medicine, but its principal use is in the seasoning of soups and other dishes. "The returns," says Mr. Bryan Edwards, "from a pimento walk in a favorable season are prodigious. A single tree has been known to yield 150 pounds of the raw fruit, or 100 pounds of the dried spice, there being commonly a loss in weight of one-third in curing; but this, like many other of the minor productions, is exceedingly uncertain, and perhaps a very plenteous crop occurs but once in five years. The price in the market, as may be supposed, fluctuates accordingly; but its average for some years past may be set down at 14 cents per pound."—Vol. ii. p. 372, ed. 1819.

IMPORTS OF PIMENTO INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Pounds.	Value.
Hamburg.....	91,519	\$8,246
British N. A. Possessions.....	18,714	1,225
British West Indies.....	4,715,309	337,647
Spain on the Mediter'n.....	375	36
Cuba.....	15,741	1,017
Mexico.....	63,311	3,787
Venezuela.....	979	64
Totals.....	4,906,028	\$852,622

Pin, in Commerce, a little necessary instrument, made of brass wire, chiefly used by women in adjusting their dress. When the wire is received in the manufactory, it is wound off from one wheel to another, and passed through a circle of a smaller diameter in a piece of iron. Being thus reduced to its proper size, it is straightened by drawing it between iron pins fixed in a board in a zigzag manner. It is afterward cut into lengths of about four yards, and then into smaller pieces, every length being sufficient for six pins. Each end of these is ground to a point by boys, each of whom sits with two small grindstones before him,

turned by a wheel. Taking up a handful, he applies the wires to the coarsest of the two stones, moving them round, that the points may not become flat. He then gives them a smoother and a sharper point on the other stone. A lad of twelve years of age can point 16,000 in an hour. When the wire is pointed a pin is taken off from each end, till it is cut into six pieces. The head is made solid by the present process; but by the old method it is a separate piece, and is made as follows: One piece of wire is with rapidity drawn round another, and the interior one being drawn out, leaves a hollow tube between the circumvolutions. It is then cut by shears, every two turns of the wire forming one head. These are softened by throwing them into iron pans, and placing them in a furnace till they are red hot. As soon as they are cold they are distributed to children, who sit with anvils and hammers before them. These they work with their feet, by means of a lathe. They take up one of the lengths, and thrust the blunt end into a quantity of heads which lie before them; then catching one at the extremity, they apply it immediately to the anvil and hammer, and by a motion or two of the foot the point and head are fixed together, in much less time than can be described, and with a dexterity that can only be acquired by practice. The pins are thrown into a copper, containing a solution of tin and wine lees. Here they remain for some time, and when taken out their brass color has become changed to a dull white. In order to give them a polish, they are now put into a tub containing a quantity of bran, which is set in motion by turning a shaft that runs through its centre; and thus, by means of friction, the pins become entirely bright. They are now separated from the bran, which is performed by a mode exactly similar to the winnowing of corn; the bran flying off, and leaving the pin behind it fit for sale.—E. A.

The manufacture of pins was commenced in the United States between 1812 and 1820. Among the first established were those at Bellevue and Greenwich, New York. Mr. Lemuel William Wright, of Massachusetts, obtained patents in the United States and in England, and commenced the manufacture at Lambeth, London. John J. Howe obtained patents in 1832-1834, in the United States and in England, and established the Howe Manufacturing Company in New York, which was afterward removed to Birmingham, Connecticut. Mr. Samuel Slocum obtained another patent, and in 1838 established a manufactory of pins at Poughkeepsie, New York. The "American Pin Company" has been established for some years at Waterbury, Connecticut, and is the leading manufactory of the kind in the United States. The improvements produced in the United States have been for several years adopted in England and other parts of Europe.—See *American Journal of Science*, xxxviii. 209; HUNT'S *Merchants' Magazine*, xxv. 641; *Economy of Manufactures*, by BABBAGE.

VALUE OF IMPORTS OF PINS INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30TH, 1856.

Whence imported.	Pins in Packs and otherwise.
Hamburg.....	\$204
Bremen.....	327
Belgium.....	2,443
England.....	53,243
Scotland.....	55
France on the Atlantic.....	8,995
Total value.....	\$40,255

Pinchbeck (Ger. *Tombak*; Du. *Tombak*; Fr. *Tombac*, *Similor*; It. *Tombacco*; Sp. *Tambac*, *Tumbaga*), a name given to one of the many imitations of gold. By melting zinc in various proportions with copper or brass, some alloys result, the colors of which approach more or less to that of gold. This composition is frequently employed as a substitute for gold, in the formation of watch-cases, and various other articles of a like description. Pinchbeck is sometimes called *Tambac*, and sometimes *Similor*, and *Petit-or*.

Pine, or **Flr**, a species of forest tree, next, if not superior, to the oak, in point of utility and value. There are above twenty species of pine. They do not bear flat leaves, but a species of spines, which, however, are real leaves. They are mostly, though not all, evergreens; but the appearance of the tree, as well as the quality of the timber, varies with the species, and also with the situation in which it grows. Generally speaking, the timber is hardest and best in exposed cold situations, and where its growth is slow.

Scotch pine (*Pinus sylvestris*) is a native of the Scotch mountains, and of most northern parts of Europe; being common in Russia, Denmark, Sweden, Norway, and Lapland. It is straight, abruptly branched, rising in favorable situations to the height of eighty or ninety feet, and being from three to four feet in diameter. It is at perfection when seventy or eighty years old. The color of the wood differs considerably; it is generally of a reddish yellow, or of a honey yellow, of various degrees of brightness. It has no larger transverse septa, and it has a strong resinous odor and taste. In the best timber the annual rings are thin, not exceeding $\frac{1}{10}$ th of an inch in thickness; the dark parts of the rings of a bright reddish color; the wood hard and dry to the feel, neither leaving a woolly surface after the saw, nor filling its teeth with resin. The best Norway is the finest of this kind, and the best Riga and Memel are not much inferior. The inferior sorts have thick annual rings; in some the dark parts of the ring are of a honey yellow, the wood heavy, and filled with a soft resinous matter, feels clammy, and chokes the saw. Timber of this kind is not durable, nor fit for bearing strains. In some inferior species the wood is spongy, contains less resinous matter, and presents a woolly surface after the saw. Swedish timber is often of this kind. Scotch fir is the most durable of the pine species. It was the opinion of the celebrated Mr. Brindley, "that red Riga deal, or pine wood, would endure as long as oak in all situations." Its lightness and stiffness render it superior to any other material for beams, girders, joists, rafters, etc. It is much used in joiners' work, as it is more easily wrought, stands better, is much cheaper, and is nearly, if not quite, as durable as oak. Scotch fir is exported from Norway and Sweden, under the name of *red-wood*. Norway exports no trees above eighteen inches diameter, consequently there is much sap-wood; but the heart-wood is both stronger and more durable than that of larger trees from other situations. Riga exports a considerable quantity under the name of masts and spars: pieces from eighteen to twenty-five inches diameter are called *masts*, and are usually seventy or eighty feet in length; those of less than eighteen inches diameter are called *spars*. Yellow deals and planks are imported from various parts of Norway, Sweden, Prussia, Russia, etc. Tar, pitch, and turpentine are obtained from the Scotch fir.—*See these titles*. When the tree has attained to a proper age it is not injured by the extraction of these products.

Spruce Pine.—Of this there are three species—the Norway spruce, or *Pinus abies*; white spruce, or *Pinus alba*; and black spruce, or *Pinus nigra*. These are noble trees, rising in straight stems from 150 to 200 feet in height. They yield the timber known by the name of *white fir*, or *deal*, from its always being imported in deals or planks. Deals imported from Christiana are in the highest estimation.—*See CHRISTIANA*. The trees are usually cut into three lengths, generally of about twelve feet each, and are afterward cut into deals by saw-mills, each length yielding three deals. The Norway spruce thrives very well in Britain, and produces timber little inferior to the foreign; it is somewhat softer, and the knots are extremely hard. The white spruce, or *Pinus alba*, is brought from British North America. The wood is not so resinous as the Norway spruce; it is tougher, lighter, and more liable to twist in drying. The black spruce, or *Pinus*

nigra, is also an American tree; but it is not much imported into England. The black and white spruce derive their names from the color of the bark, the wood of both being of the same color. The color of spruce fir, or white deal, is yellowish or brownish white; the hard part of the annual ring a darker shade of the same color. It often has a silky lustre, especially in the American and British grown kinds. Each annual ring consists of two parts; the one hard, the other softer. The knots are generally very hard. The clear and straight-grained kinds are often tough, but not very difficult to work, and stand extremely well when properly seasoned. White deal, as imported, shrinks about $\frac{1}{10}$ th part in becoming quite dry.

Weymouth Pine, or *White Pine* (*Pinus strobus*), is a native of North America. It is one of the largest and most useful of the American trees, and makes excellent masts; but it is not durable, nor fit for large timbers, being very subject to dry-rot. It has a peculiar odor.

The commercial value of pine is greater than that of any other wood, and it forms a large proportion of the lumber trade. The Northeastern States are supplied principally by Maine. The Middle States obtain their supplies from Michigan, New York, and Western Pennsylvania; the Northwestern States from Western Pennsylvania, Virginia, and Wisconsin.—*See LUMBER TRADE*.

Larch (*Pinus larix*). There are three species of this valuable tree—one European, and two American. The variety from the Italian Alps is the most esteemed, and has lately been extensively introduced into plantations in Great Britain. It is a straight and lofty tree, of rapid growth. A tree seventy-nine years of age was cut down at Blair Athol in 1817, which contained 252 cubic feet of timber; and one of eighty years of age, at Dunkeld, measured 300 cubic feet. The mean size of the trunk of the larch may be taken at 45 feet in length, and 33 inches diameter. The wood of the European larch is generally of a honey yellow color, the hard part of the annual rings of a redder cast; sometimes it is brownish white. In common with the other species of pine, each annual ring consists of a hard and a soft part. It generally has a silky lustre; its color is browner than that of the Scotch pine, and it is much tougher. It is more difficult to work than Riga or Memel timber, but the surface is better when once it is obtained. It bears driving bolts and nails better than any other species of resinous wood. When perfectly dry it stands well, but it warps much in seasoning. It is in all situations extremely durable. It is useful for every purpose of building, whether external or internal; it makes excellent ship timber, masts, boats, posts, rails, and furniture. It is peculiarly adapted for flooring boards, in situations where there is much wear, and for stair-cases; in the latter, its fine color, when rubbed with oil, is much preferable to that of the black oaken stair-cases to be seen in some old mansions. It is well adapted for doors, shutters, and the like; and, from the beautiful color of its wood when varnished, painting is not necessary.—(We have abstracted these particulars from Mr. TREDGOLD's excellent work, *The Principles of Carpentry*, p. 209-217.)

Pine-apple, or **Ananas**, though a tropical fruit, is now extensively cultivated in hot-houses and gardens, and is well known to every one. When of a good sort and healthy, it is the most luscious, and perhaps the best fruit that is produced; and, when carefully cultivated, is superior, in point of quality, to that produced in the West Indies.

Pink, a vessel masted and rigged like other ships, only that this is built with a round stern, the bends and ribs compassing so that her ribs bulge out very much. This renders the pinks difficult to be boarded, and also enables them to carry great burdens, for which purpose they are often used.

Pinnace, a small vessel used at sea, with a square stern, having sails and oars, and carrying three masts,

chiefly employed to obtain intelligence, and to land men, etc. One of the boats of a man-of-war, used to carry the officers to and from the shore, is also called the *pinnacle*.

Pint, a measure used chiefly in the measuring of liquids. The word is High Dutch, and signifies a little measure of wine. The English pint used to be of two sorts: the one for wine, the other for beer and ale. Two pints make a quart; two quarts a pottle; two pottles a gallon, etc. The pint, imperial liquid measure, contains 34·659 cubic inches.

Pipe, a wine measure, usually containing 105 (very nearly) imperial, or 126 wine gallons. Two pipes, or 210 imperial gallons, make a tun. But, in practice, the size of the pipe varies according to the description of wine it contains. Thus a pipe of port contains 138 wine gallons; of sherry, 130; of Lisbon and Bucellas, 140; of Madeira, 110; and of Vidonia, 120. The pipe of port, it is to be observed, is seldom accurately 138 gallons, and it is usual to charge what the vessel actually contains.

Pipe-clay, a species of clay abounding in Devonshire, and other parts of England, employed in the manufacture of various sorts of earthen-ware, and in bleaching.

Pipes, Amber (in Turkey). Prussia is almost the only country by which amber is furnished for ornamental purposes. M. Von Roy, an amber merchant, of Dantzig, is said to have been twenty-five years collecting the splendid specimens which he now possesses. The most extensive use of this elegant material is for the manufacture of the mouth-pieces of meerschau pipes and hookahs. Up to the present day amber mouth-pieces continue in great request in the East, where they fetch very high prices; and almost all the Prussian amber is sold to the Turks for manufacturing. There were in the Turkish department of the Exhibition four amber mouth-pieces for pipes, which were collectively worth £1000. It may serve in some measure to explain the peculiar favor which amber is held in by the Turks, that there is a current belief that amber is incapable of transmitting infection; it is deemed a mark of politeness to hand an amber pipe to a stranger.

Meerschau.—The clay of which these are made is procured chiefly in Asia Minor, but also in Spain, Greece, and Moravia. The manufacture of pipes from the clay is carried on with especial care at Vienna and Pesth. The meerschau is soaked in a liquefied composition of wax, oil, and fat, the absorption of which occasions the colors assumed by the pipe after smoking. Occasionally the bowls are artificially stained by dipping them in a solution of coppers and other substances before the application of the wax composition. The carving of the bowls is often difficult work, owing to the occurrence of a kind of clay mixed up with and harder than the meerschau. The large quantity of parings left in roughing out the bowls would entail considerable loss, unless some process had been devised for using them. This has been done; the parings are employed in making the kind of meerschau bowls called *massa-bowls*. The parings are ground to a fine powder, boiled in water, and moulded into blocks, with or without the addition of clay. The blocks are allowed to dry, and then a pipe-bowl is fashioned from each. These bowls are distinguished from the real meerschau chiefly by being rather heavier. Meerschau bowls have been produced so large and so elaborately carved as to be valued at five hundred dollars each.

Piracy consists in committing those acts of robbery and violence upon the seas that, if committed upon land, would amount to a felony. Pirates hold no commission or delegated authority from any sovereign or state, empowering them to attack others. They can, therefore, be only regarded in the light of robbers or assassins. They are, as Cicero has truly stated, the common enemies of all (*communes hostes omnium*); and the law of nations gives to every one the right to pursue and exterminate

them without any previous declaration of war; but it is not allowed to kill them without trial, except in battle. Those who surrender, or are taken prisoners, must be brought before the proper magistrates, and dealt with according to law. By the ancient common law of England, piracy, if committed by a *subject*, was held to be a species of treason, being contrary to his natural allegiance; and, by an *alien*, to be felony only; but since the statute of treasons (25 Edw. III. c. 2) it is held to be only felony in a subject. Formerly this offense was only cognizable by the admiralty courts, which proceed by the rules of the civil law; but it being inconsistent with the liberties of the nation that any man's life should be taken away unless by the judgment of his peers, the statute 28 Hen. VIII. c. 15, established a new jurisdiction for this purpose, which proceeds according to the course of common law. It was formerly a question whether the Algerines, and other African states, should be considered pirates; but, however exceptionable their conduct might have been on many occasions, and however hostile their policy might be to the interests of humanity, still, as they had been subjected to what may be called regular governments, and had been admitted to enter into treaties with other powers, they could not be treated as pirates. Pirates having no right to make conquests, or to seize upon what belongs to others, capture by them does not divest the owner of his property. At an early period of English history a law was made for the restitution of property taken by pirates, if found within the realm, whether belonging to strangers or Englishmen; but any foreigner suing upon this statute must prove that at the time of the capture his own sovereign and the sovereign of the captor were in mutual amity; for it is held that piracy can not be committed by the subjects of states at war with each other. Piracy was almost universally practiced in the Heroic Ages. Instead of being esteemed infamous, it was supposed to be honorable.—*Latrocinium maris gloriæ habebatur*.—JUSTINIAN, lib. xliii. Menelaus, in the Odyssey, does not hesitate to inform his guests, who admired his riches, that they were the fruit of his piratical expeditions (lib. iv. ver. 90); and such, indeed, was the way in which most of the Greek princes amassed great wealth.—GOSWELL, *Origin of Laws*. The prevalence of this piratical spirit in these early ages may, perhaps, be explained by the infinite number of small, independent states into which the country was divided, and the violent animosity constantly subsisting among them. In this way ferocious and predatory habits were universally diffused and kept alive; and it is not to be supposed that those who were at all times liable to be attacked by hosts of enemies should very accurately examine the grounds upon which they attacked others. According, however, as a more improved system of government grew up, Greece, and a few states, as Athens, Corinth, etc., had attained to distinction by their naval power, piracy was made a capital offense; but though repressed, it was never entirely put down. Cilicia was at all times the great strong-hold of the pirates of antiquity: and in consequence of the decline of the maritime forces of Athens, Rhodes, etc., which had kept them in check, they increased so much in numbers and audacity as to insult the majesty of Rome herself; so that it became necessary to send Pompey against them, with a large fleet and army, and more extensive powers than had been ever previously conferred on any Roman general.

During the anarchy of the Middle Ages, when every baron considered himself a sort of independent prince, entitled to make war on others, piracy was universally practiced. The famous Hanseatic League was formed chiefly for the purpose of protecting the ships of the confederated cities from the attacks of the pirates by which the Baltic was then infested. The nuisance was not finally abated in Europe till the feudal system had been subverted, and the ascendancy of the law every

where secured. In more modern times, some of the smaller West India islands have been the great resort of pirates; latterly, however, they have been driven from most of their haunts in that quarter. They are still not unfrequently met with in the Indian seas east of Sumatra.—M'CULLOCH'S *Com. Dict.*

Piracy is robbery, or a forcible depredation on the high seas, without lawful authority, and done *animo furandi*, and in the spirit and intention of universal hostility. It is the same offense at sea with robbery on land; and all the writers on the law of nations, and on the maritime law of Europe, agree in this definition of piracy. Pirates have been regarded by all civilized nations as the enemies of the human race, and the most atrocious violators of the universal law of society. They are every where pursued and punished with death; and the severity with which the law has animadverted upon this crime arises from its enormity and danger, the cruelty that accompanies it, the necessity of checking it, the difficulty of detection, and the facility with which robberies may be committed upon pacific traders in the solitudes of the ocean. Every nation has a right to attack and exterminate them without any declaration of war; for though pirates may form a loose and temporary association among themselves, and re-establish in some degree those laws of justice which they have violated with the rest of the world, yet they are not considered as a national body, or entitled to the laws of war, as one of the community of nations. They acquire no rights by conquest; and the law of nations, and the municipal law of every country, authorize the true owner to reclaim his property taken by pirates, wherever it can be found, and they do not recognize any title to be derived from an act of piracy. The principle that *a piratis et latronibus capta dominium non mutant*, is the received opinion of ancient civilians and modern writers on general jurisprudence, and the same doctrine was maintained in the English courts of common law prior to the great modern improvements made in the science of the law of nations.

By the Constitution of the United States, Congress is authorized to define and punish piracies and felonies committed on the high seas, and offenses against the law of nations. In pursuance of the authority it was declared, by the act of Congress of April 30, 1790, c. 9, sec. 8, that murder or robbery committed on the high seas, or in any river, harbor, or bay, out of the jurisdiction of any particular state, or any other offense, which, if committed within the body of a county, would, by the laws of the United States, be punishable with death, should be adjudged to be piracy or felony, and punishable with death. It was further declared, that if any captain or mariner should piratically or feloniously run away with any vessel, or any goods or merchandise to the value of fifty dollars, or should yield up any such vessel voluntarily to pirates; or if any seaman should forcibly endeavor to hinder his commander from defending the ship or goods committed to his trust, or should make a revolt in the ship, every such offender should be adjudged a pirate and felon, and be punishable with death. And by the act of March 3, 1819, c. 76, sec. 5, Congress declared, that if any such person on the high seas should commit the crime of *piracy as defined by the law of nations*, he should, on conviction, suffer death. This act was but temporary in its limitation, and has expired; but it was again declared, and essentially to the same effect, by the act of Congress, 15th of May, 1820, c. 113, sec. 3, that if any person upon the high seas, or in any open roadstead or bay or river, where the sea ebbs and flows, commits the crime of robbery, in or upon any vessel, or the lading thereof, or the crew, he shall be adjudged a pirate. So if any person, engaged in any piratical enterprise, or belonging to the crew of any piratical vessel, should land and commit robbery on shore, such an offender shall also be adjudged a pirate. The statute in this respect seems to be only declaratory of the

law of nations; and upon the doctrine of the case of *Lind v. Rodney*, such plunder and robbery ashore by the crew, and with the aid of vessels, is a marine case, and of admiralty jurisdiction. The statute further declared, that the above provision was not to be construed to deprive any particular State of its jurisdiction over such offenses when committed within the body of a county, or to authorize the courts of the United States to try any such offenders, after conviction or acquittal, for the same offense in a State court.

There can be no doubt of the right of Congress to pass laws punishing pirates, though they may be foreigners, and may have committed no particular offense against the United States. It is of no importance, for the purpose of giving jurisdiction, on whom or when a piratical act has been committed. A pirate, who is one by the law of nations, may be tried and punished in any country where he may be found, for he is reputed to be out of the protection of all laws and privileges. The statute of any government may declare an offense committed on board its own vessels to be piracy, and such offense will be punishable exclusively by the nation which passes the statute. But piracy, under the law of nations, is an offense against all nations, and punishable by all.—KENT'S *Commentaries*, vol. i.

Liability of Insurers.—There can be no piracy or robbery without violence; but this is not necessary to constitute the crime of theft. Piracy and robbery are most usually committed by strangers to the ship; they may, however, be committed by the crew; and the insurers are answerable for such a loss, unless it arise from the fault of the owner. If theft be committed by the crew, we should still hold the insurers liable. This may be doubtful; but insurers regard it as at least possible, and provide against it by the phrase, "assailing thieves." This excludes theft without violence, and perhaps all theft by those lawfully on board the vessel, as a part of the ship's company. If, after shipwreck, the property is stolen, the insurers are liable, and would probably be so if there were no insurance against theft, if this was a direct effect of the wrecking.—PARSONS'S *Mercantile Law*. The subjects of pirates and piracy have been discussed in the following works: NILES'S *Register*, xviii. 275, xxxii. 302, xx. 59, xxvii. 391, xxv. 157, xxvii. 138, xxxiii. 211; HUNT'S *Merchants' Magazine*, xiii. 450, 526, xiv. 89; *Edinburgh Review*, lxviii 33, xxvi. 449; LITTELL'S *Museum*, xxv. 337, xxvi. 266.

Pistachia, or Pistachio Nuts (Ger. *Pistaschen*; Du. *Pistasjes*; Fr. *Pistaches*; It. *Pistacchi*, *Fastucchi*; Sp. *Afscogicos*; Lat. *Pistacia*), the fruit of the *Pistachia vera*, a kind of turpentine-tree. It grows naturally in Arabia, Persia, and Syria; also in Sicily, whence the nuts are annually brought to us. They are oblong and pointed, about the size and shape of a filbert, including a kernel of a pale greenish color, covered with a yellowish or reddish skin. They have a pleasant, sweetish, unctuous taste, resembling that of sweet almonds; their principal difference from which consists in their having a greater degree of sweetness, accompanied with a light grateful flavor, and in being more oily. Pistachias imported from the East are superior to those raised in Europe.—LEWIS'S *Materia Med.*

Pistols. These are the smallest sort of fire-arms, carried sometimes on the saddle-bow, sometimes in a girdle round the waist, sometimes in the pocket, etc.—PARDON. The pistol was first used by the cavalry of England, in 1444.

The manufacture of guns and pistols in the United States has become an active one. Colt's Revolvers have acquired a reputation throughout Europe and South America, as well as the United States. His principal factory is located near Hartford, Connecticut. "It is so well ordered, so complete, so striking in its results, that all engaged in manufacture may learn something from it; it is in itself one large machine, well oiled too, which takes in at one end a shapeless

lump of iron, and a piece of wood, and puts out at the other a beautifully finished arm which you may load and fire six balls from separately in three-quarters of a minute, after a certain amount of practice. In each pistol there are fifty-three distinct pieces, including fourteen screws, and for the formation of these forty or forty-five separate machines co-operate, hammering, milling, cutting, drilling, punching, rifling, and shaving; all put into motion by a gallon of water 'in a violent perspiration;' in other words, a twenty-horse power steam-engine. Some of the machines are especially beautiful: look at that for rifling the barrels, for example, with the brush to keep the cutters clean; and the one near it for drilling the six chambers around the central boring in the solid cylinder, where accuracy is so indispensable. That regular irregularity, the eccentric, plays an important part in this, as it does in the hammering-machine below—the machine patented by Rider. In one week they turned out 525 perfect pistols here, and there are the means for making 800 or 900 a week, if it were necessary to do so."—*London Builder*.

Pistols were first used by the Germans. Bellay mentions them in the year 1544. In the time of Francis I. and under Henry II. the German horsemen, *des reiters*, were called pistoliers. The derivation of this term is uncertain. Frisch conjectures that it may have arisen from *pistillo* or *stiopo*, because pistols used to have large knobs on the handles. Daniel and others think that the name comes from *Pistoja*, in Tuscany, where they were first manufactured. He says he saw an old pistol that, with the exception of the ramrod, was all iron. During the latter part of the last century many ingenious persons directed their attention to the improvement of fire-arms, with a view to simplify their construction, to render them more effective, and to combine safety with celerity in firing. One of the most marked advancements was effected by Mr. Henry Nock, and patented by him in England in 1787. Previous to this the breeching or plug of a gun was a solid lump of iron, screwed into one end of the barrel, the touch-hole being drilled through the side of the barrel above it. Another most marked improvement was the introduction and adaptation of fulminating powder, for igniting the charge in the chamber of the breech; and for which the Rev. Mr. Forsyth obtained a patent in Great Britain, in 1807. The perfection of a proper fulminating powder was long a matter of great difficulty. Other changes were suggested, but not of a practical kind. One made by Mr. E. H. Collier, of Boston, Massachusetts, in 1818; and another by Mr. Wheeler, of Boston, in 1819.

The first valuable improvements made by Colonel Samuel Colt, of Connecticut, in the construction of the pistol, were made public in the year 1835. The original conception of Colonel Colt in regard to fire-arms was the combination of a number of long barrels to rotate upon a spindle, by the act of cocking the lock, in the same manner that they have since been made by others who claim to have originated the plan; but as objections arose from the weight and bulk of the arm, in his study to obviate them, the idea of a single barrel and a chambered breech suggested itself to him. Although without the pecuniary means of then practically testing his convictions, he made a small wooden model of his conception, which he possesses at the present day. He then assiduously pursued his calling as a scientific lecturer, and from its rewards procured the aid to manufacture specimen arms, which in their practical results exceeded even his most sanguine expectations; and in 1835 he received his first patent from the Government of the United States.

Colonel Colt's first manufactory of fire-arms was located at Paterson, New Jersey, in the year 1836, with a capital of \$300,000. This continued in operation until the year 1842, when it was relinquished as unprofitable. The Florida war of 1837-'38 created a

demand for, and gave practical demonstration of the great value of, the repeating fire-arms patented by him. They were also used with great effect in the Texan revolution and war; and afterward in the war with Mexico (1846-'47), when a contract was made by him with the government for the supply of one thousand of the improved arms. A temporary manufactory was established for this purpose at Whitneyville, Connecticut. This was succeeded by the present extensive factory at or near Hartford, on the Connecticut River, which was finished and in successful operation in the year 1855, with a capital of \$1,250,000. These buildings present a front of 500 feet. The repeating principle has also been successfully applied by Colonel Colt to rifles and carbines, several varieties of which are constantly in the course of completion in the armory. Lately the demand for the sporting rifle has increased wonderfully, which increase will, no doubt, be much augmented as their superiority is more generally practically demonstrated by our hardy backwoodsmen; and the day is not distant when regiments of riflemen will be equipped with Colt's revolvers.

Within the last year still another style of pistol has been introduced. It is called "Colt's new Model," and by some it is preferred to either of the others. Undoubtedly this is a matter of fancy with the party using the arm, as in some cases individuals yet prefer Colt's first to any arm that was ever manufactured. The arms are of several sizes, and weigh as follows:

	Pounds.	Ounces.
The military rifle, barrel 36 inches, fitted with improved bayonet.....	11	8
Sporting rifle, barrel from 18 to 30 inches, average.....	9	
The army or holster pistol.....	4	4
The navy or belt pistol.....	2	6
The pocket pistol, barrel 6 inches.....	1	12
The pocket pistol, barrel 5 inches.....	1	10
The pocket pistol, barrel 4 inches.....	1	8

These are kinds that are constantly in the course of construction; of course many other varieties are made by special order.

Of the improved pistol, over 138,000 had been manufactured here up to January, 1857. Nearly eight hundred men are ordinarily employed in this work alone. This result is the fruit of a market for arms, not confined to the United States, but extending over both the Americas; more or less to the Indies, East and West; to Egypt—even to distant Australia; to remote Asiatic tribes assembled at the great fairs of Novgorod; and over Europe generally, but especially to England. Here the arms of Colonel Colt, first introduced in splendid style through the World's Fair, were warmly welcomed, and led to the speedy establishment in London of an extensive armory for their manufacture, and to their rapid adoption into the British army and naval service.—*United States Magazine*, March, 1857. See FIRE-ARMS.

Pitcairn's Island. A small solitary island in the Pacific Ocean; seen by Cook in 1773, and noted for being colonized by ten mutineers from the ship *Bounty*, Captain Bligh, in 1789, from which time till 1814 they (or rather their descendants) remained here unknown. Soil fertile, but porous, and rather defective in water; well wooded, and climate healthful; thermometer ranging from 59° to 89° Fahr. Prevailing winds southwest and east-southeast, but it is beyond the limits of the regular trade-winds. It is surrounded by rocky shores, and has only one accessible landing-place at Bounty Bay. The cocoa-nut, plantain, banana, and bread-fruit trees flourish, hibiscus, or cloth tree, banyan-tree, orange, and others; and the potato, sweet potato, yams, water-melons, pumpkin, taro, sugarcane, ginger, turmeric, tobacco, tea-plant, and maize, are cultivated. The island contained no indigenous quadrupeds, but goats, hogs, and poultry have been imported. In 1790 this island was resorted to by the mutineers of the *Bounty*, consisting of nine British sailors, six native Tahitian men, and twelve women.

In consequence of various discords and massacres, at the end of ten years there remained only one Englishman, Adams, the Tahitian females, and nineteen children, their offspring. Under the superintendence of this man the children were educated and trained up to habits of industry and morality. In 1825 Captain Beechey found a most interesting and intelligent colony of sixty-six persons. In 1831, by the somewhat imprudent sanction of the British government, the colony, numbering eighty-seven persons, was transferred to Tahiti. After remaining five months there, and losing twelve of their number by death, the colony, at their own solicitation, were again reinstated in their native island. In 1849 the population amounted to 75 males and 74 females, in all 149; of these, three were Englishmen, one a native Tahitian woman, the only remaining female of the original migration, and the remainder were natives of the island. They live chiefly on yams, potatoes, and other vegetables, which they raise by their own labor. From the remains of burial-grounds, the island would appear to have been occupied by inhabitants at a period antecedent to the visit of the mutineers at the *Bounty*. It was seen by Carteret in 1767, and named by him after one of his officers.

Pitch (Ger. *Pech*; Fr. *Poir*, *Brai*; It. *Pecce*; Sp. *Pez*; Russ. *Smola gustaja*), the residuum which remains on inspissating tar, or boiling it down to dryness. It is extensively used in ship-building, and for other purposes.—See NAVAL STORES.

Pittsburgh, city, port of entry, and capital of Alleghany county, Pennsylvania, is situated at the conflux of the Alleghany and Monongahela rivers, where they form the Ohio, which is here a quarter of a mile wide. It is in 40° 32' N. lat., and 80° 2' W. long., 357 m. via Pennsylvania Railroad from Philadelphia, 247 west-northwest of Harrisburg, 226 from Washington, D. C., and 2044 above New Orleans by the course of the river. Population in 1810, 4768; in 1820, 7248; in 1830, 12,568; in 1840, 21,115; in 1850, 46,601; in 1854, the city and immediate vicinity estimated at 110,000. It was originally laid out on the northeast bank of the Monongahela, after the model of Philadelphia, with streets running parallel with the rivers, and others crossing them at right angles. The streets on the Alleghany are laid out on a similar plan, and hence a short distance from the Alleghany the old and new streets meet in oblique directions. The Alleghany River is spanned by three bridges, which, with several steam ferries, connect the city with the suburbs. The Pennsylvania Canal crosses the river by an aqueduct, and there is a suspension-bridge over the Monongahela.

As a manufacturing city, Pittsburgh is second in the State only to Philadelphia. In 1850 it had thirteen rolling-mills, with a capital of \$5,000,000, employing 2500 hands, consuming 60,000 tons of pig metal, and producing annually bar iron and nails to the value of \$4,000,000; thirty large founderies, with an aggregate capital of \$2,000,000, and 2500 hands, using 20,000 tons of pig iron, and yielding articles valued at \$2,000,000 annually; two establishments for manufacturing locks, latches, coffee-mills, scales, and other iron casting, employing 500 hands, and a capital of \$250,000, using 1200 tons metal, and producing annually to the value of \$3,000,000; five large cotton factories—capital \$1,500,000, hands 1500, cotton consumed 15,000 bales, and products valued at upward of \$1,500,000 annually; eight flint-glass manufactories—capital \$300,000, hands 500, and producing various articles of glass, in the manufacture of which 150 tons lead and 200 tons of pearlash are used, to the value of \$400,000 annually; seven phial furnaces and eleven window-glass factories—capital \$250,000, hands 600, and annual products \$600,000; one soda-ash factory, employing 75 hands, and producing annually 1500 tons; one copper-smelting house, producing 600 tons refined copper annually, valued at \$380 per ton; one rolling-mill, producing annually 800 tons sheathing and brazier's copper; five white-lead

factories—capital \$150,000, hands 60, and producing 150,000 kegs annually, worth \$200,000. There are also a number of manufactories of the smaller sizes of iron, several extensive manufactories of axes, hatchets, spring-steel, steel springs, axles, anvils, vices, mills, cross-cut and other saws, gun barrels, shovels, spades, forks, hoes, cut tacks, brads, etc. The products of the manufactories in the aggregate are valued at between \$50,000,000 and \$60,000,000 annually. There are consumed about 12,000,000 bushels of coal annually, worth \$600,000, and an equal quantity is exported from the city, giving employment constantly to 4000 hands.

Plains. In Geography, the general term for all those parts of the dry land which can not properly be called mountainous, and which compose by far the greater part of the earth's surface. Plains have different physical appearances according to their geographical position, and the peculiar characteristics of each have procured for them different names; thus we have the steppes of Asia, the deserts of Africa, the pampas of South America, and the prairies or savannas of North America. See these different terms.

Plane, a forest tree, of which there are two species; the Oriental plane (*Platanus Orientalis*), and the Occidental plane (*Platanus Occidentalis*). The Oriental plane is a native of the Levant, and other Eastern countries, and is considered one of the finest of trees. It grows to about 60 feet in height, and has been known to exceed eight feet in diameter. Its wood is much like beech, but more figured, and is used for furniture and such like articles. The Occidental plane is a native of North America, and is one of the largest of the American trees, being sometimes more than 12 feet in diameter. The wood of the Occidental plane is harder than that of the Oriental. It is very durable in water. The tree known by the name of plane in England is the sycamore, or great maple (*Acer pseudo-platanus*). It is a large tree, grows quickly, and stands the sea-spray better than most trees. The timber is very close and compact, easily wrought, and not liable either to splinter or warp. It is generally of a brownish white or yellowish white color, and sometimes it is very beautifully curled and mottled. In this state it takes a fine polish, and bears varnishing well. It is chiefly used in the manufacture of saddle-trees, wooden dishes, and a variety of articles of furniture and machinery. When kept dry, and protected from worms, it is pretty durable; but it is quite as liable as beech to be attacked by them.—TRENGOLD, p. 196.

Plane Sailing, in Navigation, is the art of determining the ship's place, on the supposition that she is moving on a plane, or that the surface of the ocean is plane instead of being spherical. On account of the magnitude of the terrestrial radius, this supposition may be adopted for short distances without leading to great errors; and it affords great facilities in calculation, for the place of the ship is found by the solution of a right-angled plane triangle. The part of the meridian between the ship and the parallel of latitude of the place whence she departed forms the perpendicular of the triangle; the distance on the parallel between the place of departure and the foot of the perpendicular is the base of the triangle (technically called the departure); and the distance sailed is the hypotenuse. The angle at the ship is called the course, and the other acute angle the complement of the course. Now, of these four things, the perpendicular, the departure, the distance sailed, and the course, any two being given, the triangle can be laid down on the chart, and all the other parts of it found.—See NAVIGATION.

Planks (Ger. and Du. *Planken*; Da. *Planker*; Sw. *Plankor*; Fr. *Planches*, *Bordages*; Russ. *Tolstila olosku*), thick strong boards, cut from various kinds of wood, especially oak and pine. Planks are usually of the thickness of from 1 inch to 4. They are exported in large quantities from the northern parts of Europe, particularly from the ports of Christiana, Dantzic, Arch-

angel, Petersburg, Narva, Revel, Riga, and Memel, as well as from several parts of North America.—See LUMBER TRADE.

Plantain, or Banana, the pulpy fruit of the *Musa paradisiaca*, an herbaceous plant, extensively cultivated in most inter-tropical countries, but especially in Mexico. It is not, like most other fruits, used merely as an occasional luxury, but is rather an established article of subsistence. Being long and extensively cultivated, it has diverged into numerous varieties, the fruit of which differs materially in size, flavor, and color. That of some is not above two or three inches long, while that of others is not much short of a foot; some sorts are sweet, and of a flavor not unlike nor inferior to that of a good mellow pear; but the larger kind are, for the most part, coarse and farinaceous. The latter are either used fresh or dried in the sun, in which latter state they are occasionally ground into meal and made into bread. In Mexico the sweeter sorts are frequently pressed and dried, as figs are in Europe; and, while they are not very inferior to the last-mentioned fruit, they are infinitely cheaper. "I doubt," says M. Humboldt, "whether there be any other plant that produces so great a quantity of nutritive substance in so small a space. Eight or nine months after the sucker is planted, it begins to develop its cluster. The fruit may be gathered in the tenth and eleventh month. When the stalk is cut, there is always found, among the numerous shoots that have taken root, a sprout (*pimpollo*), which, being 2-3ds the height of its parent plant, bears fruit three months later. Thus a plantation of bananas perpetuates itself, without requiring any care on the part of man, further than to cut the stalks when the fruit has ripened, and to stir the earth gently once or twice a year about the roots. A piece of ground of 100 square metres of surface will contain from 80 to 40 plants. During the course of a year this same piece of ground, reckoning the weight of the cluster at from 15 to 20 kilog. only, will yield 2000 kilog., or more than 4000 lbs., of nutritive substance. What a difference between this product and that of the cereal grasses in most parts of Europe! The same extent of land planted with wheat would not produce above 30 lbs., and not more than 90 lbs. of potatoes. Hence the product of the banana is to that of wheat as 133 to 1, and to that of potatoes as 44 to 1."—*Essai sur la Nouvelle Espagne*. The banana forms a principal part of the food of the people of Mexico; and the apathy and indolence of the natives in the *tierras calientes*, or hot regions, has been ascribed, and probably with good reason, to the facility with which it supplies them with subsistence. It is by no means in such extensive use in tropical Asia, and comes nowhere in it into competition with corn as an article of food.

Plaster, or Plaister, in building, a composition of lime, sometimes with sand, or other substance, to parget or cover the nudities of building.

Plaster of Paris, a preparation of several species of gypsum dug near Montmartre, a village in the neighborhood of Paris, and hence the name. The best sort is hard, white, shining, and marbly, being known by the name of *plaster-stone*, or *parget of Montmartre*. It will neither give fire with steel, nor ferment with aquafortis; but it calcines very freely and readily into a fine plaster, the use of which in building and casting statues is well known.

Plata (Rio De La), or the Plate River, one of the great rivers, or rather a great estuary of South America, in the Argentine Republic, formed by the junction of the Parana and Uruguay rivers, in lat. 34° S., long. 58° 30' W., its basin lying south of those of the Amazon, Tocantins, and San Francisco, and its numerous tributaries draining most part of the Plata, Paraguay, and Uruguay territories, with considerable portions of Bolivia and Brazil. The estuary resulting from their union is 200 miles in length northwest to

southeast, and where it joins the Atlantic Ocean, is 170 miles across (between Maldonado and Cape St. Antonio); its centre being about lat. 35° 30' S., long. 56° W. Its muddy waters can be traced in the ocean 200 miles from its mouth. The total length of the Plata and the Paraguay has been estimated at nearly 2500 miles; and from the ocean to the island of Apiepe in the Parana, at least 1250 miles, there is a continuous and safe navigation for vessels of 300 tons. The Aguapehy, an affluent of the Paraguay near lat. 15° 40' S., long. 59° 20' W., is separated only by a portage of three miles from the Alegre, a tributary of the Guapore, and were a canal to be made to connect the two streams, a complete system of internal navigation throughout nearly all South America would exist.—See PARAGUAY.

Plate; the denomination usually given to gold and silver wrought into articles of household furniture. It appears from PORTER'S *Progress of the Nation*, iii. 25, that the annual consumption of silver plate has increased from about 800,000 oz. at the commencement of the century, to about 1,050,000 oz. at present. Most persons may, perhaps, be inclined to think that this is not so great an increase as might have been anticipated from the increase of wealth and population. But it should be borne in mind that this account refers only to articles of standard silver and gold, and that the great consumption of the precious metals consists in plated and gilt articles, which are now made of a very superior quality. Owing also to the fact of old plate being held in the greatest estimation, but little of it is melted down to be remanufactured, so that the principal consumption is by new families.—See GOLD and PRECIOUS METALS.

Platina, a metal which, in respect of scarcity, beauty, ductility, and indestructibility, is hardly inferior to gold, was unknown in Europe till about the middle of last century, when it began to be imported in small quantities from South America. It has since been discovered in Estremadura in Spain, and more recently in the Ural Mountains in Asiatic Russia, where it is now raised in very considerable quantities. Platina is of a white color, like silver, but not so bright, and has no taste or smell. Its hardness is intermediate between copper and iron. Its specific gravity is about 21.5, that of gold being 19.3; so that it is the heaviest body with which we are acquainted. It is exceedingly ductile and malleable; it may be hammered out into very thin plates, and drawn into wires not exceeding 1-1940th of an inch in diameter. In these properties it is probably inferior to gold, but it seems to surpass all the other metals. Its tenacity is such, that a wire of platina 0.078 inch in diameter is capable of supporting a weight of 274.31 lbs. avoirdupois without breaking. It is one of the most infusible of all metals; but pieces of it may be welded together without difficulty when heated to whiteness. It is not in the smallest degree altered by the action of air or water.—THOMSON'S *Chemistry*. The late Dr. Wollaston discovered a method of fusing platina, and, consequently, of rendering it easily available in the arts. The Russians have within these few years issued platina coins of the value of 3, 6, and 20 silver roubles. Platina first began to be an object of attention in Russia in 1824, when 1 pood 33 lbs. were collected. In 1836 the produce amounted to 138 poods 42 lbs. In 1831 a piece of native platina was discovered at Demidoff's gold mines, weighing 29 lbs. 2½ zolt.—*Official Statements* published by the Russian government.

Plating. The art of covering copper and other metals with silver or gold: it is effected in various ways. Sometimes the silver is attached to and rolled out with the copper by pressure; sometimes the one metal is precipitated from its solutions upon the other; and of late manufacturers have availed themselves of electro-chemical decomposition for the purpose.

Platinum (so called from the Spanish word *plata*,

silver, on account of its color), a metal of a white color, exceedingly ductile, malleable, and difficult of fusion. It is the heaviest substance known, its specific gravity being 21.5. It undergoes no change from air or moisture, and is not attacked by any of the pure acids; it is dissolved by chlorine and nitro-muriatic acid, and is oxydized at high temperatures by pure potassa and lithia. It is only found in South America and in the Uralian Mountains: it is usually in small grains of a metallic lustre, associated or combined with palladium, rhodium, iridium, and osmium; and with copper, iron, lead, titanium, chromium, gold, and silver; it is also usually mixed with alluvial sand. The particles are seldom so large as a small pea, but sometimes lumps have been found of the size of a hazel-nut to that of a pigeon's egg. In 1826, it was first discovered in a vein associated with gold by Boussingault, in the province of Antioquia, in South America. When a perfectly clean surface of platinum is presented to a mixture of hydrogen and oxygen gas, it has the extraordinary property of causing them to combine so as to form water, and often with such rapidity as to render the metal red hot: *spongy platinum*, as it is usually called, obtained by heating the ammonio-muriate of platinum, is most effective in producing this extraordinary result; and a jet of hydrogen directed upon it may be inflamed by the metal thus ignited, a property which has been applied to the construction of convenient instruments for procuring a light. The equivalent of platinum is about 98. It is precipitated from its nitro-muriatic solution by sal ammoniac, which throws it down in the form of a yellow powder, composed of bichloride of platinum and sal ammoniac.

Platting, slips of bast, cane, straw, etc., woven or plaited for making into hats, etc.

Plumbago. See BLACK-LEAD.

Plums, the fruit of the *Prunus domestica*, are too well known to require any description. They were introduced into England in the 15th century, and are cultivated in all parts of the country. There are said to be nearly 300 varieties of plums.

Plum-tree (*Prunus domestica*). The *Prunus domestica* appears to be more widely diffused in its original locality than the apricot. It is believed to be indigenous to the south of Russia, Caucasus, the Himalayas, and to many parts of Europe. In England, and in some parts of the United States, it is sometimes found in hedges, but never truly wild. This species and many of its varieties are cultivated for ornament, or their fruit, in all the temperate countries of the habitable globe. Faulkner, in his *Kensington*, makes the plum a native of Asia, and an introduction into Europe of the Crusaders. Gough, in his *British Topography*, says that Lord Cromwell introduced the Perdrigon plum into England in the time of Henry VII. The introduction of this tree into the United States dates back to the earliest periods of their settlements. Several valuable and interesting varieties have originated in this country, among which the Bolmar or Washington plum stands conspicuous. The parent tree is said to have been purchased in a market in New York, about the end of the last century. It remained barren for several years, till, during a violent storm of thunder, the entire trunk was severed to the earth by lightning, and destroyed. The part remaining in the ground afterward threw up several vigorous shoots, which were allowed to remain and finally produce fruit. Trees of this variety were first sent to England in 1819, to Mr. Robert Barclay, of Bury Hill; and several others were sent to the London Horticultural Society in 1821, by Dr. Hosack, of New York. The wood of the *Prunus domestica* is hard, close, compact, beautifully veined, and susceptible of a fine polish. When dry, it weighs from forty to fifty pounds to a cubic foot, according to the age and growth of the tree. Its texture is silky, and when washed with lime-water its color is heightened, and may be pre-

served by the application of varnish or wax. Unfortunately for this tree, its wood is sometimes rotten at the heart. In France and Germany it is much sought after by turners, cabinet-makers, and the manufacturers of musical instruments. The leaves are sometimes given to cattle for forage. The use of the fruit in domestic economy for dessert, and for making tarts and puddings, is well known. In France plums are principally used dry or preserved, and enter extensively into commerce. The kinds usually employed for preserving are the Brignole, the prune d'Ast, the Perdrigon blanc, the prune d'Agen, and the Ste. Catherine. In warm countries plums or prunes are dried on hurdles by solar heat; but in cold climates artificial heat is employed; the fruit being exposed to the heat of an oven and to that of the sun on alternate days. Table prunes are prepared from the larger kinds of plums, as the green-gage, and Ste. Catherine; those employed in medicine from the Ste. Julienne. The former have a very sweet and agreeable taste, and the latter are somewhat austere. Fresh, ripe plums, taken in moderate quantities, are regarded as nutritive and wholesome; but in large quantities they readily disorder the bowels; and when immature, they still more easily excite ill effects. The medicinal prunes are employed as an agreeable, mild laxative for children, and are given during convalescence from febrile and inflammatory disorders in adults.—BROWNE'S *Trees of America*.

Plush (Fr. *Panne*, *Peluche*; Germ. *Wollsammet*, *Plüsch*) is a textile fabric, having a sort of velvet nap or shag upon one side. It is composed regularly of a woof of a single woollen thread, and a two-fold warp, the one woof of two threads twisted, the other goat's or camel's hair. There are also several sorts of plush made entirely of worsted. It is manufactured, like velvet, in a loom with three treadles; two of which separate and depress the woollen warp, and the third raises the hair-warp, whereupon the weaver, throwing the shuttle, passes the woof between the woollen and hair warp; afterward, laying a brass broach or needle under that of the hair, he cuts it with a knife (see FUSTIAN) destined for that use, running its fine, slender point along in the hollow of the guide-broach, to the end of a piece extended upon a table. Thus the surface of the plush receives its velvety appearance. This stuff is also made of cotton and silk.

Plymouth, a sea-port of England, on the east side of a peninsula between the rivers Plym and Tamar, at the head of Plymouth Sound; latitude of Mount Wise, 50° 22' N., long. 4° 10' 2" W. The port of Plymouth is distinguished for its capacity and security; it is capable of containing 2000 sail, and is one of the best harbors in the world. It consists of three divisions: Suttonport, adjoining the town; Catwater, formed by an estuary of the Plym; and the Bay of Hamoaze. At the mouth of these harbors the great bay of Plymouth Sound forms an excellent roadstead, which is now completely secure by the erection of the breakwater across the entrance. This is an isolated mole at the entrance of the Sound 5100 feet long, and opposing a barrier to the heavy swell of the Atlantic. The Sound is three miles long and four miles wide, and forms the harbor of Davenport and Plymouth.

Point net is a style of lace formerly much in vogue, but now superseded by the bobbin-net manufacture.—See LACE.

Points of the Compass. In *Geography and Navigation*, the points of division of the circle representing the horizon, or of the compass card over which the magnetic needle is suspended. A diameter of the circle being drawn to represent the meridian, or north and south directions, and another at right angles to it to represent the directions east and west, the circle is thus divided into four quarters, each of which is subdivided into eight equal parts, so that the whole circle is divided into thirty-two equal parts; and the points

of division are termed the points of the compass. Each has a particular name, indicating its place with reference to the four principal or *cardinal points*; namely, the north, south, east, and west points.—See COMPASS.

Polar Sea, North. We are now able to draw with nearly geographical accuracy the boundaries of the North Polar Sea. A very large portion of the northern shores of Europe, Asia, and America, which circumscribe it, have been visited, and the position of most of their bays, headlands, and rivers, geographically ascertained. By casting our eye over the North Polar chart, it will be seen that the Polar Sea of that hemisphere is an immense circular basin, which communicates with the two great oceans of the world—the Atlantic and the Pacific—by two channels, the one separating America from Europe, and the other America from Asia. It will be seen that few points of the coasts of Europe and Asia, which occupy a full half of the circumscribing circle, extend much beyond the 70th parallel of latitude; and all these points have been passed by water, though at different points and by different persons, with the single exception of the Cape Cevero Vastochnoi, which on the charts is made to extend to the latitude $75\frac{1}{2}^{\circ}$. The northern coast of America, with Old Greenland, and the two channels above mentioned, complete the circle, America extending about 80° of longitude, or just two ninths of the whole circle; and of this portion the whole coast has now been ascertained, with the exception of that part which lies between Cape Turnagain of Franklin, and the land at the bottom of Prince Regent's Inlet, which the gentlemen of the Hudson's Bay Company are now (1838) exploring. This being accomplished, we shall have the whole line of the northern coast of America completed. We may, therefore, state that the average of the degree of latitude of this coast is about the same as, or rather lower than, that of Europe and Asia, and the extent of the North Polar Sea may be considered as about 2400 geographical miles in diameter, or 7200, in circumference. The interior or central parts of this sea are very little known. Several islands are scattered over its southern extremities, the largest of which is Old Greenland, whose northern limit has not yet been passed; the others are, Spitzbergen, Nova Zembla, the islands of Liaknov, or, as some have been pleased to call them, New Siberia; the North Georgian Islands of Parry, and those which form the western lands of Baffin's Bay, to which may be added the Boothia Felix of Ross, which there is no doubt is an island. Besides these, there are a number of small alluvial islands, formed at the mouths of the several rivers of the two continents; but whether any, or what number of islands may exist nearer to the Pole, we must of course remain ignorant till the Polar Sea has been further explored.

For the little which is known of this sea, we are indebted to that spirit of discovery which showed itself immediately after a passage to the East Indies had been effected round the Cape of Good Hope; not so much, it is true, for the sake of geographical discovery as that of shortening the passage by sea to the eastern parts of the world. It was obvious that if a ship could proceed from the Atlantic to the Pacific on a great circle of the sphere, or nearly so, the distance, compared with the circuitous passage round Southern Africa or Southern America, would be prodigiously shortened. The voyage of Columbus had that object; but it was soon discovered that, from the Straits of Magelhaens to the Gulf of St. Lawrence there was an uninterrupted continuity of land. Of the northern regions the information obtained has been scanty and discouraging for such an enterprise. One of the Scandinavian pirates had, indeed, been driven by stress of weather, as early as the middle of the 9th century, upon an island to the northwest, to which, from its appearance, he gave the name of Snowland, which was afterward changed to that of Iceland, by the leader of the Nor-

wegian colonists who took refuge on that inhospitable spot; but it was not till more than a century after this that Eric Randa discovered the southern part of Old Greenland, and there are grounds for believing that in the year 1001 some of these colonists discovered Newfoundland and the coast of Labrador.

Of the South Polar Sea little or nothing may be said to be known. Captain Cook, in the years 1773 and 1774, crossed the antarctic circle in *five* places only; in longitude $89\frac{1}{2}^{\circ}$ east, where he advanced to latitude $67\frac{1}{2}^{\circ}$, and met with fields and detached pieces of ice; in longitudes 101° and 110° west, between which he proceeded to latitude $71^{\circ} 10'$ south, the farthest progress made by him toward the South Pole, where he was stopped, or at least deemed it prudent to return, on account of the fields and mountains of ice which were scattered over the surface of the sea; and in longitudes 136° and 148° west, between which he descended to latitude 68° , and saw many floating ice islands. There are, therefore, still remaining about 340 degrees of longitude in which the antarctic circle has not been crossed, and full half the circumference of the globe which has not been visited lower to the southward than the parallel of 60° south latitude.

Mr. Weddell, a master in the navy, proceeded some three degrees farther south than Cook; and since that, two ships of Mr. Enderby discovered a long tract of land, the extent of which they did not determine.

There was little doubt of the existence of high land in the South Polar Sea, though Cook discovered none beyond the Northern Thule, or Sandwich Land, on the parallel of 60° . Without high, precipitous land, those large icebergs which he met with floating among the fields of ice could not have been formed; the *hummocks* of ice, occasioned by the agitation of the sea, and the meeting of the *fields or flows* in opposite directions, seldom rise to the height of twelve or fifteen feet above the surface. The Russians, indeed, on a recent voyage of discovery, are said to have fallen in with many islands about the 70th parallel of latitude. They also circumnavigated the Sandwich Land, which was left undetermined by Cook, and conjectured that it might be a part of the great Southern Continent, which occupied so much attention of the geographers and philosophers of the last century. This idea was renewed by the recent discovery of a very considerable extent of land to the southward of Cape Horn, in latitude 63° , and seen extending from longitude 55° to 65° west. As the eastern extremity had not been seen, and the winding of the coast was to northeast, it was conjectured that it might unite with the Southern Thule of Cook, and form the long-sought-for Southern Continent. It is said, however, that the Russians have also circumnavigated this land, and that it is composed of a great cluster of islands.

The land in question has been called South Shetland, but it is no new discovery. In the account of the voyage of the *five ships of Rotterdam*, under the command of Jacob Mahn and Simon de Cordes, to the South Seas, in the year 1599, it is stated that, on approaching the Strait of Magelhaens, the yacht commanded by Dirk Gherritz was separated from all the other ships, and was carried by tempestuous weather to the south of the Strait, to 64° south latitude, where they discovered a high country, with mountains, which were covered with snow, like the land of Norway. This land of Gherritz was marked on some of the old charts, but discontinued on the more modern ones, from the uncertainty of its position with regard to longitude. There can be no doubt of its identity with the modern South Shetland. It answered to the description of the mountains of Norway, covered with snow, and is wholly barren, having neither tree nor shrub of any kind. It is unnecessary to say that it is uninhabited, there being no such people in the southern hemisphere as the Esquimaux; and it may be remarked, that no human beings are found in the Southern Ocean below the 55th

parallel of latitude, and none beyond the 50th, except on Patagonia and Tierra del Fuego. On the shores, the seals and sea-horses, which had remained from the Creation undisturbed, were so numerous, that on the first notice of the rediscovery, a whole fleet of vessels from England and North America crowded thither on speculation; but the loss of several from tempestuous weather, and a dangerous navigation, and the destruction and alarm of the objects of their cupidity, will probably cause it, for some time at least, to remain as much a land of desolation as it had been before.

For an account of Polar Sea expeditions, see ARCTIC OCEAN. Refer to PARRY's *Voyages*; FRANKLIN's *Expeditions*, etc.; *American Journal of Science*, xvi. 124; *Westminster Review*, xxxi. 273; *American Quarterly Review*, iv. 215; BLACKWOOD's *Magazine*, ii. 363, iv. 157; *Eclectic Magazine*, xii. 43, xx. 60, xix. 414; *Edinburgh Review*, xlviii. 423, lxi. 223, lxiii. 151; *Quarterly Review*, xlviii. 372, xxxvii. 523, xxxviii. 335, lvi. 151, lxvi. 218; *North British Review*, xvi. 236, xlii. 193, 275, 453, xxxi. 291, xxxvi. 45, 241; *Living Age*, xxv. 18, xxvi. 572, xx. 289; FRASER's *Magazine*, xxxviii. 608; DE BOW's *Review*, xiii. 1.

Policy of Insurance, or Assurance, of ships, is a contract or convention by which a person takes upon himself the risks of a sea-voyage, obliging himself to make good, in part or in whole, the losses and damages that may befall the vessel, its equipage, tackle, victualing, lading, etc., either from tempests, shipwrecks, pirates, fire, war, reprisals, in consideration of a certain sum, more or less according to the risk; which sum is paid down to the assurer by the assured upon his signing the policy.—See INSURANCE.

Polynesia ("many islands") includes the multitude of islands scattered over the Pacific Ocean, and comprehends a belt chiefly within 30° on each side of the equator, and from longitude 125° E. to 125° W. Including New Zealand, the boundary extends south of the equator to lat. 47° S. The islands are distributed into numerous groups, and these groups, of an elongated form, have a general direction from northwest to southeast, and are composed of one or more larger islands, and numerous smaller ones. The principal groups to the north of the equator are the Pelaw, Ladrone, or Mariane, Caroline, Radack, Marshall, Gilbert, and Sandwich Islands. South of the equator are New Ireland, New Hebrides, New Britain, Feejee, Friendly, Navigator's, Solomon's, Society, Mendana or Marquesas, Low Archipelago, Cook's, Austral, and other minor groups, besides numerous detached islands, as Easter and Pitcairn islands. With the exception of Hawaii, the largest island of Polynesia, the most considerable of the others range from 20 to 60 and 100 miles in circumference, while many do not exceed a mile or two in length. These islands are all, more or less, of coral formation; the Low Archipelago, Society Islands, Marshall, and Carolines, presenting the regular atoll form, with circular reefs and lagoons. The Friendly, New Hebrides, Solomon's, and Sandwich Islands, present fringed reefs, and have active volcanoes; summits of mountains varying from 2000 to 13,000 feet. In the lower coral islands the elevations do not exceed 500 feet. In the atoll coral islands, Darwin has supposed that a depression of surface is taking place, and that the volcanic islands are either stationary or rising. From the great predominance of ocean, the temperature of Polynesia is comparatively moderate, the climate delightful and salubrious. Mean annual temperature of Sandwich Islands 77°; temperature of Society Islands, 70° to 80°, and rarely 90°, Fahrenheit. The southeast tropical winds generally prevail, but northwest and southwest winds are not uncommon. Hurricanes are rare, and earthquakes slight and not of frequent occurrence. The refreshing coolness of the trade-winds, and a regular but not excessive supply of moisture, are favorable to a luxuriant vegetation. Soil in the valleys and in the river courses a rich volcanic

mould; on the mountains less fertile. Both vegetable and animal productions are limited as to number of species. In the islands of the middle and eastern divisions not more than 500 species of plants are found. This number increases toward the west and northwest. The bread-fruit, peculiar to this region, the cocoa, banana, plantain, banyan, sugar-cane, yam, and cotton-plant, paper-mulberry, and a species of chestnut, are indigenous. Other trees and plants of tropical climates have been introduced and flourish; and arrow-root, sweet potatoes, the common potato, and maize, are now reared abundantly. There are several timber trees, especially sandal-wood, a few spices, and ornamental flowers, which, however, have little odor or decided color. The islands were all remarkably deficient in animals, thus indicating their isolated and comparatively recent origin. Turtles resort in great numbers to many localities, and fish are plentiful on the coasts. Several species of whales, the cachalot or sperm whale, Cape whale, humpback, and blackfish, are peculiar to the seas of the Pacific, and their capture has been the chief inducement for ships visiting these regions. Oxen have been introduced from New South Wales, and thrive well; and horses from South America. The natives of Polynesia are in general a well-formed, tall, active, and intelligent people. There are two distinct races, one apparently of Malay origin, by far the most numerous and intellectual, and spread over all Central and Eastern Polynesia, and speaking one common language, though varying in dialects. The other a negro or Papuan race, with negro features and color, and crisped mop-like hair, growing in separate tufts, speaking a distinct language, and exhibiting an intellect of an inferior grade, probably the first settlers of the islands, and now confined to the western part of Polynesia, and inhabiting partly or wholly New Guinea, New Britain, New Ireland, the Solomon Islands, New Caledonia, New Hebrides, and part of the Ladrone Islands. Some of the western islands, as the Ladrones, were discovered by Magelhaens in 1521, the Marquesas by Mendaña in 1595; but it was not till 1767 that Wallis, and subsequently Cook, explored and described the leading islands of this region. Soon after this, missionaries began to settle in the islands, and after many discouragements at last have succeeded in promoting Christianity and civilization in some of the principal islands; though cannibalism and savage ferocity still prevail in the majority. The population of these islands varies continually from wars, migrations, and occasional pestilence. Tahiti and some others, when first discovered, were conjectured to be greatly more populous than at present, but no proper data exist for affording even an approximation to the real numbers. Probably the population of the whole of Polynesia does not exceed one million or one million and a half.—HARPER'S *Gazetteer*.

Pomegranate (Ger. *Granatapfel*; Fr. *Grenades*; It. *Granati*, *Melagrani*; Sp. *Granadas*), the fruit of the pomegranate-tree (*Punica granatum*). This tree, which grows to the height of 15 or 20 feet, appears to be a native of Persia, whence it has been conveyed, on the one side, to Southern Europe, and on the other to the tropical parts of Asia, and eventually to the New World. The fruit is a pulpy, many-seeded berry, the size of an orange, covered with a thick, brown, coriaceous rind. The pulp has a reddish color, and a pleasant sub-acid taste. The value of the fruit depends on the smallness of the seed and the largeness of the pulp. The finest, called by the Persians *badana*, or seedless, is imported into India from Cabul and Candahar, where the pomegranate grows in perfection. The tree thrives all the way to the equator; but within the tropics the fruit is hardly fit for use. The pomegranates brought to market from the south of Europe and the West Indies are very inferior to those of Persia.

The *Punica granatum* is a tree, in magnitude and ligneous character, bearing considerable resemblance

to the common hawthorn. In a wild state it forms a thorny bush; but when cultivated in gardens and in plantations, under favorable circumstances, it often attains a height of 15 or 20 feet.

The *Punica granatum* is indigenous to Barbary, Persia, Japan, and various parts of Asia; and has long been naturalized in the south of Europe, the West Indies, Mexico, and in South America. In the Himalayas, Mr. Royle informs us that the pomegranate grows wild, and also that it is planted near villages. It forms quite a wood in Mazanderan, whence the dried seeds are exported for medical use. The famous seedless pomegranates are grown in the rich gardens lying under the snowy hills near the River Caubul. They are also described as delicious about Hadgiabad, and throughout Persia. "Though grown in most parts of India," says Mr. Royle, "large quantities, of superior quality, are yearly brought down by the northern merchants from Caubul, Cashmere, and Boodurwar." The pomegranate-tree, which partakes of the antiquity of the vine, the fig, and the olive—and which, in point of utility, is numbered with the grain-bearing plants, and with honey, all constituting the principal food of the Eastern nations; in the early stages of civilization—must possess no small degree of historical interest. It is mentioned by Theophrastus under the name of *roa*; the Phœnicians called it *sida*; the Greeks *cytnos*; and the Romans, according to Pliny, *malus punica*.

The general diffusion of the pomegranate throughout the climates suited to its growth, implies that it possesses highly valuable properties. In hot countries its utility is incontestable; for its juice is most grateful to the palate, and assuages thirst in a degree quite peculiar to it, from its pleasant acid—an acid so soft that it may, in truth, be said to be "full of melting sweetness," as Moore expresses himself. The pulp, however, which incloses the seeds, is sometimes acid, sometimes sweet; and in some cases vinous, astringent, and always refreshing. A sirup is made from the pulp by the druggists, as well as from the dried flowers, which is employed as an astringent and detergent. The rind of the fruit, on account of its astringent properties, is sometimes employed in *materia medica*, as well as in the veterinary art. It has also been used as a substitute for galls, in the manufacture of black ink, and is said to be still employed in some parts of Germany in dyeing leather red, in imitation of morocco. In the Himalayas, Mr. Royle informs us, the rind of the fruit, called *naspal*, "being very astringent, is used in medicine, as well as in dyeing." The employment by the natives of India of the bark of the root for the expulsion of the tape-worm, being now well known, since the subject was communicated by Drs. Hamilton and Fleming, is a remarkable instance of the oblivion into which even a valuable medicine may fall, as this property was well known to Dioscorides." Lord Bacon recommends the juice of pomegranates as good for liver complaints; and Dr. Woodville says it is preferable to that of oranges in cases of fever. From the flowers, with the addition of alum, there may be obtained a fine red ink. The flowers, also, were formerly used to dye cloth a light red.—BROWNE'S *Trees of America*.

Ponce. See PORTO RICO.

Pondicherry. The name of Pondicherry is made to include all the French possessions in India, because it is the most considerable of them. It is situated on the Coromandel coast of Hindostan, in latitude 11° 57' N. Its population in 1886 was 52,127, of whom 696 were Europeans. The French possessions in India comprise also Chandarnagore, Karikal, in the Carnatic; Mahé, in Malibar; Yanaon, in Orissa; with the territory attached to each. These have a total population of 166,000, of whom 1000 are whites. The products are rice, grain, cocoa-nuts, betel, indigo, tobacco, and cotton. The annual value of the imports is about \$373,000, and of the exports about \$1,200,000. The

trade, nearly all being at Pondicherry, is with the Coromandel coast, Isle of Bourbon, the Mauritius, and Senegal. Pondicherry would have been a commercial point of great magnitude but for the changes of ownership, occasioned by the frequent wars of France and England. The law of the 17th May, 1826, provides that the distinction between the French and foreign factories in India shall be suppressed in the tariff, and that merchandise from any of these settlements shall pay no other duties than are imposed on the same articles brought from the French settlements.

Poplar (Ger. *Pappel*, *Pappelbaum*; Du. *Popelier*; Fr. *Peuplier*; It. *Pioppa*; Sp. *Alamo*; Lat. *Populus*). Of the poplar (*Populus* of botanists) there are about 15 species described. In most favorable situations the white poplar grows with great rapidity, sometimes sending forth shoots 16 feet long in a single season. The wood is soft, and not very durable unless kept dry; but it is light, not apt either to swell or shrink, and easily wrought. The Lombardy poplar grows rapidly, and shoots in a complete spire to a great height; its timber does not differ materially from that of the white poplar. It is very light, and is therefore well adapted for the manufacture of packing-cases. None of the species is fit for large timbers.—TREDGOLD'S *Principles of Carpentry*; *Vegetable Substances*, *Library of Entertaining Knowledge*.

Population. It would be quite inconsistent with the objects and limits of this work to attempt giving in this place any explanation of the laws which regulate the progress of population. However, as it is frequently of importance in commercial questions, and in others affecting commercial interests, to be able to compare the consumption of an article with the population, we believe we shall gratify our readers by laying before them the following Table, showing the comparative population of the principal commercial countries of the world:

Countries.	Population.
Austrian Empire, 1842..	35,730,112
Austria.....	23,062,561
Hungary.....	7,864,262
Lombardy and Venice..	4,803,289
British Empire.....	27,435,325
England and Wales....	17,905,831
Scotland.....	2,870,784
Islands in British seas..	142,916
Ireland.....	6,515,794
Colonies.....	5,224,477
North America.....	2,181,270
West Indies.....	900,882
Africa.....	411,463
Australia.....	469,000
Asia.....	1,561,350
Europe.....	411,463
France, 1846.....	35,400,486
Colonies, 1841, 730,496, viz.:	
Asia.....	167,790
Africa and Algeria....	272,460
West Indies.....	255,689
N. and S. America.....	23,348
Australia.....	20,200
Prussia, 1840.....	16,331,187
Protestants.....	9,835,533
Catholics.....	6,045,292
Jews.....	214,867
Russian Empire, 1846...	66,008,315
European Russia.....	54,092,300
Siberia.....	2,937,000
Trans-Caucasian.....	2,649,000
American.....	61,000
Poland.....	4,857,700
Finland.....	1,412,315
United States, 1851.....	23,674,706
White.....	19,655,202
Free colored.....	418,573
Slave colored.....	3,600,931
Bavaria, 1847.....	4,519,526
Catholics.....	3,060,694
Protestants.....	1,151,216
Jews.....	59,288
Belgium, 1849.....	4,350,090
Brazil, 1850.....	5,180,000
now 6 to 7,000,000	
Denmark, 1845.....	2,256,497
Denmark proper.....	1,407,747
Duchies.....	888,750
Colonies.....	118,491

Countries.	Population.
Egypt.....	1,927,000
Greece.....	637,700
Hamburg.....	188,054
Holland, 1849.....	3,241,990
Colonies.....	21,786,700
Mexico, 1837.....	7,557,000
Papal States, 1843.....	2,908,115
Portugal, 1841.....	3,412,500
Possessions.....	1,722,140
Azores.....	330,500
In Africa.....	706,610
In Asia.....	381,720
China and Oceania.....	523,310
Sardinia, 1833.....	4,650,308
Continent.....	4,125,735
Isle of Sardinia.....	524,633
Spain, 1833.....	12,386,341
Colonies.....	3,717,493
Sweden.....	4,645,007
Norway.....	3,316,536
Turkey.....	35,350,000
Europe.....	15,500,000
Asia.....	16,050,000
Egypt, Tripoli, Tunis.....	3,800,000
Two Sicilies, 1845.....	8,429,316
Naples.....	6,382,706
Sicily.....	2,040,610
China.....	367,000,000
Uncertain.....	
COLONIES.	
British Possessions.	
Indies.....	151,316,120
British States.....	98,785,852
Native States.....	52,359,051
Foreign States.....	171,217
Canada, 1848.....	1,491,626
Eastern.....	768,354
Western.....	723,292
Cape of Good Hope.....	168,116
Australia, 1848.....	
New South Wales.....	212,000
Western, 1848.....	4,622
Van Diemen's Land, 1850.....	80,000
South, 1849.....	45,907
Jamaica, 1850.....	400,000
Ceylon, 1843.....	1,442,062
Mauritius, 1846.....	161,089
French Possessions.	
Hayti.....	700,000
Spanish Possessions.	
Cuba, 1850.....	1,400,000
Dutch Possessions.	
Java.....	9,500,000

For disquisitions on the law of population, see writings of MALTHUS, GODWIN, A. H. EVERETT, GRAY, SADLER, THORNTON, DOUBLEDAY. The subject of population is discussed in the following periodicals: *Westminster Review*, lit. 153, xlvii. 100, lvii. 468; *Quarterly Rev.* xlv. 97, xxvi. 148, xvii. 369, liii. 30; *Bankers' Mag.*, New York, iii. 457, 528 (J. H. ALEXANDER); *North Am. Rev.* lxvii. 370 (BOWEN), xxxiii. 1 (A. H. EVERETT), xvii. 288 (E. EVERETT), xxiv. 218 (SPARKS), xv. 289; *HUNT'S Merchants' Magazine*, vii. 241, 337, 529, viii. 240, 330 (TUCKER); *Edinburgh Review*, xvi. 464, xxxv. 362, li. 297, lii. 504, lxxv. 85; *Monthly Review*, ciii. 80; *BLACKWOOD'S Magazine*, xxviii. 109, xxix. 392, xxi. 377; *British Quarterly Review*, iv. 115; *American Almanac*, 1837, 1848; *Democratic Review*, xxi. 397 (A. H. EVERETT), xvii. 297, 379, 438 (TUCKER), xxii. 11.

Porcelain, or China Ware, a very fine species of earthen-ware. The first specimens of this fabric were brought to Europe from China and Japan. The best Chinese porcelain is of a very fine texture, white, semi-transparent, and sometimes beautifully colored and gilt; is infusible, and not subject to break by the sudden application of heat or cold. The Chinese term for the article is *tse-ki*. But the Portuguese, by whom it was first brought in considerable quantities into Europe, bestowed on it the name of porcelain, from *por-cella*, a cup. Common earthen-ware, sometimes of a very good quality, is manufactured in Canton, Fokien, and several other provinces of China. But it is a curious fact that the beautiful porcelain imported into Europe is made only in the town of Kingtesing, in the province of Kyangsi. Its manufacture is fully de-

scribed by Dubalde, in his account of China, under the head "Porcelain and China-ware." The porcelain of Japan is decidedly inferior to that of China; very little is imported, and it is valued only as a curiosity. After porcelain began to be imported, its beauty soon brought it into great request, notwithstanding its high price, as an ornament for the houses and tables of the rich and the great. The emulation of European artists was in consequence excited. Very little information was, however, obtained as to the mode of manufacturing porcelain till the early part of last century, when the process was developed in a letter from a French Jesuit in China, who had found means to make himself pretty well acquainted with the subject. The knowledge that thus transpired, and the investigations of Reaumur and other chemists, prepared the way for the establishment of the manufacture in Europe. It was first commenced at Dresden, which has been famous ever since for the beauty of its productions; but the finest and most magnificent specimens of European china have been produced at Sèvres, in France, in the factory carried on at the expense of the French government.

British Porcelain Manufacture.—This, though unable to boast of such fine specimens of costly workmanship as have been produced at Sèvres and Dresden, is of much greater national importance. Instead of exclusively applying themselves to the manufacture of articles fitted only for the consumption of the rich, the artists of England have exerted themselves in preference to produce China-ware suitable for the middle classes; and have succeeded in producing articles at once excellent in quality, elegant in form, and cheap. We are principally indebted for the improvements made in this important manufacture to the genius and enterprise of the late Mr. Josiah Wedgwood. This extraordinary man owed none of his success to fortuitous circumstances. Devoting his mind to patient investigation, and sparing neither pains nor expense in accomplishing his aims, he gathered round him artists of talent from different countries, and drew upon the stores of science for aid in pursuing the objects of his praiseworthy ambition. The early and signal prosperity that attended his efforts served only as an incentive to urge him forward to new exertions, and as means for calling forth and encouraging talent in others, in a manner calculated to promote the welfare of his country. Previously to his time, the potteries of Staffordshire produced only inferior fabrics, flimsy as to their materials, and void of taste in their forms and ornaments; the best among them being only wretched imitations of the grotesque and unmeaning scenes and figures portrayed on the porcelain of China. But such have been the effects resulting from the exertions and example of this one individual, that the wares of that district are now not only brought into general use in England, to the exclusion of all foreign goods, which had been largely imported; but English pottery has since been sought for and celebrated throughout the civilized world, and adopted even in places where the art was previously practiced. An intelligent foreigner, M. Faujas de St. Fond, writing on this subject, says: "Its excellent workmanship, its solidity, the advantage which it possesses of sustaining the action of fire, its fine glaze impenetrable to acids, the beauty and convenience of its form, and the cheapness of its price, have given rise to a commerce so active and so universal, that, in traveling from Paris to Petersburg, from Amsterdam to the farthest part of Sweden, and from Dunkirk to the extremity of the south of France, one is served at every inn upon English ware. Spain, Portugal, and Italy are supplied with it; and vessels are loaded with it for both the Indies and the continent of America."—See the quotation in the *Account of the Porcelain Manufacture*, p. 16, in LARDNER'S *Cyclopedia*. For the statistical details with respect to the manufacture, see the article EARTHEN-WARE. The

British porcelain manufacture is principally carried on at the potteries in Staffordshire, and at Worcester, Derby, Colebrook Dale, and other places.

Murrhine Cups.—It was long a prevalent opinion among modern critics that the *vasa murrhina*, so famous in Roman history, were formed of porcelain. Pompey was the first who brought them to Rome from the East, about 64 years before the Christian era. They were used as drinking-cups, and fetched enormous prices; Nero having given, according to the common method of interpreting, £58,000 for a single cup! The extravagance of the purchaser may, in this instance, be supposed to have increased the price; so that the degree of estimation in which these cups were held may be more accurately inferred from the fact that, of all the rich spoils of Alexandria, Augustus was content to select one for his share.—SÆTONTIUS, lib. ii. c. 71. Pliny (lib. xxxvii. c. 2) says they were made in Persia, particularly in Karamania. But those who contend they were China-ware, chiefly found on the following line of Propertius:

Murrheaque in Parthis pocula cocta focis.—Lib. iv.

In despite, however, of this apparently decisive authority, Le Bland and Larcher have, in two very learned dissertations (*Mémoires de Littérat.* tom. xliii.), which Dr. Robertson has declared are quite satisfactory, endeavored to prove that the *vasa murrhina* were formed of transparent stone, dug out of the earth in some Eastern provinces, and that they were imitated in vessels of colored glass.—ROBERTSON'S *Disquisition on India*, note 39. Dr. Vincent (*Commerce and Navigation of the Ancients*, vol. ii. p. 723) inclines to the opposite opinion; but the weight of authority is evidently on the other side. At all events, it is plain that if the murrhine cups were really porcelain, it had been exceedingly scarce at Rome, as their price would otherwise have been comparatively moderate. But it is most probable that the ancients were wholly unacquainted with this article; which, indeed, was but little known in Europe till after the discovery of the route to India by the Cape of Good Hope. For some further details on this question, see KIPPINGII, *Antiq. Róm.* lib. iv, c. 3.—See *American Journal of Science*, xxvi. 233; *American Monthly Review*, ii. 117.

FOREIGN IMPORTATIONS AND EXPORTATIONS, DOMESTIC EXPORTS OF THE MANUFACTURES OF CHINA, PORCELAIN, EARTHEN AND STONE WARE, OF THE UNITED STATES.

Years.	Foreign Importations.	Foreign Exports.	Domestic Exports.
1840.....	\$2,070,231	\$63,754	\$10,959
1841.....	1,586,450	51,570	6,737
1842.....	1,557,961	37,000	7,618
1843.....	538,036	26,338	2,907
1844.....	1,633,432	27,239	4,834
1845.....	2,439,515	22,701	7,393
1846.....	2,525,349	63,403	6,521
1847.....	2,242,241	32,690	4,753
1848.....	2,332,996	36,148	8,512
1849.....	2,261,331	39,948	10,632
1850.....	2,601,393	42,261	15,644
1851.....	3,340,622	41,109	23,096
1852.....	3,444,095	23,834	18,310
1853.....	3,173,182	15,133	53,685
1854.....	4,137,691	55,925	33,867
1855.....	3,717,670	73,092	32,119
1856.....	3,347,884	40,091	66,696
Average.....	\$2,526,772	\$40,723	\$18,470

In consequence of a change in the fiscal year in 1843, but nine months are represented in that year.

Pork, the flesh of the hog.—Salted and pickled pork forms a considerable article of export to the West Indies and other places.

The exports of pork from the U. States for the year ending June 30, 1857, were from the following ports:

	Barrels.	Value.
Boston.....	22,732	\$379,339
New York.....	64,466	1,190,375
Baltimore.....	12,213	226,376
Other ports.....	44,389	909,777
Total.....	143,800	\$2,505,867

TABLE EXHIBITING THE QUANTITIES AND VALUE OF PORK, BACON, AND LARD EXPORTED FROM THE UNITED STATES TO GREAT BRITAIN, FROM 1830 TO 1855, BOTH YEARS INCLUSIVE.

Years.	Pork.	Hams and Bacon.	Lard.	Value
	Barrels.	Pounds.	Pounds.	Dollars
1830.....	2,290	1,646	.....	20,532
1831.....	130	2,865	.....	1,833
1832.....	2,705	602	.....	29,378
1833.....	921	7,430	600	10,197
1834.....	.....	4,994	.....	438
1835.....	12	1,815	.....	345
1836.....	.....	11,461	.....	1,233
1837.....	.....	400	.....	40
1838.....	.....	667	.....	88
1839.....	10	150	.....	241
1840.....	.....	1,061	.....	115
1841.....	4,769	26,394	444,305	80,379
1842.....	6,990	169,274	3,430,732	237,028
1843.....	3,230	656,826	4,569,484	305,293
1844.....	10,280	350,139	8,976,805	643,705
1845.....	14,140	56,907	5,687,675	4,7066
1846.....	13,001	530,026	8,211,389	763,226
1847.....	73,540	14,367,105	17,793,770	3,471,597
1848.....	87,760	20,218,462	27,783,841	5,233,259
1849.....	111,385	53,150,465	21,388,265	6,482,194
1850.....	44,631	37,377,169	31,692,591	4,331,939
1851.....	9,538	14,723,169	6,623,783	1,587,351
1852.....	1,632	3,207,903	8,976,124	1,075,299
1853.....	17,156	13,297,379	9,725,156	2,539,094
1854.....	43,664	38,800,757	26,716,141	6,193,894
1855.....	54,663	30,240,161	15,249,922	5,915,120

* 5679 tierces were also exported in 1855.

EXPORTS OF PORK FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whither exported.	Tierces.	Barrels.	Value.
Sweden and Norway.....	60	\$975
Swedish West Indies.....	115	2,634
Danish West Indies.....	2,429	40,742
Hamburg.....	32	520
Bremen.....	176	2,819
Holland.....	3	43	745
Dutch West Indies.....	339	4,351
Dutch Guiana.....	1,767	33,040
Dutch East Indies.....	25	413
Belgium.....	1,491	24,886
England.....	4326	27,832	641,896
Scotland.....	724	11,654
Gibraltar.....	225	3,073
Malta.....	362	7,144
Canada.....	56,613	897,116
Other British N. A. Poss.....	30,855	524,380
British West Indies.....	34	23,950	415,209
British Honduras.....	4,428	71,558
British Guiana.....	11,723	185,429
British Poss. in Africa.....	556	9,707
Other ports in Africa.....	637	10,457
British Australia.....	119	1,972	51,147
New Zealand.....	387	6,100
British East Indies.....	155	2,481
France on the Atlantic.....	29,129	594,138
France on the Mediter'n.....	33,755	679,820
French N. A. Possessions.....	423	7,715
French West Indies.....	505	9,027
French Guiana.....	621	12,745
Spain on the Atlantic.....	42	621
Spain on the Mediter'n.....	10	146
Canary Islands.....	30	540
Philippine Islands.....	75	1,175
Cuba.....	4,321	77,705
Porto Rico.....	3,715	65,820
Portugal.....	14	219
Cape de Verd Islands.....	20	367
Sardinia.....	3,204	51,553
Austrian Poss. in Italy.....	24	322
Turkey in Europe.....	3,204	69,063
Hayti.....	17,687	341,038
San Domingo.....	33	735
Mexico.....	270	3,077
Central Republic.....	2,094	84,373
New Granada.....	375	6,401
Venezuela.....	1,368
Brazil.....	2,773	44,440
Chili.....	2,773	4,586
Peru.....	453	7,324
Sandwich Islands.....	2,318	46,338
China.....	1,541	20,653
Whale Fisheries.....
Total.....	4484	274,650	\$5,029,940

—See PROVISIONS.

Pork Trade of the West.—The *Cincinnati Price Current* contains returns of the pork trade from all the principal points in the West for the seasons of 1855-'56,

and 1856-'57. The following is a recapitulation by States of the number of hogs packed :

States.	1855-'56.	1856-'57.
Ohio	633,697	483,048
Kentucky	428,334	349,212
Indiana	482,531	516,629
Illinois	481,263	363,202
Missouri	189,904	148,244
Iowa	172,378	105,322
Tennessee	62,400	42,811
Wisconsin	39,000	15,000
Grand totals	2,489,502	1,818,468
Total deficiency, 1857.	671,034	

Port, a harbor, river, or haven, formed either by nature or art to receive and shelter shipping from the storms and waves of the open sea. Artificial ports are those which are either formed by throwing a strong mound or rampart across the harbor's mouth to some island or rock, or erecting two long barriers, which stretch from the land on each side like arms or the horns of a crescent, and nearly inclose the haven. The former of these are called *mole-heads*, and the latter *piers*.

Port is also a name given on some occasions to the larboard or left side of the ship, as in the following instances. Thus it is said, "The ship heels to port;" that is, stoops or inclines to the larboard side. "Top the yard to port," the order to make the larboard extremity of a yard higher than the other. "Port the helm," the order to put the helm over the larboard side the vessel. In all these senses this phrase appears intended to prevent any mistakes happening from the similarity of sounds in the words *starboard* and *larboard*, particularly when they relate to the helm, where a misapprehension might be attended with very dangerous consequences.

Ports, the embrasures or openings in the side of a ship of war, wherein the artillery is ranged in battery upon the decks above and below.

Port-au-Prince, the capital of Hayti, or St. Domingo, in lat. 18° 33' 42" N., long. 72° 27' 11" W. Population variously estimated, probably from 18,000 to 20,000. It is situated on the west coast of the island, at the bottom of a large and deep gulf. It was founded in 1749; since which, with few intervals, it has been the capital of French St. Domingo, as it is now of the entire island. It is partially fortified; the harbor being protected by a battery on a small island at a little distance from the shore. The country round is low and marshy; and the heat in the summer months being excessive, the climate is then exceedingly unhealthy. The buildings are principally of wood, and seldom exceed two stories in height. The entrance to the harbor is between White Island and the southern shore. The depth of water varies from about 18 feet at ebb to about 21 feet at full tide. It is customary, but not compulsory, to employ a pilot in entering the harbor. They are always on the look-out. Ships moor head and stern, at from 100 to 500 yards from shore; loading and unloading by means of boats, as there are neither docks nor quays to assist these operations. The harbor is perfectly safe, except during hurricanes, which may be expected from August to November. The commerce of Port-au-Prince is carried on by various classes of persons. The imports from Europe and America are principally consigned to European and North American commission houses, besides a few Haytien establishments. The capital is one of the ports to which foreign merchants are confined by the law of patents; but they are restricted by heavy penalties to a wholesale business with Haytiens, and to a minimum amount of goods. Of course they can not deal with the consumers, but with the native retailers, who are chiefly women, styled "*merchandees*;" these employ bucksters, also women, who traverse the country, attend the markets, and give an account of their transactions to their employers, either every even-

ing, once a week, or once a month, according to their character for integrity.

This city, being the capital of the empire, centralizes the large bulk of Haytien foreign commerce. It is true that less than a third of the vessels engaged in this foreign commerce depart from its ports with full cargoes; but this is owing to the fact that it is unable to supply sufficient exports, and the laws of Hayti permit foreign vessels, after unloading at the first port, to proceed to others to make up their cargoes. The general navigation from 1846 to 1850 comprised, arrivals and departures, 1448 vessels, with an aggregate of 219,810 tons, or an annual average of 290 vessels of 48,962 tons. The flags which enter into the foreign trade of this port are, the United States, French, English, Danish, Belgian, Hungarian, and Bremen. Notwithstanding the great efforts made by Great Britain and France in 1847 and 1848 to ameliorate the commercial and agricultural condition of Hayti, its general commerce, during the five years ending with 1850, declined at least thirty-three per cent. when compared with the preceding five years. Its European commerce, more especially, is yearly declining, while its general trade with the United States has largely increased. The number of American vessels entered and cleared during the last six months of 1854 was 122, with an average of 200 tons each. Total value of cargoes inward, \$488,530, consisting chiefly of provisions, lumber, and dry goods. Cargoes homeward consisted of logwood, coffee, and hemp, the value of which is omitted in the official returns. Assuming the navigation between the United States and this port to have been as active the first six months of 1854 as the last, the figures for the whole year would stand thus: Total number of American vessels entered and cleared at Port-au-Prince in 1854, 244. Official returns give as the total for 1852, 210; 1851, 189; which shows an increase for each successive year.—*Commercial Relations of the United States*.

Port Aux Cayes, a sea-port of Hayti, is one of the most important of the empire. In 1850 there entered and cleared 372 vessels, measuring an aggregate of 50,574 tons. The city is generally reputed one of the most progressive in the island, and is the capital of the southern peninsula of Hayti; the best irrigated and most fertile province in the empire. Here, as in the other ports, the United States holds the first commercial rank. The chief imports from the United States are provisions, of which the consumption is heavy. During the past two or three years American merchants have also imported domestic cottons and manufactures of cotton, generally in such quantities, and with such success, as to have already disheartened all foreign competition. The French authority (*Commerce Extérieur*) says, in reference to this singular success of American merchants in this as in the other markets of Hayti: "This species of merchandise (American cottons) is in high repute for its excellent quality. It is superior to that manufactured in England, and is sold at a lower figure." France supplies a small quantity of wines, oils, and fabrics of Marseilles and Paris. Coasters plying between St. Thomas, Curaçoa, and Jamaica, import small packages of European wares, and some provisions, for which they generally find a ready market. The quantity of coffee annually exported from Aux Cayes is estimated at between four and five million pounds. During good seasons this figure rises to six million pounds. In this total, however, are included considerable quantities imported coastwise from the neighboring ports. The district proper of Aux Cayes supplies but little coffee, the principal article of culture being the sugar-cane, the produce of which, first converted into sirup, then manufactured into rum, tafia, etc., supplies the greater part of the island with spirituous liquors. Campeche-wood (logwood), the produce of which is considerable, supplies an export trade of 20,000,000 lbs.

Imports into Aux Cayes, 1850.—From the United States, \$266,166; Great Britain, \$246,480; France, \$39,432; Hanse Towns, \$29,574; other countries, \$9858; total, \$591,510.

Porte, the Sublime. The official title of the government of the Ottoman empire: said to be derived from a gate of the palace at Broussa, the original metropolis of that empire, called Bâb Humayoor, the sublime gate.

Porter, a liquor brewed from malt, part of which has been more highly dried than that used for ale. It is hopped in the same way as ale; and its deep color is finally given to it either by burned sugar, which usually goes under the name of *coloring*, or, more legitimately, by roasted or parched malt. Porter was first brewed in 1722. The malt liquor previously drunk consisted of three kinds—ale, beer, and “twopenny;” and a mixture of either of these kinds was a favorite beverage under the name of “half-and-half;” or a mixture was drunk called “three threads,” consisting of equal portions of each of the above kinds of liquor, for a draught of which the publican had to go to three different casks. About 1722, Harwood, a London brewer, commenced brewing a malt liquor which was intended to unite the flavors of ale and beer, or ale, beer, and “twopenny;” and, having succeeded, he called his liquor “entire,” or “entire butt,” a name intended to intimate that it was drawn from one cask or butt only. A mixture of ale or porter, drawn from different casks, is very commonly drunk in London at the present time. Harwood’s liquor obtained the name of porter from its consumption by porters and laborers. From 1722 to 1761, the retail price of porter in London was 3*d.* per pot, when it was raised to 3½*d.*, at which it continued till 1790. It has never been higher than 6*d.*

Porter’s Anchor. This anchor is an English patent, and is extensively used at Southampton, and other English ports. Its peculiarity consists in giving to the arms and flukes a freedom of motion round a pivot or fulcrum at the end of the shank, thus departing at once from the rigidity usually observed in the construction of anchors. The arms and flukes are forged wholly independent of the shank, and have a hole drilled transversely through the centre for the reception of the iron bolt which connects them with the shank. The effect of this construction of a swivel anchor is, that when one fluke enters the ground the other necessarily falls down upon the shank, thereby avoiding the danger incident to the upward projection of a sharp point. The objects designed to be attained by this new construction are said to be mainly the two following: the avoidance of the consequence of what is called “fouling;” by the cable passing over the exposed fluke of the anchor when the vessel is swinging in a side way; and the avoidance of injury to the vessel itself in the event of falling on her anchor.

Porters and Porterage. Porters are persons employed to carry messages or parcels, etc.—See **CARRIERS**.

Portland, city, port of entry, and capital, Cumberland county, Maine, is situated on a peninsula at the western extremity of Casco Bay, 60 miles south-south-west of Augusta. It is 105 miles from Boston, *via* the Eastern Railroad, and 111 *via* Boston and Maine, and 294 from Montreal, *via* the Atlantic and St. Lawrence Railroad, and the Kennebec and Portland, and the Androscoggin and Kennebec, connecting it with Augusta and with Waterville. Lat. (Mount Joy), 43° 39' 52" N., and long. 70° 13' 34" W. from Greenwich, and 7° 49' 14" E. from Washington. Population in 1800, 3677; in 1810, 7169; in 1820, 11,581; in 1830, 12,601; in 1840, 15,318; in 1850, 20,815; and in 1854, 25,000. The peninsula projects eastwardly into the bay about three miles, and has an average width of three-fourths of a mile, forming throughout its entire length an elevated ridge, which, inland, rises into considerable hills, presenting a very beautiful appearance. There were

in 1856 seven banks, with an aggregate capital of \$2,000,000; an insurance office; an extensive establishment making locomotives and railroad cars, employing 175 persons; three iron foundries, three brass foundries, six machine shops, three edge-tool factories, a chain-cable factory, an extensive sperm-oil factory, two plane factories, two piano-forte factories, two tanneries, six lumber-yards, five ship-building establishments, 295 stores of various kinds, and many manufactures of small wares; ten printing-offices, issuing two daily, two tri-weekly, nine weekly, and one semi-monthly publication. Capital employed in manufactures in 1850, \$761,850; value of manufactured articles, \$2,153,290.

The harbor is capacious and safe, and among the best in the United States. It is protected by islands from the violence of storms, is seldom obstructed by ice, has a good entrance, and is defended by forts Preble and Scammel, the former garrisoned by United States artillery. At the eastern extremity of the city is a tower, 70 feet high, erected for the purpose of observing vessels at sea, and furnished with signals. The harbor is connected by the Cumberland and Oxford Canal, 20½ miles long, with Sebago Pond, and thence with Long Pond, etc. The Atlantic and St. Lawrence Railroad, or, as it is now called in Canada, the Grand Trunk Railroad, was commenced in 1844, and is now complete to Montreal. Through this avenue pass a large proportion of the products of the North and West for shipment to Europe and elsewhere. The foreign commerce of the city is chiefly with the West Indies and Europe. Its chief exports are lumber, ice, fish, provisions, etc. The coasting trade is principally with Boston, and during the summer a steamboat plies daily to that city. Tonnage in 1853, 104,350 tons. Portland was formerly a port of Falmouth, and 130 houses, constituting two-thirds of the village, were burned by the British in October, 1775. It was incorporated under its present name in 1786, and received a city charter in 1832. It was formerly the capital of the State of Maine.

Port Louis, or Northwest Port, the capital of the Mauritius, at the bottom of a triangular bay, the entrance to which is rather difficult, in lat. 20° 9' 56" S., long. 57° 28' 41" E. Every vessel approaching the harbor must hoist her flag and fire two guns; if in the night, a light must be shown, when a pilot comes on board and steers the ship to the entrance of the port. It is a very convenient port for careening and repairing, but provisions of all sorts are dear. In the hurricane months the anchorage in Port Louis is not good, and it can then only accommodate a very few vessels. The houses are low, and principally built of wood. The town and harbor are pretty strongly fortified. Almost all the foreign trade of the island is carried on here.

Porto Rico (*San Juan de*), the capital of the valuable Spanish island of the same name, on the north side of the island, on a peninsula joined to the main land by a narrow isthmus, lat. 18° 29' 10" N., long. 66° 7' 2" W. The fortifications are very strong. The town, which stands on a pretty steep declivity, is well built, clean, and contains nearly 30,000 inhabitants.

Harbor.—The harbor of Porto Rico has a striking resemblance to that of Havana, to which it is but little inferior. The entrance to it, about 300 fathoms in width, has the Moro Castle on its east side, and is defended on the west side by forts erected on two small islands. Within, the harbor expands into a capacious basin, the depth of water varying from five to six and seven fathoms. On the side opposite to the town there are extensive sand banks; but the entrance to the port, as well as the port itself, is unobstructed by any bar or shallow.

Porto Rico, Island of, lies in the same latitude as Jamaica. Though the smallest of the greater Antilles, it is of very considerable size. Its form is that of a parallelogram, being about 110 miles in length from

east to west, with a mean breadth of about 88, containing an area of 3750 square miles. Surface pleasantly diversified with hills and valleys; soil generally fertile. It has, however, suffered much from hurricanes; those of 1742 and 1825 having been particularly destructive. Since the breaking up of the old Spanish colonial system, the progress of Porto Rico has hardly been less rapid than that of Cuba. Her population, which in 1778 was estimated at 80,650, amounted, according to a census taken in 1836, to 367,086, of whom 188,869 were whites, and only 41,818 slaves. It is obvious from this statement that a large proportion of the free inhabitants are colored; but the law knows no distinction between the white and the colored *roturier*; and this circumstance, as well as the whites being in the habit of freely intermixing with people of color, has prevented the growth of those prejudices and deep-rooted antipathies that prevail between the white and the black and colored population in the United States, and in the English and French islands. The population is now (1853) probably above 500,000.

Porto Rico was discovered by Columbus in 1493, at which period it is said to have had a population of 800,000 souls. In 1509 it was invaded by the Spaniards from St. Domingo, and in a few years the natives were exterminated. The island was explored and conquered by Ponce de Leon, the discoverer of Florida, while prosecuting his voyage in search of the fountain of perpetual youth. Although, during the past fifteen years, agriculture has made great progress on the island of Porto Rico, there yet remains, owing chiefly to the want of labor and good roads, a considerable portion of it uncultivated. Immense plains, which, if planted with the sugar-cane, would reward labor most bountifully, are yet lying untouched by the hand of civilization or culture, because canals are wanting, through which the water by which they are now inundated could be drawn off. The island abounds in excellent timber, but as yet it has yielded no profit to the inhabitants. There are also different kinds of the more valuable woods for cabinet-makers, such as the acajou, polysander, etc.; but they still repose undisturbed amidst the ravines of the mountains. A remedy for these evils might be found in immigration; but it has ever been the policy of the government to discourage the introduction and settlement of foreigners. The laws to that end have been particularly severe in regard to all foreigners, especially to those not professing the Roman Catholic religion. Every foreigner arriving in Porto Rico is compelled, before landing, to give some responsible resident as surety for his good behavior. After six months he must either domicile or leave the island. Should he select the former alternative, he must embrace the Roman Catholic faith, the only religion tolerated. An intelligent traveler, who lived for some time on the island, gives the following information relative to the laws under which foreigners could become denizens:

"Previous to the year 1828 strangers were required to produce the most undoubted evidence of being Roman Catholics, in order to become domiciled; and having satisfied the authorities on this point, they were further obliged, after five years' residence, to become naturalized. Before a stranger would be permitted to land, he must give security for good political and moral conduct; and supposing that he could gratify the requirements of the law in all these particulars, such were the jealousy and illiberality of the government, that few could be induced to remain in a country where no prospect of success appeared. In 1828, however, the leniency and more liberal policy of Don Miguel La Tone, the Captain-general, by relaxing the rigor of former requirements, contributed greatly in removing the impediments to the settlement of foreigners on the island. La Tone strictly carried out the spirit of the *Real Cedula* of 1815, having for its object the encouragement of agriculture and commerce in the Spanish

colonies. Thus the *domicilio* was procured by paying a trifling sum of money, and by the applicant complying with certain formalities. A considerable immigration was the immediate effect of these measures of La Tone. Lured by the superior fertility of the soil, and the liberal policy of his administration, planters from the neighboring islands of St. Croix and St. Thomas sold their estates, and brought their capital and slaves into Porto Rico. Their example was followed by several planters from the windward British and French islands. Thus seconded by foreign enterprise and foreign capital, the island has continued to prosper in a most extraordinary degree since 1828. But notwithstanding this rapid improvement, and the continued augmentation of its staple exports, this improvement would have been greater, and the exports considerably larger, but for the oppressive duties upon all articles of necessary consumption, and the frequent heavy exactions made by the government toward the support of the war in Spain. These causes, by diminishing the profits of the planters, have prevented them from extending their estates. Hence the progress which has been made in the cultivation of the soil is due rather to the continued influx of new settlers with their important capital, than to the prosperity or increased industry of the old."

The slave population is almost the only producing power on the island; but this is so totally inadequate to the wants of the planters, that they are frequently obliged to procure additional help from Cuba. This, however, greatly augments their expenses, since a robust and good-working slave, who in Porto Rico may be valued at \$350, can not be purchased in Cuba for less than \$600. Sugar and coffee are the staple productions; while tobacco, hides, woods, cotton, fruit, and rum form also a part, though to no considerable extent, of the exports. Tobacco is cultivated entirely by free labor. The five principal commercial ports of Porto Rico are San Juan (the capital of the island), Arecibo, Mayagüez, Ponce, and Guayama.

San Juan, or St. John.—Although possessing a magnificent port, considered one of the best on the island, San Juan is not the first commercial place, as the products exported thence are of a very inferior quality. Of the sugar shipped from this port, as well as from the other ports of the island, the United States receive more than two-thirds of the whole. But a small quantity goes to England, and also, though rarely, to France. From the United States are imported codfish and other salt fish; salt meat, boards, lumber, hoops, staves, and butter; from England, boilers for the manufacture of sugar, machinery, small quantities of iron, and heavy supplies of earthen-ware. Spanish vessels take in cargoes at St. Thomas, and discharge at San Juan, thereby avoiding the duty applicable to all vessels from all other adjacent foreign ports, in the ports of Porto Rico. Generally speaking, the whole island of St. Thomas is but a great entrepôt of European and American manufactures destined for the markets of Cuba and Porto Rico—a fact shown by the large amount of importations from St. Thomas into both these islands. The exports from San Juan in 1853 consisted of 11,369,304 pounds of sugar; 5803 hogsheads of molasses; 376 hogsheads of rum; and 910,966 pounds of coffee. It is to be regretted that the port of San Juan, one of the best and safest of the island, should be kept in so deplorable a condition. Six or seven years ago, a vessel drawing 16 to 18 feet water could take in a full cargo at the wharf; at present, a ship of the same tonnage can receive only three-fourths of her cargo, and is compelled to leave the wharf in order to get into water deep enough to take in the balance.

Arecibo, or Arecibo.—During the last eight years the commercial condition of this port has been highly prosperous. The imports and exports have greatly increased; splendid mansions have been erected, and several commercial houses established. The harbor,

however, is so totally unprotected that vessels are compelled to anchor in a very wide berth, and frequently, during the prevalence of north winds, are forced to retire from the shore and put out to sea. They sometimes receive cargoes under sail, without casting anchor. Accidents are, in consequence, so frequent, that seldom does a year pass without having to record the loss of one or more vessels. Imports are nearly the same as at San Juan; the exports comprise about 10,000 hogsheads of sugar, 3000 of molasses, 1000 of rum, 14,000 to 15,000 quintals of coffee, and a considerable quantity of timber for Spain, to be used in the Spanish shipyards. Arecibo also exports considerable quantities of tobacco to Germany, the United States, and Cuba, amounting in the whole to about 2,500,000 pounds.

Mayagüez, or Mayaguez.—This is the most important port on the island. It possesses large capital, and contains several costly and fine dwellings. Rapidly rebuilt after the great conflagration by which it was destroyed in 1841, Mayagüez has gained in prosperity; having been before that disaster but an inconsiderable village, it has now become the most important city on the island. The surrounding district produces large quantities of coffee, though since 1840 there has been a sensible diminution in that article. For that year the exports amounted to 80,000 quintals, while in 1853 they fell to 43,500 quintals. The coffee of Mayagüez stands in such high repute in America and Germany that purchases are frequently made in advance of the crop. Hence comes also the best sugar of the island, which is mostly imported in American bottoms into the United States. In 1853 there arrived 83 American vessels of 13,272 tons, carrying freight to the value of \$223,600; and there cleared 76, of 12,680½ tons, taking cargoes worth \$460,013. The molasses from this port is always of the best quality, and much sought after by American and English shippers. Besides coffee, in 1853 there were exported 165½ hogsheads of rum, 8221 hogsheads of molasses, 20,766,033 pounds of sugar, but only 4468 pounds of tobacco, showing a decrease, compared with the preceding year, of over 50,000 pounds. There were, besides, 1000 hogsheads of rum mixed with tabasco pepper (*malagueta*), a preparation constituting now a new and profitable branch of domestic industry. Imports from the United States and England are generally similar to the imports into San Juan. Within the past few years a considerable number of planters, of moderate capital, have engaged in the cultivation of cocoa with perfect success. A few quintals of it sold to Spanish merchants have found a ready appreciation at Barcelona, and the article is considered equal to the cocoa of Caraccas. It is quite probable that, in the course of a few years, cocoa will be largely exported from Mayagüez, and thus supply the deficit caused by the diminution in the exportation of coffee. In addition to the products already specified, Mayagüez exports also considerable quantities of oranges, citrons, and other fruits to the United States.

Ponce.—This port is almost as important, in a commercial point of view, as Mayagüez. In 1853 it exported even more sugar and molasses than the latter. But the long droughts frequently destroy entire crops—no rain falling, oftentimes, for five or six successive months. Notwithstanding, by dint of incessant labor, and by means of artificial irrigation, the industrious planter often succeeds in partially overcoming this drawback, and in securing a passable harvest. Like Mayagüez, Ponce possesses some few vessels, which make regular voyages to and from Spain. In 1853 the exports consisted of 27,804,269 pounds of sugar, 13,161 hogsheads of molasses, 1,876,249 pounds of coffee, 72 hogsheads of rum, and some hides. This trade employed 90 vessels from the United States, carrying 15,616 tons, and entering with cargoes of the value of \$173,168; and 80 vessels of 15,208 tons, clearing with cargoes in value \$684,662.

Guayama.—The drought, which affects this district

even more severely than Ponce, is the chief cause of its commercial decadence. Many of the inhabitants have abandoned their establishments, and gone with their slaves to seek, in the interior of the island, a climate more congenial to the culture of the sugar-cane. The sugar of Guayama shows a fine grain and good color for refinery. In 1853 there entered the port 85 American vessels, having an aggregate of 15,471 tons, importing in value \$255,153; and cleared 83, of 14,873 tons, exporting a value of \$492,338. The total exports of sugar during the same year were 21,920,511 pounds; of molasses, 11,618 hogsheads; of coffee, 306,683 pounds; and of tobacco, 101,862 pounds.

Mayagüez, Ponce, and Guayama are the three places on the island which possess the greatest number of steam-engines, and machines for the manufacture of sugar. This remark applies in a special manner to Mayagüez, the climate of which is particularly favorable to the development of labor. In 1850 there were put up here ten machines of from 10 to 16 horse-power each. The exportation of rum is not in proportion to that of sugar, owing to the large consumption of that article on the island.

Among the secondary ports of the island, Aguadilla and Humacao are the most considerable. In 1853 the former exported 3,092,302 pounds of sugar, 2,438,788 pounds of coffee, 649 hogsheads of molasses, and 469,956 pounds of tobacco. The latter, in the same year, exported 4,183,233 pounds of sugar, 100,000 pounds of coffee, 1676 hogsheads of molasses, and only 11,220 pounds of tobacco, against 28,300 the preceding year. The great bulk of the coffee shipped from these two ports goes to Trieste, Genoa, and Hamburg. Germany also takes from these ports a considerable quantity of tobacco.

Fajardo and Naguaba have some trade with the French West Indies, with St. Thomas and St. Croix, consisting chiefly in an exchange of live animals and provisions for the imports from those islands. Their sugar, however, amounting annually to about 5000 hogsheads, is almost exclusively sent to the United States.

Sugar.—Previously to 1820 scarcely enough sugar was produced for the consumption of the island. According to official statements, the quantity exported from all parts of the island of Porto Rico in 1839 amounted to 69,245,783 pounds, valued at \$2,423,602; while in 1853 the quantity of sugar exported amounted to 110,605,859 pounds, valued at \$3,318,175, showing an increase in fourteen years of over fifty per cent. The United States alone received in 1853 74,710,336 pounds, valued at \$2,244,309, or over two-thirds of the whole quantity exported.

Coffee.—The quantity exported in 1839 was 8,538,362 lbs., valued at \$853,000; and in 1849, 8,615,311 lbs., valued at \$516,918. In 1853 it amounted to 11,580,604 lbs., valued at \$694,836. Despite this seeming increase, it is a well-known fact that the cultivation of coffee is on the decline. The Hanseatic cities receive nearly one half of the whole exportation of coffee, while the United States take but an inconsiderable quantity.

Molasses.—In 1839 there were exported 3,311,719½ gallons, of the value of \$496,759; in 1849, 4,328,135½ gallons, valued at \$649,220; and in 1853, 46,630½ hogsheads, valued at \$466,307. The United States received of the quantity exported in 1853 to the value of \$363,612, nearly three-fourths of the total exportation.

Cotton.—The cultivation of cotton declines yearly, and has become at this time insignificant. In 1839 there were exported 1,183,973 lbs., valued at \$189,485; while in 1853 the whole amount did not exceed 280,565 lbs., valued at \$28,056.

Rum.—The value of rum exported in 1839 was \$16,241; and in 1853, \$17,106. The exportation of this article bears no proportion to that of molasses, as rum is immoderately consumed by the common people on the island.

VALUES OF THE PRINCIPAL ARTICLES IMPORTED INTO PORTO RICO, 1848-1853.—[Made up from the "Balanzas Generales."]

Articles.	1848.	1849.	1850.	1851.	1852.	1853.
Olive oil.....	\$86,019 50	\$99,289 50	\$89,197 15	\$79,250 70	\$99,932 63	\$122,707 00
Liquids.....	193,638 94	187,250 70	228,132 07	236,431 00	340,668 17	342,913 08
Meats.....	71,712 40	96,375 29	83,278 73	92,607 11	91,724 16	67,218 67
Spices.....	5,967 42	6,450 50	14,895 46	14,895 22	*15,533 18	10,057 34
Fruits, etc.....	32,139 56	27,838 98	29,159 19	50,672 74	50,021 56	43,340 01
Rice.....	38,580 26	40,598 81	43,987 87	46,809 78	145,498 59	83,665 75
Cereals, etc.....	5,8,968 91	580,415 98	688,859 82	1,000,319 92	1,193,113 23	692,701 40
Lard and butter.....	54,149 12	80,733 13	88,158 34	74,671 74	91,658 76	69,578 30
Cheese.....	27,314 76	25,196 73	30,637 76	45,888 50	67,014 58	33,847 50
Fish.....	365,902 00	304,488 41	436,990 91	381,208 51	402,232 21	343,003 02
Other edibles.....	116,986 63	112,706 09	116,620 52	164,087 40	166,031 64	135,732 06
Cottons.....	521,310 87	755,287 33	651,105 34	6,538 14	599,201 52	677,841 81
Woolens.....	52,034 03	49,201 34	47,244 04	50,594 36	48,744 18	75,777 62
Linen.....	308,446 65	445,699 03	310,130 17	253,582 22	267,459 22	352,494 05
Silks.....	68,440 44	61,578 08	62,186 03	8,645 38	93,880 46	76,496 07
Tobacco.....	199,929 18	143,120 94	185,580 84	222,056 45	138,440 21	124,774 56
Skins and peltries.....	72,400 53	58,030 87	85,049 14	121,449 15	134,141 93	106,406 23
Wood.....	233,360 00	211,196 42	316,291 80	337,188 06	254,947 98	216,807 15
Metal.....	26,126 60	32,033 34	24,619 34	35,446 71	71,738 15	33,674 29
Glass.....	12,024 97	15,633 04	20,829 16	14,747 11	32,567 23	25,273 74
Iron nails.....	36,505 36	68,275 08	58,170 54	51,273 36	42,294 46	39,741 36
Iron ware.....	19,059 48	23,788 56	35,403 97	42,445 57	65,179 66	36,383 21
Machines, and parts thereof, for sugar manufactories.....	9,855 12	28,830 28	24,583 44	27,739 16	21,166 48	15,207 52
Agricultural implements.....	22,174 05	22,781 25	23,582 36	49,122 67	89,706 05	38,013 91
Soap.....	127,431 30	134,339 00	112,438 75	156,884 00	215,949 35	97,312 10
Medicines.....	33,209 82	33,667 40	31,955 38	20,374 79	30,617 56	36,192 61
Furniture.....	61,338 02	44,173 47	44,454 02	45,756 27	84,488 03	34,568 64
Perfumery.....	12,438 15	18,306 61	15,028 08	17,325 00	25,167 50	26,029 00
Candles.....	46,652 15	16,806 63	62,678 40	65,287 32	68,945 42	48,017 38
Gold and silver.....	294,116 00	612,155 00	740,062 50	763,475 25	392,281 00	735,630 75
Total.....	\$4,460,751 62	\$4,481,583 89	\$5,222,020 98	\$6,073,870 02	\$6,298,395 65	\$5,335,910 36

* The "Balanza" gives this sum as \$107,257 34, which is an error.

Previously to 1815, Porto Rico, being excluded from all direct intercourse with other countries, excepting Old Spain, was either stationary or but slowly progressive, the entire value of the exports in that year having amounted to only 65,274 dollars! But at that epoch a royal decree appeared, which exempted the trade between Spain and the Spanish colonies and Porto Rico from all duties for fifteen years; and she was then also permitted to carry on a free trade, under rea-

sonable duties, with other countries. In consequence principally of these wise and liberal measures, but partly also of a considerable immigration of rich Spanish colonists from South America, Porto Rico has latterly made rapid progress. Great improvements have been effected in the police and internal administration, and roads have been constructed in all parts of the island. The exports of domestic produce from the U. S. for the fiscal year 1856-'57 were \$1,783,429.

GENERAL COMPARATIVE STATEMENT OF THE AMOUNT AND CHARACTER OF THE COMMERCE OF PORTO RICO FROM 1848 TO 1853.—[From the "Balanzas Generales."]

Years.	IMPORTATION INTO PORTO RICO.				EXPORTATION FROM PORTO RICO.			
	National Products.	Foreign Products.		Total Imports.	For the national Trade.	For the foreign Trade.		Total Exports.
	In Spanish Vessels (generally).	In Spanish Vessels.	In foreign Vessels.		In Spanish Vessels (generally).	In Spanish Vessels.	In foreign Vessels.	
1848.....	\$1,148,079	\$17,33,370	\$1,583,801	\$4,469,751	\$60,820	\$38,816	\$4,695,500	\$5,555,186
1849.....	1,011,000	2,319,032	1,651,550	4,981,583	464,128	237,823	4,700,419	5,402,871
1850.....	1,356,961	1,879,488	1,885,579	5,222,029	238,916	271,860	5,321,542	5,877,319
1851.....	1,542,717	2,210,062	2,321,089	6,073,870	502,451	280,840	4,918,682	5,761,974
1852.....	2,030,947	2,122,734	2,144,663	6,298,395	409,618	349,718	3,878,002	4,695,339
1853.....	1,411,004	2,194,375	1,730,530	5,335,910	440,406	335,060	4,553,831	5,299,327

AMOUNT OF DUTIES RECEIVED, THE NUMBER OF VESSELS ENTERED AND CLEARED, AND THE RESPECTIVE TONNAGE OF THE SAME AT PORTO RICO.—[From the "Balanzas Generales."]

Years.	Duties received.			Vessels entered.		Vessels cleared.	
	On Imports.	On Exports.	Total.	Number.	Tonnage.	Number.	Tonnage.
1848....	\$879,374	\$154,864	\$1,034,239	1036	118,910	1129	123,250
1849....	922,608	159,698	1,082,307	1095	124,851	1126	129,673
1850....	1,011,472	177,529	1,189,001	1206	132,040	1159	131,767
1851....	1,044,525	24,833	1,069,418	1324	160,586	1209	164,042
1852....	1,228,005	31,077	1,259,173	1452	175,896	1352	168,766
1853....	1,020,246	31,641	1,051,887	1338	151,663	1225	154,867

The tonnage of American vessels arriving in 1853 at Porto Rico amounted to 67,180, or nearly one half of the total tonnage of the island, double that of all the Spanish, and nearly triple that of all the English ves-

sels. The ports most visited by American vessels were: Mayagüez, 97 vessels; Ponce, 69 vessels; Guayama, 50 vessels; and Porto Rico (San Juan), 45 ves-

QUANTITIES OF THE PRINCIPAL PRODUCTS OF PORTO RICO, 1848-1853.

Years.	Aguardiente.	Cotton.	Coffee.	Sugar.	Hides.	Tobacco.	Molasses.	Black Cattle.
	Hogsheads.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Gallons.	Head.
1848.....	9814	192,457	9,613,074	101,288,754	745,880	2,457,449	2,867,474	4372
1849.....	12411	304,052	8,615,311	100,742,517	519,070	2,430,540	4,328,135	3700
1850.....	5721	241,574	11,763,654	112,129,432	514,712	2,973,308	4,905,813	4376
1851.....	5727	266,581	12,111,971	118,416,304	632,706	6,478,084	4,827,568	6053
1852.....	1157	218,792	11,570,763	93,691,396	508,820	5,565,739	3,357,900	6220
1853.....	6487	280,565	11,580,004	110,605,859	547,551	3,703,457	4,896,228	6019

The foreign Antilles, and among them especially St. Thomas and St. Croix, have the largest amount of the imports into Porto Rico. Indeed, the former, as al-

ready observed, may be considered merely as an entrepôt for European and American manufactures, serving the Spanish merchants, from its proximity to the

Spanish West Indies, as a market for all the merchandise. It will be seen that the United States occupy the first rank as regards the amount of exports, taking more than one half of the total exportations. They receive two-thirds of all the sugar, and three-fourths of all the molasses exported; these being the principal articles entering into the export trade of Porto Rico. The exportation to the United States amounted in 1853 to \$2,340,000, chiefly for sugar and molasses. Spain holds the second rank in importations into, and only the fourth as respects exportations from, Porto Rico; since the foreign Antilles import more into the island, and the United States, England, and the Hanseatic cities take more from it, than does Spain, despite all differential duties in her favor, both as respects shipping and trade.

Tonnage Duties.—Ships entering the ports of the island of Porto Rico will pay, if foreign, \$1 the ton; if national, 37½ cents the ton, as per register. National vessels bringing full cargoes of coals will pay no ton-

nage duties, although the number of tons be less than indicated by their register; foreign vessels will, however, pay 50 cents per ton, in compliance with the royal decree of December 23, 1848. But whenever a ship, either national or foreign, brings other cargo besides coals, no matter whether the coals be equal to, or more than, the amount of her tonnage, she will pay the tonnage duty in accordance with said decree. Vessels loaded with coals only are exempted from local duties, with the single exception of the fee (\$23) to the captain of the port for entering and clearing. National or foreign vessels entering the ports will pay, in addition to the duties specified, 12½ cents per ton, as per register, for the purpose of deepening the harbor. Vessels arriving in the harbor of San Juan, under whatever circumstances, or for whatever purpose, will pay 12½ cents per ton for dredging and keeping the port navigable. National vessels to or from the island of St. Thomas will pay, at whatever port, the tonnage duties applicable to the flag.

COMPARATIVE STATEMENT OF THE COMMERCE BETWEEN THE UNITED STATES AND PORTO RICO, AND OTHER SPANISH WEST INDIES (EXCEPT CUBA), EXHIBITING THE VALUE OF EXPORTS TO AND IMPORTS FROM EACH COUNTRY, AND THE TONNAGE OF AMERICAN AND FOREIGN VESSELS ARRIVING FROM AND DEPARTING TO EACH COUNTRY, DURING THE YEARS DESIGNATED.

Years.	COMMERCE.				NAVIGATION.			
	Value of Exports from United States.			Value of Imports into the United States.	American Tonnage.		Foreign Tonnage.	
	Domestic Produce.	Foreign Produce.	Total.		Entered the United States.	Cleared from the United States.	Entered the United States.	Cleared from the United States.
1845	\$688,149	\$20,775	\$708,924	\$2,000,258	51,150	28,575	629	632
1846	675,441	25,905	701,346	2,277,110	51,284	30,056	487	1373
1847	825,079	33,685	\$858,064	2,141,929	38,063	26,767	1,746	1879
1848	801,722	37,012	838,734	2,106,296	45,438	35,241	513	1150
1849	523,292	33,234	556,526	1,964,861	47,534	25,870	2,192	3398
1850	516,062	33,591	549,653	2,067,866	41,768	30,744	3,074	2108
1851	361,470	57,209	1,018,619	2,480,329	48,336	36,320	7,874	6013
1852	1,015,563	39,542	1,055,105	3,001,223	58,385	35,010	12,061	5544
1853	810,411	54,143	864,554	2,870,936	47,838	30,815	15,844	9429
1854	990,886	60,977	1,051,863	2,880,353	52,228	31,014	8,710	8528
1855	1,144,581	38,937	1,183,518	2,475,998	43,249	34,190	7,880	5592

American vessels entering ports in the islands of Cuba and Porto Rico in ballast are not subjected to the payment of any tonnage duty whatever; and American vessels entering the ports in the islands of Cuba and Porto Rico, with cargoes of any description of merchandise whatsoever, are exempted from any charge of tonnage duty, if such vessels export or convey therefrom cargoes of molasses taken in at said ports. Exemption, therefore, from the liability to tonnage duty of Spanish vessels coming from ports in the islands of Cuba and Porto Rico is extended to such vessels arriving in ports of the United States, either in ballast or laden with molasses taken in at any of the said ports, together with such quantity of fresh fruit, the production of said islands, as may be deemed by the collector and naval officer, under the provisions of the forty-fifth section of the act of 2d March, 1799, to be admissible as surplus stores: provided the said vessels depart from the United States in ballast, or with their cargoes of molasses, or cargoes of the staple productions of the United States.—See *Commercial Relations with the United States; Manual for United States Consuls; TURNBULL'S Cuba and Porto Rico; HUNT'S Merchants' Magazine*, x. 327.

Portsmouth, a sea-port of England, in the English Channel, on the western side of the island of Portsea, at the mouth of the bay called Portsmouth Harbor, lat. 50° 47' N., long. 1° 6' W. Portsmouth Harbor excels every other in Great Britain in depth, capaciousness, and security. At its entrance the harbor is very narrow, but soon expands into a great width. Every where the anchorage is good, the depth sufficient for ships of any size, and in extent almost sufficient to contain the whole English navy. The roadstead of Spithead, between Portsmouth and the Isle of Wight, can contain 1000 sail with security. Ship-building and other manufactures are carried on to a considerable extent. The cod and other fisheries are actively prosecuted, and Portsmouth has considerable foreign and

coasting trade. The tonnage of the port in 1853 was 26,645 tons.

Portugal (*Lusitania*), a country of southwestern Europe, forming the western portion of the Iberian peninsula, and situated between lat. 36° 57' and 42° 8' N., and long. 6° 15' and 9° 32' W., bounded east and north by Spain, south and west by the Atlantic Ocean. Capital, Lisbon. Length, north to south, 368 miles; breadth, 80 to 140 miles; and there are few passable roads. Wheat, barley, oats, flax, and hemp are cultivated in the elevated tracts; rice in the lowlands; olives, oranges, lemons, citrons, figs, and almonds in the central and southern provinces; and at the southern extremity, the American aloe, the date, and other tropical plants. The cultivation of the vine is the most important branch of industry, and the produce of the vineyards watered by the upper Douro, termed *port*, is the staple export. There are extensive forests of oak in the north, chestnut in the centre, and the sea-pine, kermes, and cork in the south. The olive oil is of inferior quality. Mules and asses are the chief beasts of burden; oxen are used for draught in the provinces. Cattle and sheep are reared in considerable numbers, but the wool is not of fine quality. Goats and hogs are numerous, and fish abound in the rivers and on the coasts. Iron, marble, and salt are the chief mineral products; the mines of tin, lead, and antimony are not worked. There are numerous salt marshes on the coast, and 200 mineral springs are enumerated. The manufactures are very limited, chiefly arms and porcelain at Lisbon, woollens at Portalegre and Fundao, cotton-spinning at Thomar, jewelry and trinkets at Lisbon and Oporto, glass at Marinha-Granne, paper at Alemquer, silks at Braganza and at Campo-Grande, near Lisbon. Lisbon, the capital of Portugal, is the principal port, and is situated on the north bank of the River Tagus, the observatory of the fort being in lat. 38° 42' 24" N., long. 9° 5' 50" W. Population, about 240,000. The harbor, or rather road, of Lisbon is one

of the finest in the world, and the quays are at once convenient and beautiful. Fort St. Julian marks the northern entrance of the Tagus. It is built on a steep, projecting rock. There is a light-house in the centre, 120 feet above the level of the sea. At the mouth of the Tagus are two large banks, called the North and South Cachops. There are two channels for entering the river — the north or little, and the south or great channel. On the middle of the South Cachop, about 1½ mile from Fort St. Julian, is the Bugio fort and light-house, the latter being 66 feet in height. The least depth of water in the north channel, on the bar, is four fathoms, and in the south six. The only danger in entering the port arises from the strength of the tide, the ebb running down at the rate of seven miles an hour; and after heavy rains the difficulty of entering is considerably augmented. The trade of the country is mostly conducted by the English and other foreigners. The population and extent of Portugal are shown by the following statistics, taken in 1854:

Population.....	3,500,000
Extent in square miles.....	84,500
Communes.....	260

The great fountain of wealth in Portugal is in its vineyards; and yet, under the system of political economy practiced by the government of that kingdom, wine can not be either grown, made, or exported, except under heavy restrictions and imposts. Until within the past few years, there was not sufficient corn grown in the few agricultural districts for the necessities of the country; still, corn is classed among its staples, and its importation from foreign countries prohibited, unless when, from any cause, the home supplies are inadequate to meet the demands for consumption. The following official return exhibits the entire agricultural resources of Portugal for the year 1851, and, with the exception of corn, the supply of which is constantly fluctuating, may be regarded as a fair index of the average yearly agricultural wealth of this kingdom:

Articles.	Quantities.	Amount.
Corn.....	Moios.....	1,139,737
Beans (pulse).....	".....	178,812
Rice.....	".....	12,252
Salt.....	".....	466,166
Walnuts, filberts, almonds, and chestnuts.....	".....	37,640
Figs.....	Arobas.....	328,700
Carob beans.....	".....	248,160
Oranges and lemons.....	Thousand.....	360,000
Cattle.....	Heads.....	5,732,712
Wine (Maduro e verde)....	Pipes.....	787,800
Alto-Douro port.....	".....	100,000
Olive oil.....	".....	43,682
Wool.....	Arobas.....	337,583
Silk.....	Pounds.....	815,140
Honey.....	Arobas.....	59,137
Beeswax.....	".....	25,616

The moio is equivalent to 22·39 bushels. The aroba equals 32 lbs.

In 1831 Portugal imported 553,740 alquieres (each equal to 32 lbs.) of grain; between 1846 and 1851 she exported, as appears from her official statistics, about 1,800,000 alquieres from Caminha, and about 4,000,000 alquieres from Vianna; making a total of nearly 6,000,000 alquieres, or 1,000,000 alquieres per annum; or an exportation of about twice as much as she formerly imported. With this brief reference to the natural capabilities and agricultural resources of Portugal, the laws and regulations under which that kingdom conducts its foreign commerce, the character and extent of that commerce, and the description of merchandise which constitutes the leading articles of exchange, especially between Portugal and the United States, will next be considered. For a long period the commercial relations of the United States with Portugal were regulated by such acts of legislation as the Portuguese government thought proper to adopt, with no other check than the countervailing legislation of the United States. Under this system the direct trade

between the two countries in national vessels, laden with the produce and manufactures of either, was allowed on terms of full reciprocity; but the indirect trade was fettered by discriminations and restrictions, and by the countervailing duties to which they gave rise, until the treaty of commerce and navigation entered into between the two countries in 1840 placed their trade on a basis of entire reciprocity. This treaty stipulates that vessels of either country arriving in the ports of the other shall be put on the footing of national vessels; that no other or higher duties shall be levied on the produce or manufactures of either country, when imported into the other, than on similar produce, etc., of other foreign countries; that the same duties shall be levied on such importations, whether in American or Portuguese vessels; that all favors granted by either party to other nations shall become common to both; and that American vessels shall pay no higher duties of export in the ports of Portugal than national vessels. This treaty is declared to be in force for six years, and further, until the end of one year after either party shall have given notice to the other to terminate the same; no such notice having been given by either party; commercial relations between the two countries are still governed by its provisions.

Under the stipulation equalizing American and Portuguese vessels with respect to direct importations, the American flag enjoyed, during a brief period after the ratification of the treaty, special advantages over the vessels of other foreign nations. This was the result of a law passed by the Cortes in 1837 (before the treaty was adopted), by which a deduction of fifteen per cent. on all duties was allowed on merchandise imported in national bottoms. This measure, although it had given a great impulse to the national shipping of Portugal, and largely augmented importations in American bottoms, was found to exercise a disastrous effect on the public treasury, diminishing the revenue from that source about \$800,000 annually. It was consequently abolished; and after the 15th January, 1842, all foreign vessels were equalized, in this respect, with the national flag. Notwithstanding Portugal possesses natural advantages and resources which might enable her to rank among the most important trading countries in Europe, her commerce with foreign nations, and particularly with the United States, has dwindled down to the mere shadow of what it was in former times; nor can much hope be indulged of a speedy commercial regeneration of this kingdom so long as her present restrictive and prohibitory regulations exist, and her unsurpassed natural resources remain under their present partial and imperfect system of development. The dismemberment of Brazil from the kingdom of Portugal (1820) would seem to mark the period of the greatest decline in her commerce with the United States. This can be best illustrated by giving the official returns for two equal periods preceeding and following this event, and contrasting the results.

EXPORTS FROM THE UNITED STATES TO PORTUGAL AND DEPENDENCIES, 1810-1832.

Years.	Amount.	Years.	Amount.
1810.....	\$7,679,210	1822.....	\$427,000
1811.....	11,466,150	1823.....	246,648
1812.....	9,399,500	1824.....	518,886
1813.....	10,6879.28	1825.....	408,160
1814.....	591,669	1826.....	313,553
1815.....	2,281,101	1827.....	357,370
1816.....	2,270,389	1828.....	291,614
1817.....	1,334,823	1829.....	392,911
1818.....	2,88,177	1830.....	279,759
1819.....	2,263,580	1831.....	294,383
1820.....	1,225,751	1832.....	216,218
Total...	\$52,098,298	Total...	\$6,756,492

Showing a falling off in the total amounts, during the eleven years compared, of \$48,941,806, or, in the average annual amounts, of \$4,449,255. It is proper, however, to remark, that the trade with Brazil absorbed more than a moiety of the total amount of the exports from 1810 to 1820. The general trade of Portugal with

all foreign countries has also declined during the past half century, in a ratio of nearly one-third in exports and one half in imports. This will be seen from the following comparison of imports and exports, for a series of years within the above-named period:

Year.	Imports.	Exports	Total
1801.....	\$34,171,780	\$31,379,730	\$65,551,510
1816.....	22,337,430	20,223,385	42,560,815
1830.....	16,194,501	13,085,000	29,279,500
1844.....	12,282,530	8,225,665	20,508,195
1848.....	13,507,210	10,679,430	24,186,640

NAVIGATION RETURNS OF PORTUGAL FOR THE YEAR 1852.

Countries.	Arrivals.	Tonnage	Crew.	Clearances.	Tonnage.	Crew.
Portugal.....	5447	315,708	45,349	5777	319,834	45,752
England.....	1145	159,537	11,255	1223	196,074	13,863
Spain.....	917	11,306	5,287	952	10,695	5,381
Sweden.....	219	40,328	2,107	217	42,446	2,088
United States.....	136	37,647	2,699	135	34,925	2,532
France.....	98	11,741	791	95	11,684	780
Netherlands.....	90	9,840	621	88	8,709	610
Austria.....	286	57,246	3,391	310	60,125	3,104
Total.....	8338	643,383	71,560	8787	685,492	74,200

COMMERCE IN 1852 AND 1853.

Years.	Imports.	Exports.
1852.....	33,200,570	13,179,375
1853.....	36,346,560	21,902,832

The wines which, at the exportation of 1853, were valued at 6,186,680 francs, were not put in the account of the crop of 1852. The imports of wine from Madeira into the United States for the fiscal year ending June 30, 1856, were 23,649 gallons; and from Portugal, 62,533 gallons.

It thus appears that in 1848 the exports from Portugal to all nations were only about one-third, and the imports from all nations about one half of the amount of exports and imports in 1801, or half a century ago. The general movements of trade between the United States and Portugal have varied so little during the past twenty years that they may be regarded as stationary, at least so long as the existing commercial regulations remain unchanged in both countries. During the past year, however, the government of Portugal has manifested some disposition to review and modify its entire system of commercial policy; and the good effects that have already succeeded the initiatory measures to this end, already adopted, will, it is believed, encourage it to remove altogether the onerous restrictions which have so long fettered its trade with foreign nations. In 1853 the export duty on wine was materially reduced, and equalized to all nations (a discrimination having been made, before that period, between exports to Europe and America); and the effect of this first step toward a more liberal policy is evidenced in the increased exportation of that great staple in 1853 over the preceding year, to an amount exceeding three-fourths of the whole. This will be seen from the following table. The pipe is estimated at the United States custom-house at about 113½ gallons:

EXPORTS OF WINE, BRANDY, ETC., FROM THE PORT OF OPORTO IN THE YEARS 1852 AND 1853.

Countries.	1852.	Countries.	1853.
Great Britain.....	19,219	Great Britain.....	46,834
United States.....	4,452	Australia.....	2,531
Brazil.....	2,833	United States.....	1,658
Australia.....	2,001	Canada.....	1,002
Hamburg.....	917	Hamburg.....	923
Canada.....	902	Brazil.....	743
Russia.....	373	Russia.....	561
Bremen.....	250	Denmark.....	455
Newfoundland.....	156	Portuguese poss'ns.	357
Prussia.....	119	Bremen.....	232
France.....	16	Sweden.....	215
Holland.....	21	Newfoundland.....	163
Spain.....	2	Prussia.....	114
Sweden.....	288	France.....	15
		Holland.....	9
		Spain.....	1
Total.....	31,499	Total.....	55,813

Exports in 1853..... 55,813 pipes.

" 1852..... 31,499 "

Excess in 1853 over 1852..... 24,314 "

The subjoined statements of the commerce and navigation of Oporto during the Portuguese financial year

1854-'55, and the movements in wines and brandy the same period, are made up from returns of the United States consul at that port.

Alterations lately made in the Portuguese Tariff (1853).

Broadcloths have been reduced 12 per cent. Raw silk now pays only two-fifths of the former duty. On satins, gros-de-Naples, etc., a reduction of nearly 54 per cent. has been made. Flax has been raised to 42 cents per quintal of 128 pounds, being an advance of 200 per cent. In linens, and goods of cotton and linen, as well as woollens, no great alteration has been made. In gray cloths and white shirtings there has been a reduction of about 12 per cent. Ale pays about one-third of the old duties. Wine, which heretofore paid an import duty of about \$266 per pipe, has been reduced to about one-fifth of that amount. The export duty on port has been reduced and equalized to all the world. Pianos, which formerly paid from \$48 to \$192 each, according to size, now pay \$24 each, regardless of size. Formerly, no tea could be imported except in national vessels; the duty being, from Portuguese territories, about 1s. 9d. English (42 cents), and from other parts 4s. 3d. per pound, equal to \$1 02. Now tea may be imported indirectly, in national or foreign bottoms; Portuguese vessels still enjoying the usual discriminations over foreign vessels engaged in the indirect trade. It is believed that Portugal has no treaty with any nation equalizing foreign vessels to national vessels in the indirect trade. If so, all foreign flags are equally subject, with those of the United States, to an additional duty of 20 per cent. when importing goods not the produce of the country to which they belong. The chief difficulty which foreign merchants have to encounter, in selecting a cargo for the Portuguese market, arises from the complicated and almost unintelligible terms in which the tariff of that country estimates the value of merchandise. Cottons, linens, and in many instances, even fluids, are estimated by the pound; and, owing to the great variety of specific articles under any particular genus, and the great difference in their respective prices, it were next to impossible to say, even approximately, what duty is assigned to all or any of the descriptions of merchandise which usually make up a mixed cargo. Cotton, for instance, is thus classed in the tariff of 1852: *raw*, per 101 pounds, 2½ cents (which is plain enough); *manufactured*, from 6 cents to 70 cents per pound (which is not). Should an American merchant desire to ship to Lisbon or Oporto a cargo of such American produce as would be most likely to find a ready market in exchange for the wines or fruits of Portugal, he would naturally turn to the Portuguese tariff, to ascertain the import duty on such descriptions of merchandise as he could most profitably send. The article of cotton manufactures, it has been shown, would probably afford some exercise to his skill; but let him select a cargo of tobacco. The Portuguese tariff informs him that it is admitted only when sold to government contractors; but he is left in the dark with respect to the precise duty to which it is subject. If he has a correspondent

at Oporto or Lishon, he will inform him that the duty on tobacco is arbitrary, and depends on the terms of the particular bargain he may make with the government contractors, after his cargo shall have reached port.

This complex classification of the Portuguese tariff induced some British merchants, a few years since, to

make the attempt to reduce to a fixed value the actual duties levied on some of the leading imports into Portugal from foreign countries. Below is the result of their calculations, as respects some articles of cotton manufacture. The duties, in Portuguese money, are given in *reas*, the *milrea* being equal to 1000 *reas*, or \$1 12.

Articles.	Duties in Portuguese Money.	Rate per Cent.
Cotton twist, etc., under 40, per pound.....	50	3½
Cotton bleached or dyed, under 40, per pound.....	80	47
Wick of candles, under 40, per pound.....	400	..
White cottons with glazed finish, 15 threads, etc., per pound.....	70	23
Cottons woven with dyed threads, up to 16, per pound.....	200	52
Cotton dresses, shawls, or handkerchiefs, to 16 threads, per pound.....	400	92
White cambrics, 21 threads or upward, per pound.....	160	29
Colored cambric dyed in the piece, per pound.....	200	56
Colored cambric in shawls, handkerchiefs, dresses, or other shapes, per pound.....	400	88

The duties on the different descriptions of cotton goods vary from 16 (on colored velveteens) to 96 (on striped nankeens, plain) per cent. Notwithstanding the enormous duties on cottons which the above table indicates, the manufactures of Portugal, of this description of merchandise, are confined to some coarse and very inferior description of woolens, and a few common cottons and linens. Still, while that scale of duties continues, cotton tissues can never become a profitable medium of exchange between the two countries. There is no reason, however, why the United States could

not compete with Brazil in supplying the markets of Portugal with sugar, rice, rum, timber, and other articles which have been heretofore chiefly imported from that country. The rice of Carolina is far superior to Brazilian, and yet Portugal consumes annually of the latter upward of 40,000,000 pounds. Brazil supplies the Portuguese market annually with sugar to the amount of from one and a half to two millions of dollars. Both these articles can now be exported from the United States to Portugal on the same terms as from Brazil.

COMMERCE OF THE UNITED STATES WITH PORTUGAL FROM OCTOBER 1, 1830, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	\$147,726	\$66	\$147,726	\$356,116	....	\$140,775	5,106	....
1822.....	102,935	18,555	121,490	422,666	\$14,000	800	3,439	....
1823.....	48,077	300	48,377	181,074	....	13,087	1,470	1,081
1824.....	77,255	5,168	82,423	242,304	190	28,745	3,441	152
1825.....	110,015	2,834	112,839	221,072	....	15,160	3,241	723
1826.....	99,945	538	100,483	349,989	....	39,605	6,436	....
1827.....	116,103	220	116,323	268,001	14,000	31,554	4,138	....
1828.....	77,010	1,164	78,174	112,559	....	2,600	3,438	617
1829.....	42,088	628	42,716	287,151	....	13,185	2,397	....
1830.....	43,408	1,803	45,211	165,321	....	8,154	2,243	184
Total...	\$364,562	\$31,266	\$395,828	\$2,556,593	\$23,190	\$289,465	35,423	2,757
Sept. 30, 1831.....	\$39,149	\$2,256	\$41,505	\$124,446	....	\$4,746	1,598	....
1832.....	28,262	300	28,562	123,816	....	1,600	1,177	600
1833.....	78,313	5,330	83,643	170,189	\$4,100	4,005	2,138	1,036
1834.....	42,542	16,533	59,125	215,309	....	11,013	2,928	556
1835.....	162,708	107,002	270,305	547,974	18,260	27,895	5,637	650
1836.....	88,585	13,247	101,832	275,273	3,531	990	1,434	1,290
1837.....	124,337	17,072	141,409	187,643	....	15,440	3,226	10,497
1838.....	67,976	8,003	75,979	226,864	9,000	22,577	2,092	1,641
1839.....	50,711	6,093	56,804	587,778	6,000	17,177	3,061	2,085
1840.....	97,341	5,724	103,065	222,884	....	3,053	3,851	5-7
Total...	\$733,663	\$182,400	\$916,063	\$2,752,176	\$40,891	\$109,086	27,962	18,251
Sept. 30, 1841.....	\$114,443	\$7,321	\$121,764	\$256,568	....	\$25,567	4,801	728
1842.....	72,723	1,388	74,111	142,587	....	5,546	3,305	757
9 mos., 1843*.....	59,066	1,538	60,604	46,713	....	512	2,557	543
June 30, 1844.....	99,553	3,565	103,118	190,705	....	3,880	5,743	172
1845.....	124,359	5,419	129,769	296,908	....	7,216	5,803	990
1846.....	96,316	8,453	104,769	373,250	\$2,500	....	4,815	1,874
1847.....	56,893	1,535	58,428	283,330	....	2,372	2,637	1,833
1848.....	112,260	2,184	115,244	214,732	....	3,944	5,842	5,418
1849.....	169,721	6,273	175,994	322,220	....	510	4,837	5,023
1850.....	172,973	5,236	178,214	389,763	....	....	2,976	7,531
Total...	\$1,078,333	\$43,512	\$1,121,845	\$2,510,826	\$2,500	\$49,547	43,216	24,949
June 30, 1851.....	\$167,342	\$4,996	\$172,338	\$367,548	....	....	2,470	5,176
1852.....	234,064	4,129	238,193	266,864	....	\$850	6,307	6,333
1853.....	223,651	26,552	250,203	411,155	\$2,000	....	5,476	8,696
1854.....	127,150	23,715	150,865	243,572	200	....	2,866	5,094
1855.....	270,716	24,867	295,583	166,067	....	....	5,670	9,303
1856.....	344,098	34,101	378,199	287,166	330	....	6,232	5,743

* Nine months to June 30, and the fiscal year from this time begins July 1.

The tonnage employed in the above trade was:

	1853.	1854.	1855.
Tons.....	8,790	4,020	12,082
American.....	14,669	10,106	16,373
Foreign.....	23,459	14,126	28,455
Total.....			

The exports from the United States to Portugal consist of whale oil, whalebone, sperm candles, staves and

headings, beef, pork, rice, tobacco, linseed oil, soap, nails, manufactures of iron, and sundries. The imports, as taken from the United States Treasury returns, are wool, wines, vinegar, dried fruit, salt, corks and cork-tree bark, marble, sheet and bar lead, copper, and sundries.

The exports from the United States to Portugal for the fiscal year 1856-'57 included \$56,439 of unmanufactured cotton, and \$121,359 of tobacco.

The tonnage of the coasting-vessels employed in the coasting-trade of Brazil varies from 40 to 420 tons each. Foreign vessels are not allowed to participate in the coasting-trade. We annex a Table showing the number and tonnage of vessels employed in the coasting-trade of Portugal in 1852.

Ports.	Number of Vessels.	Tonnage.
Oporto.....	358	35,513
Viana.....	128	8,271
Figueira.....	108	15,050
Aveiro.....	153	7,910
Caminha.....	15	1,412
Villa de Conde.....	3	101
Espozende.....	4	120

Foreign vessels are allowed to enter into the foreign trade, and pay the same tonnage dues as those bearing the flag of Portugal, to wit: Vessels of the United States under the treaty of 26th of August, 1840; also the vessels of the following countries under different treaties and conventions, Dutch, Danish, British, Prussian, Swedish and Norwegian, Russian, Brazilian, Belgian, Hanse Towns, French, Papal States, and Hanoverian. The indirect trade is, however, excepted. Goods not the product of the country from which the vessel sails are liable to an extra duty of 20 per cent. when brought to Portugal in foreign ships.

PORT DUES, ETC.	Reas.	Cents.
Sailing in ballast, or not fully laden, per ton.....	250	= 28
Laden with salt, olive oil, or wine, produce of Portugal.....	50	= 5 3-5
Laden with other produce of Portugal.....	150	= 16 4-5
In all cases when re-exporting foreign goods.....	250	= 28
Entering in ballast, and sailing in ballast (except in cases of distress).....	250	= 28
With full cargo of grain, produce of Portugal.....	250	= 28
With wine, salt, or olive oil.....	250	= 28
With other Portuguese produce.....	100	= 11 1-5
Contribution to remove the bar in the port of Oporto.....	100	= 11 1-5

An additional tax of 15 per cent. on the amount of tonnage and bar-dues is also exacted in Oporto. Under treaty, American vessels are equalized with national vessels as to these duties. Contributions for the exchange building, five reas = one half cent, nearly. Steamers pay two-fifths less tonnage dues than sailing vessels. The contribution for the bar is the same for both. Every captain of a merchant-vessel is bound to have two manifests of the same tenor, signed by himself, and certified by the Portuguese consul or vice-consul at the port of departure. Goods omitted in his manifest, or of a different description, have to pay a sum equal to the value of the goods. Goods admissible being omitted, a fine equal to double the amount of the duties, and custom-house charges and imposts. —United States Commercial Relations.

Portuguese Settlements.—The Portuguese have numerous settlements in Western Africa, situated on the River Caches, the St. Domingo, and the Rio Grande. The chief settlement in Guinea is on the island of Loando; and in Benguela, that of St. Philip. There is some trade carried on between the United States and these settlements, especially at Loando. The exports from the United States to this point consist of domestic cottons, flour, and specie; imports to the United States, gum-copal, palm-oil, ivory, hides, etc. The following summary, exhibiting the general trade between the United States and Loando, during the first six months of 1854, is derived from a consular return: Number of American vessels arrived and cleared, 10, with an aggregate of 2218 tons. Value of cargoes inward, \$65,000; discharged at Loando, \$43,000. Value of cargoes outward, \$22,000.

From a return of later date, the trade between the United States and Loando, for the last three months of 1855 appears to have been carried on by five American vessels, of some 200 tons each—three of them belonging to Salem, Massachusetts, and two to New York. Their cargoes inward, landed, consisted of dry goods, flour, rum, etc., to the value of \$24,200; the total value of inward cargoes being \$61,500; and their cargoes

outward, of palm-oil, gum-copal, ivory, copper ore, etc., to the value of \$67,100. Each of these vessels touched at Ambriz. Indeed, vessels trading to Loando usually touch at Ambriz and Ambrizette, where they have agents, to whose consignment they land part of their cargoes, and take in such produce as may be in waiting. They then touch at Loando, and leave part of their remaining cargoes; then they make for Benguela, where they usually remain from 40 to 60 days, to close their sales, and take on board gum-copal and ivory. On their homeward voyage they again touch at Ambriz and Loando, at which places they complete their cargoes of gums, palm-oil, ivory, hides, and coffee.

At Ambriz there are now two American, two English, one French, and a number of Portuguese factories. Heretofore the only duty paid at this port was a small tribute to the native king, for the privilege of trading. Recent movements indicate a design on the part of the Portuguese government to establish a regular custom-house, and charge import and export duties. The claim of Portugal is predicated on its alleged title to some copper mines in the interior, which can be reached only through this port. The little kingdom of Ambriz is too weak to resist the pretensions of the Portuguese; and however novel this claim may appear to more civilized nations than the little negro kingdom of Ambriz, there is official information to the effect that, instead of free trade, United States commerce will probably hereafter encounter at this point the burdensome restrictions of Portuguese commercial legislation.

The once flourishing and vast colonies of the Portuguese were, before the year 1850, reduced to the following territories:

	Population in 1850.
ISLANDS.	
Madeira and Porto Santo.....	108,464
Eastern Azores.....	97,330
Central.....	69,387
Western.....	68,391
	<u>343,572</u>
AFRICA.	
Cape Verd Islands.....	86,738
Coast of Guinea, Bissao, etc.....	4,270
St. Thomas, Princes, etc.....	12,753
Angola, Benguela, and dependencies.....	589,127
Mozambique and dependencies.....	300,000
	<u>992,888</u>
ASIA.	
Goa, Saluto, Bardez, etc. (new conquests).....	363,788
Town of Damao.....	33,159
Town of Diu.....	10,765
	<u>407,712</u>
OCEANIA AND CHINA.	
Macao.....	29,587
Islands of Timor, Solor, etc.....	918,800
	<u>947,387</u>

For commerce, etc., of Portugal, refer to BALBI'S *Essay on Portugal*; BROUGHTON'S *Letters on Portugal*; HODGE'S *Portuguese Expeditions*; MISS PARDOE'S *Letters*; HUNT'S *Merchants' Magazine*, ix. 366 (WHARTON); *Quarterly Review*, xli. 184 (SOUTHEY); *American Annual Register*, viii. 213 (J. Q. ADAMS). On the wine country of Portugal, see FRASER'S *Magazine*, xxxvi. 302.

Postage—Post-office. Postage is the duty or charge imposed on letters or parcels conveyed by post; the post-office being the establishment by which such letters or parcels are conveyed. We propose, in the present article, to divide and treat the subject under the following heads:

I. Sketch of early Postal Affairs. II. The first National Post-office. III. The British Post-office. IV. Introduction of cheap Postage. V. Postal Statistics, and Rates of Postage in other Countries. VI. History of the United States Post-office. VII. The present Condition and future Prospects of the United States Post-office.

The post-office, as it exists to-day, is essentially a modern institution. Some writers have traced the origin of the Post to a very early period in the polit-

ical history of the world. They find the origin of the word post in the Latin *positus*, as applied to the postal couriers who were placed or posted at certain intervals or stations on the route over which letters or messages were conveyed. Herodotus, Xenophon, and other ancient historians, speak of postal couriers that were employed by kings, rulers, and commanders of armies. In Persia, in the time of Cyrus, stations were kept at regular intervals along the principal highways of the country, and messages were forwarded for the government by couriers, who acted as post-riders. In the Roman empire, in the time of Julius Cæsar, and during the reign of Augustus, a similar method of communication was kept up between the central government and the principal military stations. Marco Polo tells us, and his narrative is confirmed by other travelers, that Kublai Khan, the Emperor of Tartary, had regular post establishments throughout his vast empire. This was in the 13th century. In his narrative we find the following, which is particularly interesting, as giving an account of a regular post among a comparatively barbarous people, that was quite equal to the postal establishments of many modern Christian nations: "From the city of Kanbalu there are many roads leading to the different provinces, and upon each of these, that is to say, upon every great high road, at the distance of 25 or 30 miles, accordingly as the towns happen to be situated, there are stations, with houses of accommodation for travelers, called *yamb* or post-houses." [These are *mansiones equestrum*; in the Chinese language *tchan*, and in the Persian *marhileh*.] "These are large and handsome buildings, having well-furnished apartments, hung with silk, and provided with every thing suitable to persons of rank. Even kings may be lodged at these stations in a becoming manner, as every article required may be obtained from the towns and strong places in the vicinity; and for some of them the court makes regular provision. At each station 400 good horses are kept in constant readiness, in order that all messengers going and coming upon the business of the Grand Khan, and all ambassadors may have relays, and, leaving their jaded horses, be supplied with fresh ones. Even in mountainous districts, remote from the great roads, where there are no villages, and the towns are far distant from each other, his majesty has equally caused buildings of the same kind to be erected, furnished with every thing necessary, and provided with the usual establishment of horses. He sends people to dwell upon the spot, in order to cultivate the land, and attend to the service of the post; by which means large villages are formed. In consequence of these regulations, ambassadors to the court and royal messengers go and return through every province and kingdom of the empire with the greatest convenience and facility."

This is a picture of a very complete postal establishment. The Incas of Peru, in the 16th century, had a similar system of postal couriers to keep up communication between different parts of the country. There was a system of postal communication in France as early as the time of Charlemagne, and used principally for the conveyance of government dispatches. Louis XI. also employed postal couriers. "A permanent establishment of messengers for the conveyance of letters was attached to the University of Paris from the beginning of the 13th century, and indeed was not abolished until the year 1719, long after a general post had been settled in France. Other universities were similarly provided. Sometimes powerful or opulent individuals established posts for mercantile purposes, and the convenience of a particular district."—*Encyclopædia Britannica*. The date of the first regular post establishment in modern time was not far from the year 1497. There is a general coincidence in point of time of a number of leading discoveries, conquests, inventions, and improvements. Printing was invented in 1441. Constantinople was taken by the Ottomans,

the Greeks driven from the East, and the Turkish empire founded in 1453. Postal couriers were employed in Great Britain as early as 1464. Printing was introduced into England in 1474. The kingdom of Spain was established by the union of Aragon and Castile, in 1479. The Cape of Good Hope was discovered in 1486, and America in 1492. The post-office was established in Germany about the year 1497. Africa was circumnavigated in 1498. The Reformation commenced in 1517. A system of punctuation by marks and pauses was introduced in 1520. Hungary was united to Austria in 1521. Magellan completed the first circumnavigation of the globe in 1522. The astronomical system of Copernicus was proclaimed in 1532. In India, as early as 1570, a system of foot-posts was established by Akbar, the head of the Mogul empire. Indian runners, noted for their speed, were employed, and one messenger, without relief, we are told, would often travel from 80 to 90 miles in a day.

II. *The first National Post-office*.—The first regular post-office was established by Maximilian, emperor of Germany, near the close of the 15th century—about the year 1497. At the head of this post establishment the emperor placed Francis, prince of Thurn and Taxis, the first postmaster-general mentioned in history. This establishment, originally started like all other government posts as a general errand-boy and message-bearer of government, soon became a powerful monopoly, and claimed the sole right of transmitting the correspondence of the people. From the time of its foundation to the present day the German post establishment has been held as a hereditary fief or property by the princes of the house of Thurn and Taxis. It has been a subject of frequent discussion whether postal business should be entirely carried on by government. There are arguments on both sides, and many against it can be found in the history of this German postal union. The Catholic religion being the religion of the state, Protestants made frequent and just complaints against the suppression and violation of correspondence in the cause of political tyranny and religious intolerance. We are informed that this was one of the direct causes of the Thirty Years' War. Lamoral, prince of Thurn and Taxis, a military leader (Catholic) as well as postmaster-general, by the assistance of his allies defeated and dispersed the Protestant Union under Frederick, the Elector Palatine. This was followed by the "Massacre of Prague," the "horrible persecution of all malcontents," the "banishment of thirty thousand Protestant families, and the total suppression of the Protestant religion." In this work the post-office was used as a machine for annoyance, espionage, persecution and warlike conquest. The very same postal concern is this day a stumbling-block and a serious impediment in the way of cheap postage between nations on the west—France, Great Britain and the United States—and people living in the eastern part of Europe. But the house of Thurn and Taxis own the post, pocket large profits, are deaf to all considerations of public good, and insist on the very highest paying (transit) rates of postage.

III. *The British Post-office*.—The Post-office of Great Britain, at once the most efficient, economical, and profitable of modern times, has a most interesting history. We find mention of postal couriers employed by government as early as the reign of King John. He summoned his barons to form the Parliament by issuing "letters patent." During this reign state accounts exhibit frequent items of charge for the carriage of letters. In the time of Edward II., there were fixed posts or stations where horses were kept for post-riders. In 1481, Edward IV., during his wars with Scotland, established, as stated by Gale, certain posts, twenty miles apart, where the riders relieved one another, and in this way conveyed letters one hundred miles a day. Long before there was any account of a national post-office, we meet with the superscription of letters,

"haste, poste haste." In 1581, during the reign of Elizabeth, Camden states that Thomas Randolph was chief postmaster of England, but nothing is mentioned as to his functions as a transmitter of letters.

Among the early records of postal affairs in Great Britain are various accounts of the violation of letters, particularly in the reign of Henry VIII. The English ambassador at the Court of James V., King of Scotland (Sir Ralph Sadler), gives numerous instances of the violation of letters by Cardinal Beaton. One messenger, a soldier from Berwick-on-Tweed, was employed to relieve the courier from the south on his way to Edinburgh, with dispatches for the ambassador. He was called "the post." While on the way, he fell into the hands of Beaton's emissaries, and they seized the letters that were addressed to Sir Ralph Sadler, and refused to give them up. They were finally delivered, after they had been kept some days, and opened; "which," as Sir Ralph says, "being in cipher, they had kept the longer to prove their cunning in the deciphering of them, which (as I credibly am informed) they could do." A letter from the Earl of Angus, "Sir George Douglas hath to convey by post, and will, as he hath written to me, ride himself therewith to Berwick, because he dare trust no other man to carry it." He adds, "it is much ado to convey letters safely in this country." One messenger of King Henry was taken by the cardinal's party, who "threatened to hang him with all his letters about his neck." But on two notable occasions the wily cardinal—the Pope's *legatus à latere* in Scotland—had the tables turned upon him. One of his own couriers was shipwrecked and cast ashore near Bamborough Castle, was captured, and by the cardinal's letters found on him, it appeared that he ("through the authority of the Bishop of Rome") (the Pope) intended to get all power, spiritual and temporal, from the King of Scotland, while professing to be his friend. King Henry reported this to King James through his ambassador. When he heard it, the incensed monarch said, "whatsoever he be in Scotland that we may know, doth not his duty both in the execution of God's laws above all, and also in the ministration of indifferent justice to our lieges; by God," quoth he, "if we may know him, we shall not lett to punish him, be he spiritual or temporal."

The last notable act of this kind was when Cardinal Beaton sent Norman Leslie, son of the Earl of Rothes, and others, to Edinburgh, from his strong-hold at St. Andrews. Suspecting foul play, they "fingered the packet," and found they were the bearers of their own death-warrants. They returned by night, and at a very early hour in the morning, while the draw-bridge of the castle was lowered, rushed in and stabbed the cardinal in his own room. The journals and correspondence of this period contain various other instances of the violation of correspondence. The earliest mention of a postmaster, who had the charge of correspondence, and whose duties and privileges were defined, was in the reign of James I. of England. He was charged with "the sole taking up, sending and conveying of all packets and letters into foreign parts." The office was filled by Mathew le Quester, and by Mathew le Quester, his son. In 1635 King Charles issued a proclamation "for settling of the letter-office of England and Scotland." "This," says an English writer, "may properly be regarded as the origin of the British Post-office." By royal command, Thomas Witherings, Esq., was Postmaster-general. Posts were established from London to the Continent, and to Scotland and Ireland. In 1644 the Parliament made Edmund Prideaux Postmaster-general, and he established a weekly mail. Cromwell made important improvements. He had an act passed "to settle the postage of England, Scotland, and Ireland." By this it was enacted that "there shall be one General Post-office, and one officer styled the Postmaster-general of England, and the comptroller of the Post-office." This officer was to have the

"horsing" of all persons "riding in post." The rates of postage were fixed, and all other persons forbidden to "set up or imploy any foot-posts, horse-posts, or packet-boats." The postage of a letter eighty miles from London was two pence sterling; above that distance, in England, three pence; to Scotland, four pence; and to Ireland, six pence. Double letters were double these rates. The post-riders were required to ride seven miles an hour in summer and five in winter. Cromwell farmed the post-office out for £10,000 a year; and on the restoration of Charles II., in 1660, the office was rented for £21,500 a year. In 1663 the entire profits were settled on the king's brother, the Duke of York (afterward King James II.), and his heirs male. In 1685, by an order in council, a post-office was established on this continent "for the better correspondence between the colonies of America."

During the reign of James II., William Dockwra set up a local system of letter and parcel distribution in London. He was allowed to continue it for several years, until it proved profitable, and then his local letter system was seized under pretense that it encroached upon the royal prerogative. In the more modern history of the post-office there are parallel cases. In 1688 an act was passed for the establishment of a General Post-office in Scotland. In 1698 King William made a grant of the whole revenues of this office to Sir Robert Sinclair, with a subsidy besides of £300 a year. Even at this rate Sir Robert found it a losing business, and threw it up. In 1710 (9 Anne, ch. 10) an act was passed that may be considered the charter of the British Post-office. This act established a General Post-office throughout Great Britain and Ireland, the North American colonies, and the West Indies. It was all put under the control of one officer, styled her Majesty's Postmaster-general. The act provided for one chief letter-office in Edinburgh, one in Dublin, one in New York, and others in the West Indies. For a considerable period after the act of 1710, there were no relays of post-horses, one man or boy, and a horse, accomplishing an entire journey like the one from Aberdeen to Edinburgh, traveling by day and stopping at night. Up to 1763 there was only a tri-weekly mail from London to Edinburgh. That year the trips were increased to five times a week. The time required for the mail-coach to go between the two cities was from eighty-two to eighty-five hours. Until 1788, there was no direct mail from London to Glasgow. It is instructive to note the progress in the income of the British post-office for a period of two hundred years. The net and gross income of the British post-office at different periods will be seen in the following table, the last column giving the gross income in United States currency, reckoning five dollars to the pound sterling:

Years.	Net Revenue.	Gross Receipts.	Gross Receipts.
1653.....	£10,000	....	....
1663.....	21,500	....	....
1685.....	65,000	....	....
1696.....	67,222	£90,440	\$452,200
1711.....	90,223	111,426	557,130
1754.....	97,365	210,663	1,053,315
1760.....	83,493	230,146	1,150,730
1770.....	156,062	305,015	1,525,075
1780.....	136,409	418,862	2,094,310
1790.....	331,179	571,863	2,859,315
1800.....	720,981	1,083,950	5,419,750
1810.....	1,138,889	1,855,748	9,278,730
1820.....	1,385,493	2,191,562	10,957,810
1830.....	1,304,020	2,265,481	11,327,405
1840.....	500,789	1,359,466	6,797,330
1845.....	761,982	1,887,576	9,437,880
1850.....	803,898	2,264,684	11,323,420
1855.....	1,065,056	2,716,420	13,582,100
1856.....	1,207,725	2,867,954	14,339,770

The first year of penny postage was in 1840.

To give the different rates of postage that have been levied at various periods since the act of Queen Anne would require a long tabular statement. In 1710 the charge for a single letter from London to Edinburgh,

and from London to Dublin, was sixpence. In England the rates were three, or four pence, according to distance; in Scotland, two, three, or four pence, and in Ireland two or four pence. The rates were altered, and generally increased in amount and also in number, in each of the three kingdoms—and without uniformity in either two—in 1765, 1784, 1797, 1801, 1805, and 1812, and in Ireland in 1813 and 1814. From two or three rates in 1710, they went on increasing in number until they reached the climax of absurdity and inconvenience in twelve different rates in England and Scotland, in 1812, and thirteen rates in Ireland, in 1814. In Scotland, in 1813, an additional half-penny was levied on all letters that were conveyed in mail-coaches. These absurd, complicated, troublesome, and multifarious rates of postage remained on the statute books until they were blown from existence by the reduction of all rates to one uniform charge of a penny, through the exertions of Mr. Rowland Hill, in 1840.

The next great improvement in the mail service of Great Britain was the introduction of mail coaches, in 1784. This was principally accomplished by the exertions of Mr. John Palmer. Like most new improvements, it was the project of an outsider, Mr. Palmer not being an officer of the post-office, but the manager of a provincial theatre. That extraordinary fatality usual in such cases took possession of nearly all prominent officials; and the Postmaster-general, members of Parliament, and other dignitaries, denounced the scheme as preposterous, undignified, and impracticable. The projector was pronounced a visionary zealot, and as unreliable as a madman. It appeared to Mr. Palmer that when passenger coaches traveled regularly over the principal roads at a much more rapid rate than the horse-posts usually did, the mails could, with advantage, be transported by them. At this day we can scarcely see tangible grounds for a violent opposition to a plan to adopt the swiftest and most reliable conveyance for the mails, except in that official jealousy, which never bears a rival near the throne, or that resents the assumption of an outsider in presuming to know any thing better than the servant of routine who is paid to carry on a concern that he feels no interest in improving. The mails were transferred to stage-coaches, all the opponents of the plan were put to shame, and Mr. John Palmer received from the Treasury the sum of £50,000, and an annuity of £3000 a year for life, for the benefits he had conferred on the nation in augmenting the national income, and increasing the facilities for correspondence.

IV. *Introduction of Cheap Postage.*—Mr. Rowland Hill, an English country gentleman, in no way connected with the government or the Post-office, set to work, in 1836, to devise a plan to effect some permanent improvements in the regulation and management of the postal establishment. He found, by referring to the official records of the Post-office Department, that while the population, the business of the country, and all branches of the national income (the post excepted) had greatly increased during the preceding twenty years, the revenue and business of the post-office had, with some fluctuations, actually decreased. He compared the postal income to the revenue derived from stage-coaches, a branch of business that afforded a good index to the prosperity of the country. The following table exhibits at one view a comparison of the revenue from stage-coaches, with the net postal income; and a column showing what the net revenue of the post-office would have been in 1835 had the receipts kept pace with the revenue from coaches:

Years.	Revenue from Stage-coaches.	Increase per Cent.	Net Post-office Revenue.	Revenue which would have been.	Comparative Loss.
1815	£217,671		£1,567,291	£1,567,291	.....
1820	273,477	25	1,479,547	1,946,000	£466,453
1825	362,631	66	1,670,219	2,585,000	914,781
1830	418,535	92	1,517,952	2,990,000	1,472,048
1835	498,497	128	1,540,500	3,550,000	2,009,500

Believing that the legitimate demand for the conveyance of letters and distribution of correspondence had increased as fast as that for the conveyance of persons and parcels, it was evident that, in effect, there was a loss in post-office revenue, amounting to £2,000,000. These facts and others were first submitted privately to the government, and in 1837 to the public, in a pamphlet, entitled "Post-office Reform, its Importance and Practicability." It was received with great favor, and in a short time passed through three editions. The author came to the following conclusions: He demonstrated clearly that the actual cost of conveying a letter by coach in the mail from London to Edinburgh—400 miles—was only one-thirty-sixth part of a penny. It must be evident that the actual difference of expense between transporting a letter one mile and delivering it, and carrying one four hundred miles to be delivered, did not justify a different rate of charge. He came to the conclusion that the large cost of distributing letters was the result of complex arrangements in the post-office, arising from many rates of postage. That these complex arrangements would be avoided if postage were charged, without regard to distance, at a **UNIFORM** rate. That all letters should be charged by weight, those reckoned as single letters that did not exceed half an ounce each. That the uniform charge for letters, including their delivery, should be one penny. That this rate of charge would afford the greatest facilities to the public, put a stop to correspondence through private channels, and eventually prove the most profitable to the government. That with the simplicity and economy of arrangement attending the uniform charge of a penny, there would be but little more expense attending a four-fold increase of correspondence than there was with the then numerous rates of postage. That the effect of a uniform penny rate would be to increase correspondence "in all probability at least five-and-a-quarter fold." [In 1856 the number of letters in the kingdom (478,393,803) had increased more than six-fold beyond the number in 1839 (then 75,907,572), the last year of the old rates.] That the necessary cost of primary distribution, instead of being 84 hundredths of a penny, as it was under the numerous rates of postage, would only be 32 hundredths of a penny, the difference, 52 hundredths of a penny, arising from the expensiveness of the arrangements, the excessive charges, and the consequent restriction of correspondence. That the secondary distribution of letters (the delivery) ought to be untaxed, so as not in any degree to interfere with the simplicity of arrangements attending a uniform and low rate.

A verification of Mr. Hill's predictions, almost amounting to prophecy, has been established by the working of the system. In his pamphlet, published in 1837, he predicted that the increase of correspondence, and the attendant economy of management that would result from a uniform rate of a penny, "would afford a probable net revenue"—that is, in a reasonable time—"of £1,278,000." In 1856 the net revenue was exactly £1,208,725. One statement will show the great economy of management under a uniform rate of postage. Taking the cost of carrying on the British postal establishment (transportation excepted) in 1837, before there was uniform postage, and in 1854 (with the uniform charge of a penny), and looking also at the number of letters at each period, we can see what the handling, sorting, distribution, and delivery amounts to per hundred or per thousand letters. The following is the official record:

Years.	Expense of Distribution.	Number of Letters.	Expense of each 1000 Letters.
1839.....	\$2.5 3 3-32	82,471,596*	\$30
1854.....	\$2.238 195	443,649,301	7

* This number included both franked and paid letters. Omitting free letters, the number was 75,907,572.

By the efforts of Mr. Wallace, M. P. for Greenock, Lord Ashburton, and others, a parliamentary commit-

tee was appointed; and after numerous sittings, and the examination of nearly a hundred witnesses from all classes and ranks of society, they made their report in two formidable blue-books, giving the entire testimony, and a great mass of official statistical information. It is a fact worth mentioning in this place that all great postal improvements, both in Great Britain and the United States, were commenced, carried on, and prosecuted to a successful termination, by citizens entirely unconnected with the postal establishment. So far from deriving aid from those who would be supposed to possess the ability and disposition to afford it—viz., those in the post-office—they have uniformly opposed all reforms. It was singularly true in the present inquiry. "It was found, by the commission, to be a matter of the greatest difficulty to extract from the post-office any information necessary for the elucidation of the inquiry." "Not only has the post-office been utterly barren of improvement itself, but its weight is thrown into the opposite scale." "Whenever the post-office attempted to give facts and estimates to combat Mr. Hill"—to quote from an eminent writer—"it was found that Mr. Hill was always right, and the post-office always wrong." A Chancellor of the Exchequer described the "gentlemen of the post-office" as "unwilling horses." Petitions to the number of 320, from 262 different places, and bearing over 38,000 names, were sent to Parliament, asking for the adoption of Mr. Hill's plan. In 1839 franking was abolished, and an act passed authorizing the lords of the Treasury to adopt a uniform rate of one penny on all single letters, without regard to distance. The penny postage went into operation on the 5th day of January, 1840.

The official reports of the Post-office, showing the revenue and expenditure, and the amount of correspondence, comprise the best eulogy of the principle of the uniform penny rate. It is no disparagement to Mr. Rowland Hill to say that, while he was once in favor of prepayment of postage being compulsory, he has long since receded from that idea. Prepayment is not, and never has been, compulsory in Great Britain, all letters being forwarded to the persons addressed, whether prepaid or not, with the exception of letters weighing over four ounces; and these, if not prepaid, are at once opened and returned to the writer. Letters not prepaid are charged double; and such letters, if refused or not delivered, are returned to the writer from the Returned-letter office, and the double postage then due may be collected by compulsory process. By this means the distribution of circulars and advertising sheets through the mails, without prepayment, is effectually prevented. In Great Britain it is customary to refuse all unpaid matter unless a name or the handwriting on the outside shows who the sender is; and so near universal is prepayment of all postage, that more than 98½ per cent. of all letters have their postage paid before mailing.

In Great Britain there is no Dead-letter office, and there are no "dead" letters. There is a "Returned-letter office," and all letters, and even papers and printed packages, that have not, for any reason, been delivered are at once opened or examined, and, where possible, returned to the senders. When the name is printed or written on the outside of the letter, or impressed in the seal, or where a coat of arms or device reveals the writer, the letter or package is returned unopened. As there is a letter delivery by carriers daily, or several times a day, at almost every post-office and post village, refused, misdirected, or other "stray" letters are at once known, and, by the above regulations, almost all letters that in other countries (and particularly in the United States) would be pronounced "dead," and condemned to a hopeless imprisonment for months, and then, perhaps, to be burned, are here sent back to the writers and rightful owners, and usually in less than a week from the day they are mailed.

The practice now is to dispatch every letter on the day it is received at the Returned-letter office. The last annual report (1857) says: "By recent arrangements, returned letters are sent back to the writers much more quickly than formerly; every such letter (except from abroad) being now opened [where necessary], redirected and reposted on the day of its arrival at the Returned-letter office. The number of letters returned to the writers last year (1856), owing to failure in the attempts to deliver them, was nearly the same as in the previous year—viz., about 2,400,000, or about 1 in 200 of the whole number of letters posted. Owing to the same cause, about 550,000 newspapers, also, were undelivered, being about 1 in 129 of the whole number."

In the case of letters that can not be delivered, even though by the fault of the writers, the British post-office is supposed to be just as much the servant of the people as in the case of letters when originally mailed and correctly addressed, and every such letter is looked upon as a piece of property, to be sent to the person addressed, when possible, and when not, returned to the owner. All letters and packages that are prepaid, when returned, are delivered to the senders without any charge; and when not prepaid, double postage is exacted. With such system, simplicity, and facility is the returning of letters carried on, that each clerk returns two hundred per day.

The principle and operation of the British Penny-postage system is this: A minimum rate of postage is sought for that shall not be an exorbitant charge for the smallest packages the shortest distances, and this postage is paid by a stamp. Now the object is to make this stamp cover as large a number and variety of packages—written and printed—as possible. Each letter is called a "single" letter that does not exceed half an ounce in weight, and each package of printed matter—newspapers, circulars, hand-bills, pamphlets, or books—done up open at the ends or sides, is considered "single" up to four ounces. Here is the value, convenience, simplicity, and utility of UNIFORM postage, both to the public at large, and to those who handle, sort, rate, and attend to the letters and mails. Drop-letters, or more properly local letters—for they are not permitted to "drop" and become "dead"—and all local mail matter, is charged at the same rate as those that are transported five hundred miles. The consequence is readily seen. The penny stamp covers almost all—more than nineteen-twentieths—the packages that are mailed. A letter not weighing over half an ounce, local or otherwise, a newspaper, pamphlet, or other printed package, not weighing over a quarter of a pound, have the postage prepaid by the all-powerful, all-convenient, universal, uniform penny stamp. Then in larger packages the rates are not cut up so fine as to be inconvenient to either the citizen or the postmaster. Letters from half an ounce to an ounce are two postages, and after the first ounce each ounce or fraction of an ounce in excess is reckoned as two postages. In printed matter, after the first half pound, the reckoning is made by half pounds; each half pound, or fraction of a half pound, being charged two postages—two pence. All the items in this simplicity and uniformity of arrangement save a vast amount of time and trouble to the people, and the clerks and postmasters, in a nation that writes and sends by mail annually nearly six hundred million letters and printed packages, particularly as each letter and printed package has to go through from four to eight different processes or operations in the hands of the citizen, and from fifteen to twenty after it gets into the post-office. Would any other system but one that combines so much wisdom, economy, convenience, simplicity, uniformity, and utility, bring nearly six hundred million letters and packages through the post-office in a single year? A record of the business, and the revenues and correspondence of the post-office of the kingdom for a few years, will do something toward answering the question.

STATISTICS OF THE BRITISH POST-OFFICE.—[Reduced to United States Currency.]

REVENUE, EXPENSES, NUMBER OF LETTERS, AND NUMBER AND AMOUNT OF MONEY ORDERS IN THE UNITED KINGDOM, DURING A SERIES OF YEARS, COMMENCING WITH 1815, AND ENDING WITH 1856.

Years.	Gross Receipts.	Expenses.	Net Revenue.	Number of Letters.	Number of Money Orders.	Amount of Money Orders.
1815	\$11,619,175	\$3,523,135	\$8,096,140	....	....	....
1825	11,343,088	3,286,800	8,056,288	....	....	....
1835	11,216,469	3,432,866	7,783,603	....	....	....
1836	11,763,012	3,608,699	8,154,313	....	....	....
1837	11,618,690	3,436,568	8,262,122	....	....	....
1838	11,731,590	3,433,841	8,297,749	....	....	....
1839	11,953,818	3,754,997	8,198,821	75,907,572	188,921	\$1,565,623
1840	6,797,532	4,298,885	2,508,647	168,768,344	557,717	4,804,878
1841	7,497,093	4,690,845	2,806,248	196,500,191	1,552,845	15,637,538
1842	7,890,729	4,857,522	3,033,207	208,434,451	2,111,980	21,685,889
1843	8,104,338	4,903,252	3,201,086	220,450,306	2,501,523	25,564,204
1844	8,525,339	4,925,553	3,599,786	242,091,654	2,806,803	28,476,977
1845	9,437,383	5,627,971	3,809,412	271,410,789	3,176,126	32,166,815
1846	9,819,287	5,698,726	4,120,561	299,596,762	3,515,079	35,355,84
1847	10,905,084	5,982,600	4,922,484	322,146,243	4,031,155	39,515,886
1848	10,713,400	7,016,253	3,707,147	328,830,184	4,203,651	40,756,475
1849	10,826,749	6,622,814	4,203,935	337,399,199	4,248,891	40,763,219
1850	11,323,421	7,303,928	4,019,493	347,069,071	4,439,713	42,472,413
1851	12,110,841	6,520,818	5,590,023	360,447,187	4,601,025	44,402,104
1852	12,171,634	6,719,536	5,452,098	379,501,499	4,947,815	47,191,389
1853	12,872,039	7,003,329	5,868,640	410,817,483	5,215,290	49,580,976
1854	13,609,313	7,632,781	5,976,532	443,649,301	5,466,244	52,312,159
1855	13,582,100	8,256,820	5,325,280	456,216,176	5,807,412	55,046,395
1856	14,339,770	8,301,145	6,038,625	478,393,803	6,178,182	59,027,810

The money columns give the amounts in United States currency, calculating five dollars to the pound sterling. It will be seen that the gross and net revenue of the post-office for twenty years, from 1815 to 1835, actually declined. Then there were twelve or fourteen rates of postage for letters, averaging about six and a half pence sterling (13 cents) a letter. With a reduction to the uniform rate of a penny—less than one-sixth of the former rates—the postal revenue more than recovered in eleven years, while the number of letters sent by mail annually increased from 75,907,572 in 1839, to 478,393,803 in 1856. The remittances of money, in money orders, increased from a million and a half in 1839, to fifty-nine millions in 1856. To make a direct comparison between the use of the post-office in Great Britain and in the United States, it may be stated that, after a careful estimate, the number of letters sent through the post-office in this country since 1789, to 1856, inclusive—a period of sixty-seven years—has been 1,652,104,648, while in Great Britain, in the years 1853, 1854, 1855, and 1856, the number of letters was 1,789,076,769; or more in that country in four years, with low and uniform postage, than in this country since the formation of the government, now nearly three-quarters of a century! During ten years—from 1847 to 1856, inclusive—the population of London alone sent by post 920,527,039 letters, or more than in the entire United States during the same peri-

od; the latter numbering 888,527,549! But in Great Britain there was one uniform rate for letters, and one uniform scale by weight for printed matter, while in this country there are three rates of postage on letters, and on printed matter, from a small newspaper to a large book, the number of rates is almost one thousand! Under the post-office system of Great Britain there is a free-letter delivery, a safe way of remitting money by money orders, that is used to the extent of about sixty millions a year, and one low rate of postage that brings an annual income of over fourteen millions of dollars. In the United States the postage is higher; there is no uniformity, no letter delivery, and no money order system, and our population scarcely pay seven millions in postage. The people of Great Britain can scarcely one half of them read or write, and yet they write and send by mail almost 500,000,000 letters in a year.

The population of the United States, numbering just about the same as Great Britain, and nearly all able to read and write, only write and send by mail 131,000,000 letters in a year. Are further facts and illustrations necessary to show the superiority of the British postal system, or the relative merits of the "uniform postage" and the "complex postage" systems?

The correspondence between Great Britain and several of her colonies, and foreign countries, for the year 1856, will be seen in the following table:

ESTIMATED NUMBER OF LETTERS, NEWSPAPERS, AND BOOKS BETWEEN GREAT BRITAIN AND CERTAIN COLONIES AND FOREIGN COUNTRIES.

	Letters Outward.	Letters Inward.	Inward and Outward.	Newspapers and Books Outward.	Newspapers and Books Inward.	Inward and Outward.
Africa, West coast of.	28,800	28,836	51,636	22,884	4,632	27,516
Australia.	913,733	....	....	1,842,466	....	....
Belgium.	3,5,811	250,564	576,375	202,740	185,400	388,200
Brazil.	66,252	80,076	146,328	123,408	60,084	183,492
Bremen.	57,166	49,538	106,704	19,608	....	....
Canada.	358,784	396,915	755,119	908,028	424,416	1,332,444
Ceylon.	28,722	37,542	66,264	114,084	22,122	136,206
East Indies; viz., Bombay, Calcutta, Madras, Aden, Penang, and Singapore.	610,482	647,800	1,258,282	979,068	920,687	1,199,755
France.	2,184,916	2,021,610	4,206,526	718,296	614,304	1,332,600
German Postal Union.	911,957	635,145	1,547,102	586,968	184,380	771,348
Hamburg.	385,445	257,469	642,914	149,592	127,868	277,460
Holland.	233,632	179,827	413,459	81,636	44,808	116,444
Hong Kong.	72,522	78,228	150,750	105,980	51,298	165,168
Mauritius.	20,730	16,530	37,260	49,164	26,250	69,414
Mediterranean, including Malta, Alexandria, and Ionian Islands.	234,786	173,056	407,842	92,802	9,420	102,222
Spain and Portugal; viz., Lisbon, Oporto, and Gibraltar.	171,846	164,088	335,934	75,492	4,860	80,202
Sweden.	26,015	17,253	43,268	4,776	3,264	8,040
United States.	1,733,745	1,547,054	3,280,799	1,063,584	872,664	1,936,248
West Indies and Pacific.	322,716	281,700	604,416	572,412	122,496	694,908

* No returns.

The total amount of correspondence in each of the three kingdoms, as well as the local and other letters in London for seventeen years, is exhibited in the following table:

NUMBER, AS NEARLY AS CAN BE ASCERTAINED, OF CHARGEABLE LETTERS DELIVERED IN GREAT BRITAIN IN THE YEAR IMMEDIATELY PRECEDING THE FIRST GENERAL REDUCTION OF POSTAGE, ON THE 5TH OF DECEMBER, 1839, AND IN EACH COMPLETE YEAR SUBSEQUENT THERETO.—[*Franked or Free letters marked **.]

Years.	By Country Offices	London District exclusive of Local Letters.	Localities in London District.	Total in England and Wales.	Total in Ireland.	Total in Scotland.	Total in United Kingdom.	Increase per Cent on the previous Year.
1839.....	.....	.....	.....	59,982,520	8,311,904	7,623,149	75,907,572	.....
1839.....	.....	.....	.....	*5,172,284	*1,054,508	*336,32	*6,563,024	.....
1840.....	88,971,308	23,559,895	20,372,382	133,003,525	18,210,642	13,554,167	168,768,344	122½
1841.....	108,395,677	27,966,722	23,108,722	154,471,121	20,794,297	21,234,772	196,500,191	16½
1842.....	111,115,489	29,385,282	26,389,942	163,890,713	22,228,154	22,215,583	208,424,451	16
1843.....	117,704,474	30,908,743	24,891,410	173,494,627	23,482,465	23,473,216	220,451,303	6½
1844.....	129,060,023	33,575,996	26,980,400	186,652,419	25,197,188	26,502,777	242,091,684	9½
1845.....	147,274,431	36,074,711	30,823,059	214,133,698	28,587,993	28,669,168	271,410,759	12
1846.....	162,624,024	39,598,681	33,261,059	235,878,755	32,572,947	31,135,060	299,586,762	10½
1847.....	175,023,407	43,757,549	34,631,817	253,411,764	35,473,316	33,261,163	322,146,243	7½
1848.....	180,716,102	45,991,153	35,072,747	260,380,002	34,837,431	33,563,101	328,830,184	2
1849.....	187,382,329	47,845,683	39,960,318	267,188,410	35,433,913	34,746,876	337,399,199	2½
1850.....	192,503,628	44,850,170	38,887,844	276,292,642	35,383,855	35,427,534	347,061,071	2½
1851.....	199,746,304	47,819,499	40,585,952	288,151,755	35,182,782	36,512,649	360,647,137	3½
1852.....	212,633,753	51,171,423	40,403,307	304,205,303	37,449,953	37,843,182	379,511,499	5½
1853.....	232,504,177	54,402,073	42,816,814	329,722,514	40,419,642	40,675,310	410,817,433	8½
1854.....	254,922,067	57,186,159	46,191,561	355,300,616	41,234,594	44,114,009	449,649,301	8
1855.....	268,037,537	51,647,543	45,844,163	365,530,349	41,822,884	45,851,022	458,216,176	2½
1856.....	275,453,824	64,961,321	47,894,708	388,309,853	41,851,005	48,202,942	478,373,803	4½

POSTAL STATISTICS OF TWENTY-FIVE LEADING CITIES AND TOWNS OF GREAT BRITAIN, GIVING THE NUMBER OF PERSONS EMPLOYED, AND THE POSTAL REVENUE, LOCAL EXPENSES, AND MONEY REMITTED IN MONEY ORDERS.

Cities.	Population.	Clerks, Sub-postmasters, Receivers, etc.	Letter-carriers.	Local Expenses.	Postal Revenue.		Money Orders.	
					1855.	1856.	Issued.	Paid.
London.....	2,362,336	1397	1385	£215,658	£817,338	£834,927	£2,202,229	£3,336,679
Liverpool.....	375,955	147	82	14,029	92,842	100,379	358,646	361,874
Manchester.....	316,213	160	123	12,765	78,121	85,301	325,029	356,800
Glasgow.....	329,097	123	134	10,096	57,783	63,441	153,819	192,199
Edinburgh.....	160,302	82	74	11,043	41,922	50,270	128,271	205,383
Dublin.....	258,361	124	109	19,330	45,499	55,103	266,043	210,558
Birmingham.....	232,841	90	64	7,364	35,695	38,849	192,443	305,374
Bristol.....	137,328	119	53	6,158	28,510	20,967	132,477	208,281
Leeds.....	273,613	98	42	5,123	19,525	21,435	110,455	140,229
Newcastle.....	87,734	51	25	2,983	18,434	19,647	97,230	83,302
Hull.....	84,690	67	46	3,900	16,575	16,960	97,192	118,395
Sheffield.....	185,310	46	22	2,642	14,509	14,782	83,604	93,467
Bath.....	54,240	32	47	3,366	13,765	14,884	78,264	72,997
Bradford.....	149,543	87	25	1,866	11,824	13,136	45,032	41,228
Belfast.....	100,300	39	20	1,869	10,352	12,122	41,506	44,375
Exeter.....	40,688	60	30	2,807	10,113	11,915	65,899	77,395
Norwich.....	63,195	51	41	2,893	11,229	11,870	50,822	61,737
Southampton.....	35,305	81	24	2,614	12,228	11,685	76,901	70,714
Nottingham.....	57,407	52	28	2,206	10,528	11,366	80,727	66,701
Aberdeen.....	71,973	50	20	1,707	10,918	11,130	32,600	42,426
Portsmouth.....	72,096	13	16	1,637	10,858	10,824	90,555	70,043
Plymouth.....	52,221	29	19	1,767	10,197	10,221	64,115	67,649
Wolverhampton.....	119,748	23	14	1,336	8,086	8,750	50,213	33,457
Derby.....	40,609	44	20	2,171	8,202	8,659	40,448	43,194
Leicester.....	60,584	27	23	1,642	7,227	7,853	47,689	45,783

The rate of letter-postage between Great Britain and each of her colonies—over forty in number—is six-pence sterling, except to the Cape of Good Hope, Natal, Labuan, Gambia, Island of Ascension, Falkland Islands, and Vancouver's Island. A book-post, for the transmission of every species of printed matter, has also been established with the most of the colonies. The above table exhibits at one view the population, annual postal revenue, local post expenses—for rent of post-offices, salaries, etc., not transportation—amount of money remitted by money orders in a year, together with (second column of figures) the number of clerks, postmasters, sub-postmasters, and letter-receivers, and (third column) the number of town and rural letter-carriers in (and around) twenty-five of the leading cities and towns of Great Britain. The population is from the census of 1851, the local expenses and number of persons employed, for the year 1854, the money orders for 1856, and the postal revenue for both 1855 and 1856.

The British money order system is one of the most important adjuncts to the Post-office. This was first started as a private enterprise by certain officers of the post-office, in the year 1792. The commission charged was eight-pence to the pound sterling, making the whole business complicated and expensive. The consequence was, it afforded little profit to the projectors, and but very trifling accommodation to the public. The three officers engaged in it received less than

two hundred pounds sterling each, in annual profits, the entire commissions amounting in a year to less than four thousand pounds. August 13th, 1838, the money-order office was attached to the post-office, and the officers compensated for their rights. At first the commissions were put at six-pence sterling for all orders less than two pounds, and one and six-pence for orders between two and five pounds. These commissions were reduced on the 20th of November, 1840, to six-pence and three-pence respectively. No order is granted for more than five pounds. The number of persons employed in the money-order office at first was three. This was in 1838. In 1841 there were thirty-seven, and now in the money-order office in London alone there are nearly two hundred. We have seen in a table on a previous page [1558] the vast increase in the money-order business in the kingdom. In 1839 the number of orders was less than two hundred thousand, and the amount of money emitted about \$1,570,000. In 1856 the number of orders had increased to over six millions in number, and the amount in a year to about sixty million dollars. The money order is a draft from one postmaster on another, and is paid at sight, in specie, to the person in whose favor it is drawn. It is as safe as a duplicate bank check before it is endorsed, and if proper care is used in remitting it; if it gets lost or stolen, it will be impossible for any but the rightful owner to obtain the money on it, even by committing forgery, as a casual finder

will not know the name of the person in whose favor it is drawn. It is safe to say that not one money order in five hundred thousand gets appropriated by the wrong person. All post-offices are not money-order offices.

There are in the United Kingdom 10,866 post-offices. Of these 845 are head post-offices, and 10,021 sub-post-offices. The number of post-offices where money orders are bought and sold is 2095. The net profit on money orders during several years was as follows: In 1849, £322; in 1851, £7487; in 1854, £16,167; and in 1856, £22,674. The commissions averaged less than one per cent.

One vast superiority of the British Post-office consists in the facilities for rapid delivery and local distribution in cities and towns. The postage on each local letter being one penny, the same as for letters the longest distance, there is a very large profit on the local distribution of letters, admitting that the carriers deliver every thing "free" that comes from other places. The clear profits on the local distribution of letters in London alone, after deducting the entire expense of letter-carriers, receivers, and mail-men, is over \$900,000 a year. It will then be seen that the term "free-letter delivery" is a misnomer. By the figures in a table on a previous page it will be seen that the number of local letters in London annually is over forty-seven millions. The machinery for the local distribution of letters in London consists of about 1400 letter-carriers, one or two score of mail-men, with horse and cart, and about 500 sub-postmasters and letter-receivers. In all the densely populated parts of London there are hourly deliveries through the day, and more than four-fifths of the first morning delivery is accomplished between the hours of seven and a quarter past nine. More than one half is done before nine o'clock. In addition to the "receiving-houses," where stamps can be purchased and letters can be posted at all hours of night and day, there are now in use a large number of "letter-pillars" of cast iron. These convenient receptacles of letters have given great satisfaction, and are rapidly coming into use in cities, towns, and country districts. There is but one assignable cause for the extensive use, large income, and great profit, of the British Post-office. The charges are simple, uniform, and low; the accommodations numerous, and the deliveries rapid and punctual. The estimated number

of book packages that passed through the British Post-office in 1856 was 3,000,000, the newspapers 71,000,000, and the letters 478,393,803, being a total number of 552,393,803 packages. This is probably one half of the entire number sent by mail in the civilized world.

The *personnel* of the Post-office of the United Kingdom is as follows:

Postmaster-general, Duke of Argyll.....	1
Secretary of the Post-office, Rowland Hill, Esq.....	1
Assistant secretaries.....	9
Secretaries for Scotland and Ireland.....	2
Surveyors.....	15
Heads of Departments, etc.....	19
Mail guards.....	204
Clerks.....	1,53
Letter-carriers and messengers.....	10,427
Postmasters and receivers.....	10,866
Total.....	23,190

The expenses of the British Post-office for 1856 were as follows:

Salaries, wages, etc.....	£909,024
Hereditary pensions.....	29,310
Buildings.....	33,330
Mail conveyance by railway.....	376,363
Conveyance by coaches, etc.....	162,837
Conveyance by water.....	14,309
Manufacture of postage stamps.....	26,164
Miscellaneous.....	108,842
Total.....	£1,660,229

It is an invariable rule in the British Post-office that all persons appointed shall be of a suitable age, and shall submit to a rigid examination, to see if they possess the necessary qualifications. Letter-carriers and sorters must be between the ages of 17 and 27 at the date of their original appointment, and shall undergo an examination by a physician to see if they possess the requisite health and strength. Wages and salaries are not exorbitant, but none are discharged except for some fault or dereliction of duty; and after a certain number of years of faithful service, they are permitted to retire on a pension, amounting to from one third to two thirds of their salary, according to the length of time they have served.

We will close our account of the post-offices of Great Britain by giving the revenue and expenditure, the rates of postage, and the various improvements introduced into the post-offices of the principal British colonies since the introduction of the penny postage into England in 1840. The revenue and expenses in each case are for 1854, except for Canada, which is for 1855.

Colonies.	Nature and Date of Improvement.	Rate or Rates of Letter Postage.	Revenue.	Expenses.
		Cents.		
Barbadoes.....	Inland post (1852), uniform postage and stamps..	2	\$6,225	\$9,750
Canada.....	Reduced postage (1851) and postage stamps.....	1 to 5	387.5.5	510,485
Ceylon.....	Reduced postage (1846).....	2, 3, 6, 9, and 12	35,855	42,975
Gold coast.....	Post established in 1853.....	12, 18, and 24		
India.....	Uniform postage and postage stamps (1854-'55).....	1½	1,375,835	1,515,220
Jamaica.....	Charge by weight instead of pieces (1843).....	8, 12, 16, 20, and 24	65,040	59,410
Mauritius.....	District post-offices and postage stamps.....	4	2,915	4,000
New Brunswick.....	Reduced postage and postage stamps (1851).....	5	40,550	51,115
Newfoundland.....	Inland posts (1852), and uniform postage (1853).....	5	1,810	3,620
New South Wales.....	Reduced postage and postage stamps (1851-'54).....	2 and 4	120,685	261,665
New Zealand.....	Uniform postage and postage stamps.....	4	11,045	11,450
Nova Scotia.....	Reduced postage and postage stamps (1851-'56).....	1½ and 5	27,380	19,505
Prince Edward's Island..	Uniform postage (1851).....	4	4,715	10,455
South Australia.....	Uniform postage (1854).....	1	37,385	47,790
Tasmania.....	Reduced postage and postage stamps (1851-'53).....	2 and 4	40,990	81,455
Trinidad.....	Uniform postage and postage stamps (1851).....	2	7,665	9,215
Victoria.....	Reduced rates and postage stamps (1850).....	4 and 8	334,745	729,330
Western Australia.....	Reduced postage and postage stamps (1852-'54).....	2 and 4	7,181	10,265
Total.....			\$2,507,445	\$3,439,215

Nearly or quite all of the improvements introduced into the colonial post-offices appear to be the direct result of the success of the penny postage in Great Britain. It will be seen that many of them cling to the old absurdity of a number of rates, all entailing great inconvenience on every person that mails a letter, and greatly multiplying the operations and increasing the labor and expense in the post-offices.

V. Postal Statistics, and Rates of Postage in other Countries.—There are certain peculiarities and features of interest in many of the Continental post-offices of Eu-

rope that deserve notice, leaving the prominent statistics to be given in tabular form. In the German Postal Union, in Prussia, Switzerland, Spain, and some other countries, the post-office undertakes the carriage of passengers and small parcels as well as letters and mail matter. In this species of traffic the government does not hold an absolute monopoly, but, like stage proprietors that get the mail contract, they are enabled to hold an undue competition with all outsiders, resulting from their advantages as mail carriers. In nearly all the Continental cities the government post

makes the delivery of letters a part of the postal business.

The absurdities in some of the postal systems of the Continental states consist generally of a varied scale of charges, and the adoption of so low a standard of weight as to make a great deal of useless labor in the rating of letters, besides putting other states that enter into postal relations with them to serious inconvenience. The half-ounce scale for letters is in use in the United States, Peru, New Granada, Equador, Brazil, Great Britain, Spain, Holland, Denmark, Iceland, Prussia, Austria, Baden, Bavaria, Frankfort-on-the-Maine, Hamburg, Hanover, Lübeck, Saxony, Württemberg, and sixteen British colonies. The quarter-ounce scale is used only in France, Switzerland, Sardinia, and Tuscany; while a weight equivalent to one-third or three-eighths of an ounce is used in Portugal, Belgium, and Brunswick. Russia, Chili, and Bremen, adopt the ounce scale for single letters, Sweden a weight that is equivalent to about five-eighths of an ounce, and the Kingdom of Naples still uses the old plan of charging by the sheet. The half-ounce scale being in such extensive use, is it too much to expect that the time may soon come when all the principal commercial nations will adopt that standard, without waiting for a uniform system of weights and measures? France is the principal nation now in the way of such an arrangement. By insisting on a quarter-ounce scale for foreign letters, that government puts the public and the postal authorities of other nations to great inconvenience, and there is nothing gained by it. Such a rate can be adopted as will prove remunerative, and by having a scale reducible to greater convenience and simplicity, much labor is saved. To see this in the most striking light, let us look at the former rates in use a few years ago in Spain. Domestic letters were considered single up to six-sixteenths of an ounce, and the postage charged was one real (5 cents), with the addition of one cent for each eighth of an ounce beyond the weight considered as single. Then all letters sent to the

Spanish islands were considered single up to five-sixteenths of an ounce, and charged thirty-five cents, with the addition of ten cents for every sixteenth of an ounce beyond! Is not this excessive fineness as absurd—except in degree—as it would be to weigh and reckon by the single grain? This old absurdity and inconvenience in weighing and rating letters in Spain has been swept away by the adoption of the regular half-ounce scale. In Great Britain, up to two ounces, there are but three rates of postage for letters, while in the United States there are nine rates. When will the convenience and economy of simplicity in the arrangement of matters having such a vast detail as postal operations be clearly understood by the nations? Let us look at one fact. There are passing through the British Post-office in a year, in round numbers, five hundred million (500,000,000) letters, and each one of these, in the various processes of sorting, rating, stamping, mailing, and delivery, goes through not far from twenty (not less) distinct processes, besides what is done in bulk, like weighing and transportation. This is by the employes of the Post-office, independent of all the care and labor of the public in considering the various charges, rates, weights, and adjustment of differences. Here, then, are *ten thousand million*—let us see how it will look in figures, 10,000,000,000—different and distinct handlings and processes of separate letters, each of them consuming and requiring more or less time, toil, talent, and care; and every useless or needed operation, turn, or thought, bestowed on a letter in its passage through the mail in Great Britain entails at once an additional five hundred million (500,000,000) processes or operations on the postal laborers annually! Will those who make laws for the post-office think of these things? Will it, need it, any longer be a matter of wonder that the annual correspondence of Great Britain has increased from 75 million letters to about 300 millions; that it is all done for a penny a letter, and that about one half of the revenue from this source is clear profit?

POSTAL REVENUE AND EXPENSES OF DIFFERENT NATIONS AT DIFFERENT PERIODS, TOGETHER WITH THE NUMBER OF RATES OF POSTAGE ON SINGLE LETTERS, WITH THOSE RATES AT THE PRESENT TIME (AS NEAR AS IT CAN BE STATED FROM AN EXAMINATION OF OFFICIAL REPORTS), ALL SUMS BEING GIVEN IN UNITED STATES CURRENCY; THE RATES OF POSTAGE IN CENTS, AND THE REVENUE AND EXPENSES IN DOLLARS.

Countries.	Letter Postage. Cents.	Number of Rates.	Date.	Postal Revenue.	Postal Expenses.	Date.	Postal Revenue.	Postal Expenses.
Austria.	2½ to 7½	3	1841	\$3,158,400	\$2,083,345	1852	\$4,534,025	\$4,199,300
Baden.	2½ to 7½	3	1841	458,570	346,570	1852	481,815	374,645
Bavaria.	2½ to 5	2	1842	354,170	...	1853	3-8-240	...
Belgium.	2 to 4	2	1848	693,005	303,060	1852	700,355	332,340
Brazil.	3½	1	1842	50,980	82,405	1851	114,885	151,510
Bremen.	2 to 3	2	...	...	...	1853	5,000	25 0
Brunswick.	1½ to 3	0	1843	83,745	64,315	1852	105,960	74,000
Chili.	5	1	...	...	...	1852	70 4 5	48,585
Denmark.	2	1	1841	397,730	271,019	1852	354,815	352,025
Equador.	12 to 30	4	...	...	...	1852	12,475	11,140
France.	2 to 4	2	1847	10,659,135	7,095,465	1852	9,321,900	6,623,925
Frankfort.	1 to 7½	4	...	...	...	...	...	...
Great Britain.	2	1	1840	7,797,332	4,293,385	1856	14,339,770	8,301,145
Hamburg.	2 to 7½	3	1851	39,730	16,585	1852	41,045	15,310
Hanover.	3	1	1849	178,810	62,350	1852	157,960	60,200
Holland.	2 to 6	3	1849	592,735	199,635	1852	576,085	311,305
Iceland.	Free	1	...	...	...	...	...	...
Lübeck.	2½ to 7½	3	...	...	...	1852	22,085	13,165
Naples.	2 to 4	3	...	...	...	...	...	...
New Granada.	8 to 12	2	1850	83,330	...	1852	101,625	...
Oldenburg.	2½ to 3	2	1851	63,630	54,550	1852	61,805	60,600
Peru.	6 to 48	6	...	...	...	1852	38,000	38,000
Portugal.	2½	1	...	...	...	1853	184 5 0	138,375
Prussia.	2½ to 7½	3	1843	5,615,130	4,479,220	1853	6,427,980	5,665 5 5
Russia.	8	1	1842	3,377,745	1,809,940	1852	3,855,400	2,419 8 0
Sardinia.	4	1	1850	6 5 580	335,190	1852	642,530	393,135
Saxony.	1 to 4½	3	1849	588,780	308,185	1852	667,885	453,770
Spain.	5	1	1844	1,271,000	768,000	1852	1,631,850	1,041,560
Sweden.	2 to 10	9	1839	260,000	226,500	1852	331,440	3 3 40
Switzerland.	1 to 3	0	1850	1,035,730	836,130	1852	1,302,525	962,420
Tuscany.	2½	1	1839	192,975	70 5 5	1852	225,545	142,415
United States.	1 to 10	0	1840	4,543,522	4,718,236	1856	7,670,822	10,407,868
Württemberg.	1 to 4	3	...	...	...	1852	384 800	371,435

Nearly all of the European (continental) nations make it a part of their postal business to transport passengers and parcels as well as mails. In consequence of this arrangement, an accurate comparison of the

financial results of the different postal systems can not be given. The total annual revenue of the post-offices on the Continent of Europe, at the latest dates given above, amounted to \$32,409,405—probably one third

of this being for goods and passengers—and the total annual expenses to \$24,362,450. The post-offices of South America had an annual revenue of \$368,890, with expenses to the amount of \$249,235. If we assume that one gross third of the postal revenue and expenses on the Continent of Europe are on account of passenger and parcel traffic, we shall be able to make the following summary statement of the postal affairs of different nations and different parts of the world; the figures standing exclusively for the legitimate postal traffic—letters, papers, and printed documents:

Nations	Revenue.	Expenses.
Great Britain	\$14,331,770	\$8,301,145
British Colonies	2,497,420	3,146,230
United States	7,620,822	10,407,568
Total	\$24,450,012	\$21,855,243
Continental Europe	\$21,606,270	\$16,241,633
South America	336,890	249,235
Total	\$21,943,160	\$16,490,868
Grand total	\$46,401,172	\$38,346,111

If we add to the above the one third of the postal revenue of European countries that was deducted for parcel and passenger traffic, we shall have the sum of \$57,204,307 as the total annual revenue of all the post-offices in the world (that we have given above), and \$46,466,928 as the total annual expenses. Of the legitimate postal traffic—letters and printed matter—more than one half of the revenue is in the United States, Great Britain, and the British colonies.

A fair estimate of the amount of letter correspondence may be arrived at by the following calculation: The rates of postage in Great Britain being much low-

er than in most other countries, we may assume that one dollar of revenue in that country represents as many letters as two dollars throughout the rest of the world. The annual postal revenue of Great Britain is \$14,339,770; of the British Colonies, \$2,497,420; and of the rest of the world, \$29,563,982. From this we conclude that the correspondence by mail in Great Britain and the British colonies amounts to rather more than the correspondence in all the other nations referred to. The correspondence through British post-offices amounts to about 500,000,000 letters annually, and—including this number—in all the nations under consideration, not far from 1,000,000,000. In this calculation, of course, we do not include China, Turkey, and other countries, of which no statistics are given. Of the fifty-one nations and colonies mentioned in the preceding and a former table (page 1560), thirty-six adopt the half-ounce scale for letters. Ten of the nations and nine British colonies have uniform postage, while in one only (Iceland) the postage is free, the entire expense being defrayed from the national treasury.

The following table has been compiled to show the actual and comparative amount of money paid in postages in each of seven different countries, during the same year (1853), along with the population, and columns, also, showing the cost of each thousand letters, together with the number of letters in a year, the number for each thousand persons, and the money paid annually (on the average) by each thousand persons. The last line gives the same statistics for Great Britain for 1839, the year before the penny postage was established. Except this last, the statistics are all for the year 1853:

Countries.	Population.	Postal Revenue.	Postal Expenses.	Number of Letters.	Cost of 1000 Letters.	Revenue per 1000 Persons.	Letters per 1000 Persons.
Switzerland	2,392,740	\$447,572	\$341,038	19,773,655	\$25	\$187	8,239
Holland	3,056,591	288,162	156,754	13,349,883	22	94	4,367
Belgium	4,426,202	755,648	327,118	11,521,955	66	171	2,603
Spain	13,936,218	1,281,761	1,065,398	30,775,686	42	94	2,209
France	35,733,170	9,321,900	6,628,925	151,060,000	62	260	4,192
United States	23,191,876	5,440,724	7,982,757	102,139,148	58	256	4,404
Great Britain	27,833,501	12,572,039	7,003,399	410,817,489	31	462	14,700
Great Britain, 1839	26,988,910	11,953,318	3,784,997	82,470,596	145	443	3,065

In those countries where the post-office engages in passenger and parcel traffic, the revenue has, in the above table, been given only for the letters and mail matter.

VI. *History of the United States Post-office.*—Having taken a rapid survey of the postal affairs of other countries and other times, we will glance at the progress and condition of the post-office in the United States. Probably the earliest mention of a legal post in the British colonies of North America is found in the General Court records of Massachusetts in 1639. We find it there recorded as follows: "It is ordered that notice be given, that Richard Fairbanks, his house in Boston, is the place appointed for all letters which are brought from beyond the seas, or are to be sent thither, are to be left with him; and he is to take care that they are to be delivered or sent according to the directions; and he is allowed for every letter 1d., and must answer all miscarriages through his own neglect in this kind, provided that no man be compelled to having his own letters except he please." In 1667, in consequence of the uncertainty and loss attending correspondence, a petition was signed by some twenty persons, "To the Honorable General Court, now sitting in Boston." That petition set forth that "several of us being sensible of the loss of letters, whereby merchants, especially with their friends and employers in foreign parts, are greatly damaged; many times the letters are imputed and thrown upon the exchange, so that those who will may take them up; no person, without some satisfaction, being willing to trouble their houses therewith," etc., etc. They then request that the honorable court "will depute some mete person to take in and convey letters according to directions." After due deliberation, they did "make choice of Mr. John Hayward, the

scrivener, to be the man." There are no records to show how long John Hayward kept his office, or what amount of business he did. In 1657, the colony of Virginia passed a law requiring each plantation to provide a messenger to convey the government dispatches as they arrived, each planter in succession sending a messenger to the next, and so on to the final destination. The penalty for neglecting this duty was a hog'shead of tobacco. In 1672 Governor Lovelace, of New York, established "a post to goe monthly" from New York city to Boston and back. This purported to be in obedience to his Majesty's commands, "who enjoys all his subjects in their distinct colonies to enter into a strict alliance and correspondency with each other, as likewise for the advancement of negotiation, trade, and civil commerce, and for the speedy intelligence and dispatch of affayres." It gave notice that a messenger would start on the first of January, 1673, and that "If any, therefore, have any small letters or portable goods to be conveyed to Hartford, Connecticut, Boston, or any other parts on the road, they shall be carefully delivered according to the directions, by a sworn messenger and post, who is purposely employed in that affayre. In the interim, those that bee disposed to send letters, lett them bring them to the Secretary's office, where, in a lockt box, they shall be preserved till the messenger calls for them. All persons paying the post before the bagg be sealed up." The mails at this period did not appear to have a very rapid transit. The post-riders set out from New York and Boston simultaneously, on Monday morning, and on the Saturday evening following, they met at the half-way house, Saybrook, Connecticut, where they exchanged mails, and each wended his way back, arriving on Saturday of the following week. At the present time,

instead of two weeks being required, and a semi-monthly mail only, the mails are transported between Boston and New York three times a day, each way, in from eight to eleven hours; two weeks being ample time to convey the mails from New York to Copenhagen, Denmark, to Marseilles, Berlin, Vienna, or Trieste. It is shrewdly suspected that the fatherly care exhibited by King Charles for a mail service, and a "strict alliance and correspondence" between the American colonies, was with an eye to the profits, which all went to a member of the royal family.

In 1683 William Penn established a post-office in Pennsylvania, and appointed Henry Waddy postmaster. The mails were sent to the principal towns in Pennsylvania, and to the neighboring colonies, once a week, the times of departure being regularly published "on the meeting-house door and other public places." Postal affairs in the colonies received marked attention in England, in 1685, on the accession of King James, who owned the Post, and put the profits in his own privy purse, and an order in council was made "for the better correspondence between the Colonies of America." In 1686 an order was made in New York that all letters coming from beyond sea should be delivered at the custom-house. The postage was "fourpence half-penny for a single letter, and nine-pence for every packet or double letter," "one half of the money to be given to the poor," under the direction of the Captain-general and the Council, and the other half to the officers of the custom-house.

In 1691-'92 Thomas Neal, by letters patent, was appointed Postmaster-general, with authority to erect post-offices in the American colonies. It appears, however, that he did not act himself, but appointed Colonel Andrew Hamilton, of New Jersey, Postmaster-general for all the colonies. In 1692, by the recommendation of Colonel Hamilton, the Common Council established a post-office in New York city. It was located in Broadway, opposite the end of Beaver Street. The rates of postage were, for eighty miles or under, four-pence half-penny; from New York to Philadelphia, nine-pence; and to Virginia, twelve-pence. The expense, however, was found greatly to exceed the income. For ten years there was no regular Post further east than Boston, or further west than Philadelphia. Lord Cornbury wrote home, in 1704, saying: "there is no other Post upon all this continent. If I have any letter to send to Virginia or to Maryland, I must either send an express, who is often retarded for want of boats to cross those great rivers they must go over, or else for want of horses; or else I must send them by some passengers who are going thither. The least I have known any express to take hence to Virginia has been three weeks." At this period the mail was carried twice a month in stage-coaches, between Boston and New York and Philadelphia; and from New York to Albany by a foot-post, once a month. In 1732 a General Post-office was established in Virginia, and a post-office in each county. In 1736 there was a weekly mail from Philadelphia to New York and Boston. In 1737 Colonel Spotswood, formerly Governor of Virginia, appears to have been Postmaster-general, and he appointed Benjamin Franklin postmaster at Philadelphia. The following is an advertisement from Franklin's newspaper at this period:

"October 27, 1737.—Notice is hereby given, that the Post-office of Philadelphia is now kept at B. FRANKLIN'S, in Market Street, and that Henry Pratt is appointed riding postmaster for all stages between Philadelphia and Newport, in Virginia, who sets out about the beginning of each month, and returns in twenty-four days, by whom gentlemen, merchants, and others, may have their letters carefully conveyed, and business faithfully transacted, he having given good security for the same to the Honorable Colonel Spotswood, Postmaster-general of all his Majesty's dominions in America."

Colonel Spotswood died in 1753, and the home

government appointed Franklin as his successor, and he held the office for twenty-one years, till 1774, when the difficulties occurring between the colonies and the mother country, Franklin was unceremoniously turned out of office. He sympathized too strongly with the people of the colonies in their wrongs, hardships, and oppressions to be a fit instrument of the crown. He is not the last or the only instance of a postmaster losing his office for political opinions. During Franklin's administration of the Colonial Posts, numerous improvements were made. At one time he took his own conveyance, and, in company with his daughter, made a journey of several hundred miles, visiting all the principal post-offices in Pennsylvania, New Jersey, New York, and New England. With that attention to details which always marks the man of large business capacity, he set about making numerous reforms in the administration of the Post. He had as associate or assistant, Mr. William Hunter. By the terms of their appointment they were to have six hundred pounds a year, *provided they could get it!* Franklin, in giving an account of the Post-office during his administration of its affairs, after he had been turned out of the office by George the Third, makes the following pithy summary:

"The American Post-office had hitherto (*i. e.*, before 1753) never paid any thing to that of Britain. We were to have six hundred pounds a year between us, if we could make that sum out of the profits of the office. To do this, a variety of improvements were necessary; some of these were inevitably, in the beginning, expensive; so that in the first four years the office became above nine hundred pounds in debt to us. But it soon after began to repay us; and before I was displaced by a freak of the minister's, we had brought it to yield three times as much clear revenue to the crown as the Post-office in Ireland. Since that imprudent transaction, they have received from it—not one farthing!"

The practice of sending newspapers in exchange, free, dates from Franklin's administration of the Colonial Post-office. He was editor and publisher of a newspaper, and he received his exchanges free, and accorded the same privilege to other journals. The philosopher undoubtedly soon recovered his equanimity after that "freak of the minister's," for though he suffered official decapitation, he was soon after reinstated in office by a more competent authority, being unanimously appointed Postmaster-general of the United Colonies by the Continental Congress. In 1776 he vacated the office, on being appointed ambassador to France. On the 7th of November of that year, Richard Bache was appointed to the office. He held the place for a little over five years, and on the 28th of January, 1782, Ebenezer Hazard was appointed Postmaster-general, and remained in office until the adoption of the Constitution, in 1789, when Samuel Osgood was appointed. The different incumbents of the office of Postmaster-general since the Revolutionary war broke out were as follows:

Benjamin Franklin, in 1775; Richard Bache, 1776; Ebenezer Hazard, 1782; Samuel Osgood, 1789; Timothy Pickering, 1791; Joseph Habersham, 1795; Gideon Granger, 1802; Return J. Meigs, 1814; John M'Lean, 1823; William T. Barry, 1829; Amos Kendall, 1835; John M. Niles, 1840; Francis Granger, March, 1841; Charles A. Wickliffe, September, 1841; Cave Johnson, 1845; Jacob Collamer, 1849; Nathan K. Hall, 1850; Samuel D. Hubbard, 1852; James Campbell, 1853; and Aaron V. Brown, in 1857.

The rates of postage from 1776 to 1816 were from 7 to 33 cents, according to distance. In 1816 the rates were fixed by act of Congress at 6½, 10, 12½, 18½, and 25 cents for each single letter, according to distance. These rates remained till the act of 1845, which established the half-ounce scale for single letters, and fixed the rates at five and ten cents.

The act of March 3, 1851, established the following rates: one cent for drop letters, three cents for all single letters (half ounce), for every distance not over three thousand miles, when prepaid, and five cents if not prepaid; and double these rates when over three thousand miles. The law of 1855 fixed the rates at one cent for drop letters, three cents for letters all distances under three thousand miles, and ten cents when over that distance, and all to be prepaid, or retained and sent to the dead-letter office. This law went into operation, as far as it was found practicable, on the first of April, 1855. After the first of January, 1856, all letters were required to be prepaid by stamps. In March, 1856, a law was passed making prepayment compulsory on all transient printed matter; and this law went into effect on the 1st of April, 1856. The inconveniences and inconsistencies of the law making prepayment compulsory are numerous. At an expense of less than one hundred thousand dollars, nearly all letters might be returned to the writers in a brief period

of time after they fail or miscarry. The usage of our government is in strong contrast to that of Great Britain, where all dead or returned letters are sent to their writers at once.

It is instructive to observe the progress of our postal correspondence beyond the increase of population and the augmentation of almost all other national and domestic transactions. During each period of ten years, from 1790 to 1850, the average increase of the population of the country has been 84 per cent., the exports 42 per cent., the expenses of government 95 per cent., Post-office revenue 120 per cent., and correspondence by mail 140 per cent. Thus, while the population of the country has increased in sixty years seven-fold, letter correspondence has increased four hundred and forty fold, or sixty-three times as fast as the population. In 1790, the letters sent by mail in the United States were estimated at 265,545; and in 1856, 181,450,409. The following table gives, for a period of sixty-seven years, the leading items:

STATISTICS OF THE UNITED STATES POST-OFFICE.

Years.	Post-offices.	Miles of Post-roads.	Expense of Transportation.	Total Expenses.	Revenue.	Number of Letters.	Population.	Letters for each Person.
1790.....	75	1,875	\$22,681	\$22,140	\$37,935	265,515	3,150,000	0.067
1791.....	83	1,905	23 2 3	36,097	46,194	3 4,058	.....	.....
1792.....	195	5,612	32,731	54,531	67,444	472,108	.....	.....
1793.....	209	5,642	44,734	72,040	104,747	723,220	.....	.....
1794.....	450	11,84	53,005	89,973	128,947	902,629	.....	.....
1795.....	453	13,207	75,359	117,893	169,620	1,124,340	.....	.....
1796.....	468	13,207	81,482	131,572	115,667	1,365,469	.....	.....
1797.....	554	16,180	89,382	150,114	213,918	1,497,186	.....	.....
1798.....	639	16,180	107,014	179,084	232,977	1,630,839	.....	.....
1799.....	677	16,180	109,475	183,038	264,846	1,853,922	.....	.....
1800.....	703	20,817	128,644	213,914	280,804	1,656,628	5,306,000	0.370
1801.....	1,025	22,309	152,450	255,151	320,443	2,243,101	.....	.....
1802.....	1,114	25,315	174,671	281,916	327,045	2,289,315	.....	.....
1803.....	1,253	25,315	205,110	322,364	351,823	2,462,761	.....	.....
1804.....	1,405	20,556	205,555	337,502	389,450	2,726,150	.....	.....
1805.....	1,578	31,076	230,635	377,367	421,373	2,949,651	.....	.....
1806.....	1,710	33,481	269,033	417,234	446,106	3,122,742	.....	.....
1807.....	1,843	33,755	292,751	453,885	478,763	3,351,341	.....	.....
1808.....	1,444	34,035	305,499	462,828	460,564	3,233,948	.....	.....
1809.....	2,112	34,035	332,917	498,012	506,634	3,546,438	.....	.....
1810.....	2,300	36,406	327,966	455,669	551,684	3,861,788	7,240,000	0.533
1811.....	2,403	36,406	319,166	499,099	587,247	4,110,729	.....	.....
1812.....	2,610	39,378	340,626	540,165	649,038	4,544,456	.....	.....
1813.....	2,740	39,540	438,559	681,012	703,155	4,922,085	.....	.....
1814.....	2,870	41,736	475,002	727,126	730,370	5,112,590	.....	.....
1815.....	3,000	43,166	487,779	748,121	1,043,075	7,301,455	.....	.....
1816.....	3,260	48,176	521,170	804,022	961,732	6,732,474	.....	.....
1817.....	3,453	51,600	550,189	916,515	1,092,973	8,023,784	.....	.....
1818.....	3,618	50,473	664,011	1,085,832	1,130,135	9,041,880	.....	.....
1819.....	4,030	67,586	717,881	1,117,861	1,204,737	9,637,896	.....	.....
1820.....	4,590	72,492	782,455	1,160,916	1,111,917	8,895,415	9,688,000	0.913
1821.....	4,653	78,808	815,681	1,182,923	1,056,658	8,463,264	.....	.....
1822.....	4,799	81,763	783,618	1,167,572	1,117,400	8,130,520	.....	.....
1823.....	5,043	84,860	767,464	1,163,886	1,114,345	8,914,760	.....	.....
1824.....	5,182	84,860	763,939	1,163,190	1,156,812	9,254,496	.....	.....
1825.....	5,677	94,052	785,646	1,206,584	1,252,061	10,016,488	.....	.....
1826.....	6,150	94,052	885,100	1,309,316	1,388,417	11,110,836	.....	.....
1827.....	7,003	105,336	942,345	1,373,239	1,475,551	11,788,408	.....	.....
1828.....	7,651	114,536	1,086,312	1,623,333	1,598,134	12,785,072	.....	.....
1829.....	8,450	114,780	1,153,646	1,732,133	1,707,415	13,550,344	.....	.....
1830.....	8,450	115,176	1,174,009	1,932,708	1,850,538	13,804,664	12,868,000	1.073
1831.....	8,686	116,000	1,252,226	1,836,123	1,997,812	17,980,808	.....	.....
1832.....	9,205	104,467	1,482,507	2,266,172	2,253,570	20,327,130	.....	.....
1833.....	10,127	119,916	1,894,688	2,330,415	2,610,538	23,548,842	.....	.....
1834.....	10,993	112,500	1,922,431	2,896,591	2,823,707	25,448,363	.....	.....
1835.....	10,770	112,774	1,719,007	2,757,530	2,993,557	26,242,013	.....	.....
1836.....	11,011	118,264	1,688,052	2,755,624	3,398,455	30,586,095	.....	.....
1837.....	11,767	141,242	2,081,786	3,308,493	4,100,615	36,905,415	.....	.....
1838.....	12,519	134,918	3,131,308	4,621,837	4,235,078	38,115,702	.....	.....
1839.....	12,780	133,919	3,301,922	4,654,718	4,477,614	40,298,526	.....	.....
1840.....	13,418	155,739	3,213,043	4,718,286	4,543,522	40,891,618	17,069,000	2.395
1841.....	13,778	156,026	3,084,814	4,499,528	4,407,726	39,669,534	.....	.....
1842.....	12,733	149,732	4,192,196	5,674,752	5,029,507	45,265,563	.....	.....
1843.....	13,814	142,295	2,582,512	4,374,754	4,216,225	38,666,025	.....	.....
1844.....	14,103	144,687	2,932,947	4,276,513	4,237,288	38,135,592	.....	.....
1845.....	14,153	143,940	2,818,630	4,320,732	4,419,842	39,158,973	.....	.....
1846.....	14,601	149,679	2,597,455	4,084,312	4,690,090	41,379,781	.....	.....
1847.....	15,146	163,318	2,476,466	3,971,275	4,013,447	47,585,757	.....	.....
1848.....	16,159	163,218	2,448,766	4,316,850	4,161,078	52,364,819	.....	.....
1849.....	16,747	167,703	2,490,018	4,479,049	4,705,176	60,159,862	.....	.....
1850.....	18,417	178,612	3,005,974	5,212,553	5,552,917	69,426,452	23,192,000	2.994
1851.....	19,716	196,290	4,016,583	6,024,566	6,727,867	83,252,735	.....	.....
1852.....	20,901	214,284	4,136,907	7,118,459	6,823,952	95,790,524	.....	.....
1853.....	22,320	217,743	4,719,095	7,982,757	5,940,722	102,139,148	.....	.....
1854.....	23,548	219,135	4,925,785	8,577,414	6,683,537	119,634,413	.....	.....
1855.....	24,410	227,908	6,076,335	9,168,342	7,815,177	126,723,425	.....	.....
1856.....	25,565	230,642	6,765,639	10,407,898	7,620,822	181,450,409	28,000,000	4.695
Total.....	.....	.....	\$99,215,330	\$155,466,524	\$148,887,649	1,652,104,643	.....	.....

The total number of mail routes on the 30th of June, 1856, was 7972, and the number of contractors 6372. The length of routes and annual amount of transportation stand as follows:

Kind of Service.	Length of Routes.	Annual Transportation.		Cost per Mile.
		Miles.	Cts. M.	
Steamboat.....	14,951	4,240,170	20 3	
Railroad.....	20,323	21,509,296	10 6	
Coach.....	59,453	19,114,991	7 0	
Inferior grades.....	153,913	26,143,440	5 9	
Total miles....	239,642	71,397,337	....

The revenue and expenditures of the Post-office, and the items of which they were composed, for the years 1855 and 1856, were as follows:

EXPENDITURES OF THE UNITED STATES POST-OFFICE.

	1855.	1856.
Transportation of the mails....	\$6,076,335	\$6,705,640
Compensation to postmasters....	2,135,335	2,102,891
Pay of post-office clerks.....	702,617	753,081
Pay of letter-carriers.....	143,313	162,915
Depredations and special agents	64,454	63,592
Ship, steamboat, and way letters	18,766	17,613
Advertising.....	75,457	64,603
Blanks.....	91,138	48,533.
Mail bags.....	52,080	48,916
Mail locks, keys, and stamps...	16,173	11,687
Wrapping-paper.....	45,467	31,627
Postage stamps.....	11,904	26,705
Stamped envelopes.....	40,635	64,686
Office furniture.....	5,250	5,290
Official letters.....	56	....
Repayment for dead letters.....	7	....
Postage stamps redeemed.....	19	....
Patent padlock.....	5,000	....
Miscellaneous payments.....	168,011	200,080
Balance paid Great Britain.....	302,860	....
Balance paid Bremen.....	13,465	....
Balance due Great Britain.....	70,523	23,849
Balance due Bremen.....	6,130	8,638
Bad debts.....	....	2,582
Total expenses.....	\$10,044,995	\$10,407,868

REVENUE OF THE UNITED STATES POST-OFFICE.

	1855.	1856.
Letter postage.....	\$3,294,550	\$1,751,767
Stamps sold.....	2,511,318	4,235,446
Postage on printed matter.....	638,928	632,746
Letter carriers.....	143,313	162,916
Dead letters.....	4,976	8,388
Registered letters.....	....	31,466
Fines.....	35	70
Emoluments returned.....	77,903	74,800
Extra compensation overcharged	23,330	14,715
Balance due by Prussia.....	69,694	....
Miscellaneous receipts.....	7,733	5,513
Appropriation for gov't postage	700,000	700,000
Total revenue.....	\$7,411,830	\$7,610,822

VII. *The present Condition and future Prospects of the United States Post-office.*—From the official figures given previously, we see that while the correspondence by mail and the postal revenue actually decreased during twenty years of high postage in Great Britain—ending with 1835—the revenue and correspondence both, from the date of low and uniform postage, in 1840, has greatly increased—the latter six hundred per cent. The vast economy in the management of the Post-office in that country is seen in the fact that while the correspondence increased from 75 millions of letters in 1840, to 478 millions in 1856—at least six-fold—the expense was but little more than doubled. Had it been deemed necessary, but few figures would have been required to show clearly—what was demonstrated by Mr. Rowland Hill—that the slight diminution in the net revenue of the Post-office in Great Britain, consequent to the great reduction of postage in 1840, was far more than made up to the national treasury, during each and every year thereafter, in other branches of national income, and all from the direct and sole cause of the activity and prosperity of all business interests, engendered by a reduction in the rates of postage. We believe, and are confident that it is susceptible of a clear demonstration, that the principal reasons why our Post-office has not kept pace with the advancing spirit of the age, and been made as efficient as the post in several other coun-

tries, are the following: In the first place, several popular fallacies have been engendered and kept up by official post-office reports. Again, the official heads of this important department, for the last fifteen years, have almost invariably thrown their official and personal influence against all the great improvements urgently demanded by the people; and in carrying out this opposition, several of these officers have exhibited an unwarrantable interference with the legislation of the country. All of the principal improvements have been accomplished, not through their aid, but in the face of their opposition. The annual reports of the Postmaster-general, since 1852, have declared and attempted to prove that the legitimate revenue of the Post-office has been less than its legitimate expenditures, while the contrary has been the fact, as must be evident when we have a complete view of the premises. The true state of the case is—and this is the important matter that has been overlooked—the Post-office has performed a large amount of labor, and consequently been put to great expense, without any clear record or any adequate return.

The payment for and on account of letters and documents transported and delivered by the Post-office for the government—the sum of \$700,000—is entirely inadequate to the service performed. To show the amount of “franked” matter sent from Washington alone, the following items were given in an official statement from the postmaster of Washington City to the Post-office Committee of the House of Representatives, as the amount of that description of mail matter for one month—January, 1854.

FREE MAIL MATTER FROM WASHINGTON FOR ONE MONTH.

	Weight.	Postage.
	Pounds.	
Letters from members of Congress.....	3,446	\$4,664
Documents.....	693,508	110,961
Letters from Departments.....	7,065	6,782
Newspapers (numbering 1,110,020).....	111,002	11,100
Total for one month (prepaid rates).....	815,021	\$133,507
For twelve months.....	9,780,242	1,602,087
Postage for twelve months, if not prepaid.....	....	3,153,290

The newspapers were not counted, but weighed; and as the newspapers of the country average about one and a half ounces each, these have been considered as averaging ten papers to a pound. The postmaster expressed it as his opinion that the free matter during that month, of which he gave the results, was less than the average quantity. The amount given would make about 5000 tons of “free” matter in a year, from the post-office of the city of Washington alone; or an average for each week-day of fifteen tons. Looking at this \$1,602,087 due by government at prepaid rates, for the postage on free matter, outward only, from the city of Washington alone, in a year, it would be a very moderate estimate that should put the postage of the government, at the rate the citizen pays, at \$2,500,000 annually. If we look at the revenue and expenses of the Post-office for ten years, and see what appropriations were made for the free matter transported for government, we shall see whether the Post-office actually supported itself or not.

Years.	Postal Expenses.	Revenue from Postages.	Appropriations that were made.	Appropriations that should have been made.
1847....	\$3,971,275	\$3,703,999	\$309,448	\$2,500,000
1848....	4,326,850	4,161,078	....	2,500,000
1849....	4,479,049	4,505,176	200,000	2,500,000
1850....	5,212,953	5,352,971	200,000	2,500,000
1851....	6,024,566	6,751,978	375,880	2,500,000
1852....	7,108,450	5,082,537	1,741,445	2,500,000
1853....	7,982,757	5,240,724	700,000	2,500,000
1854....	8,577,424	5,983,557	700,000	2,500,000
1855....	10,044,995	6,711,830	700,000	2,500,000
1856....	10,407,868	6,920,822	700,000	2,500,000
Total....	\$68,136,197	\$54,014,652	\$5,626,782	\$25,000,000

That the Post-office did not support itself from the postage paid by citizens during the last ten years, and

also support the burden of all the "franked" matter thrown on it by government, is evident from the above figures. The "official" statement is, that the entire postal revenue for ten years was \$59,641,434, and the expenditures \$68,136,197; therefore there was a "deficiency," showing that the Post-office did not support itself by \$8,494,763. But the reality is this. At the rates of postage now levied, the cost of transporting and delivering the letters and documents for the citizens and the government, for ten years, was as follows:

Postage due and paid by citizens for ten years...	\$51,014,652
Postage due (but not all paid) by government...	25,000,000
Total	\$79,014,652
Expenses of the Post-office for ten years	65,136,197
Post-office earnings exceeded the expenses by...	\$10,878,455

It is clearly evident that any attempt to show whether our Post-office supports itself under the present laws, regulations, rates of postage and management, must begin by showing what are its legitimate expenses and what its legitimate income. The theory and practice of our law-makers is in strong contrast to the action of the members of the British Parliament in 1839 and 1840, at the time of the agitation and adoption of the penny postage. They at once abolished and renounced the franking privilege, on the principle that officers of the government could as well afford to pay their own postage as private citizens; that they were in that case put to far less trouble to frank and send documents for others, and that all postage necessary for carrying on the business of the government should be charged to the Treasury, like all other national or government expenses. In reality, we do not know the amount of expenses and burdens that fall on the Post-office, and yet the head of that Department has taken upon himself to say that its income is not sufficient for its legitimate support. If a merchant or man of business were to know the precise amount of income that he actually received, while he was ignorant of a large portion of his expenditures, would he, or could he, conduct and manage his affairs with prudence, judgment, and economy? It is a parallel case with our Post-office, burdened as it is annually with five thousand tons of franked matter.

The history of our Post-office for the last sixteen years discloses the following facts: Letter postage has been reduced from a scale of five rates, running from six to twenty-five cents, and averaging, perhaps, thirteen or fourteen cents a letter; first (in 1845) to five and ten, and next (in 1851) to three, five, and six cents, and lastly (in 1855) to three and ten cents; and yet there has been no sensible diminution of the postal receipts, taking one year with another. Taking the yearly increase of the postal revenue for a number of years before the first reduction as a criterion, the receipts of the Post-office in 1855 and 1856 were as large, if not larger than they would have been under the old rates. And yet the postage on each separate letter averages less than one third the charge previous to 1845. By the side of that fact it may be stated here that in the postal history of all nations there is no instance on record where a reduction of postage, however great, has been followed by any permanent reduction of the postal revenue. In public as in private affairs, the inhabitants of a country extend their patronage just in proportion to the business and economical facilities afforded them.

After the successful introduction of penny postage into Great Britain in 1840, the citizens of the United States commenced holding public meetings and petitioning Congress for a reduction of rates, and other postal improvements. The pressure and agitation were kept up from 1841 to 1845, and during that period the Postmaster-general—the Hon. Charles A. Wickliffe—used every exertion, and brought every influence, official and personal, to defeat the measure. With all this uncalled-for interference with the wishes of the people and the legislation of the country by an executive of-

ficer, the bill reducing postage to the two rates of five and ten cents was passed, and went into operation in 1845. The incumbent of this office from 1853 to 1857—James Campbell—made every possible effort not only to defeat the wishes of the people in having the rates of postage reduced and made uniform, but to raise the then existing prepaid rate of letter postage from three to five cents, and to double all the rates on printed matter. These measures were introduced in a bill, at the solicitation of the Postmaster-general, by the chairman of the House Committee, and at once defeated, receiving only the small minority of thirty-six votes.

The efforts made by the Postmaster-general to raise the rates were successful in increasing the postage from six to ten cents on all letters that are transported over 3000 miles.

It may be uncharitable to hint that our statesmen have heretofore paid so little attention to the postal subject as to be unacquainted with its details, though it is unquestionably true that this branch of government has not received the attention that its importance demands. In examining the postal subject we can not arrive at correct results by any system of generalization, or by wholesale comparisons. It is a question of detail, of calculation, and of fact, in which certain cardinal principles can not be ignored or lost sight of. It is true that the people of Great Britain write many more letters than the people of the United States; and it is equally true that this is the consequence of receiving a far greater amount of postal accommodation for the money they pay. It is eminently true that the large and profitable amount of correspondence passing through the British Post-office is the direct result of low and uniform postage, combined with the great facilities for collecting, distributing, and delivering letters and other mail matter in cities and large towns. While we have populous cities with varied interests that require an immense local correspondence, our postal affairs are conducted in the same manner that they were in the first years of the Republic. Except by the labors of private parties, who are allowed to deliver letters from the post-office, and levy a tax for the service, or to set up private post-offices of their own, for the collection and distribution of mail matter, we have hardly an improvement or facility for distributing letters in cities to-day that did not exist seventy years ago. People who write letters may carry or send them to the post-office, and those to whom they are addressed have the privilege of calling for the same and taking them out. Except through and by the labors of the private postman and carriers, we, as a people, seem to be aware that the greatest want and the most profitable field for postal facilities is in and about our large cities and towns. In the country the distance between post-offices may be reckoned by miles, but in large cities the legitimate wants of the people are not met except by having deliveries many times a day, and places for obtaining stamps and mailing letters at every one or two hundred yards. The relative postal wants of the residents of different city and country districts, and the extent to which those wants are met, in this country and in Great Britain, may be seen by the figures representing the average number of letters written by each person in a year, in the various localities. The figures relating to the annual correspondence in this country are in whole numbers and decimals.

CORRESPONDENCE IN THE UNITED STATES.

Different Localities.	Letters per Person, annually.
Country districts at the South.....	1-6
Country districts at the North.....	2-5
Country districts throughout the Union.....	3-3
All of the Southern States.....	2-9
All of the Northern States.....	6-1
Throughout the United States.....	4-9
City of New Orleans.....	19-7
City of Cincinnati.....	21-3
City of New York.....	30-0
City of Boston.....	40-8

These figures are not supposed to be exact, but they are a very near approximation to the precise number, arrived at by a close calculation, based on the relative population and postal income. The following statement exhibits the annual correspondence per person—in whole numbers—in different localities in Great Britain:

CORRESPONDENCE IN GREAT BRITAIN.

Different Localities.	Letters per Person, annually.
Country districts of the Kingdom.....	8
Throughout the Kingdom.....	17
England alone.....	23
Average in cities.....	45
In London.....	43
In Manchester.....	57

These results are very different from what we see in this country. They all go to establish one clear, indisputable fact. They prove beyond question that the people of cities write from five to twenty times as

many letters as the residents of country districts. And as we know that a very large portion of the inhabitants of cities and towns are minors, paupers, vagrants, and ignorant persons, it is clear that the adult male business population have occasion to write from a hundred to a thousand letters each per annum. We know, from the habits and wants of the population in rural districts, that the adult persons who are engaged in agricultural and mechanical pursuits do not usually carry on one-fortieth part as much correspondence as the mercantile classes in cities. Bearing these facts in mind, and remembering that there are from six to twelve deliveries a day in all parts of London, with over five hundred receiving houses and letter-pillars where letters can be mailed—averaging one for every second block or square throughout the city—bearing these facts in mind, we need not be surprised at the widely different results in that country and this, as conveyed in the following authentic figures:

ANNUAL NUMBER OF LETTERS IN DIFFERENT LOCALITIES.

Years.	London Local Letters.	London Mail Letters.	Total London Letters.	Total in the United States.	Total in Great Britain.
1847.....	34,630,317	43,757,510	78,388,357	47,583,757	322,146,243
1848.....	33,672,747	45,991,153	79,663,900	52,304,819	338,830,134
1849.....	33,160,398	45,845,683	79,006,081	60,153,862	337,999,199
1850.....	38,837,844	44,856,170	83,744,014	69,426,452	347,063,071
1851.....	40,555,952	47,819,439	88,405,451	83,252,735	360,647,187
1852.....	40,403,207	51,171,423	91,574,630	95,710,524	379,501,499
1853.....	42,816,314	54,402,023	97,218,337	102,139,148	410,817,459
1854.....	40,191,569	57,186,159	103,377,728	119,624,418	443,649,301
1855.....	43,844,963	59,647,549	105,492,512	126,723,425	456,216,176
1856.....	47,894,708	64,561,321	112,856,029	131,450,400	478,392,843
Total.....	404,885,519	515,638,520	920,527,039	888,527,549	3,864,670,152

We see by the above that the people of London alone (less than two and a half millions) have written and sent through the post more letters in the last ten years than all the people in the United States, while the population of Great Britain—about the same as in the United States—have written almost five times as many as the people of this country. We must seek for a solution of this in the far greater postal facilities in the United Kingdom, particularly in cities, than in this country. See the gigantic results of a good local post in London. There are almost one half as many letters written and mailed in London, for distribution in the city (local letters, see first column in the preceding table), as are written in a year by all the people in America! Could we get at the results of our local distribution of letters, we should find that the number of letters written in our cities, and distributed by the government post in the place where written—"drop letters," as we very appropriately call them—we should find that they were only about one-fortieth or one-fiftieth part as many as in the cities of Great Britain. In other words, the active business population of our cities write about as many letters to go through the mails to a distance, as the same population do of that class of letters in cities in England; but of local letters, for distribution in the city where they are written, only about one-fortieth part as many.

It is as easily shown that the local correspondence of cities is much more profitable to the Post-office than correspondence that is conveyed hundreds of miles, as it is to demonstrate that the correspondence of cities is of more importance and of greater amount than the correspondence of rural districts. The whole secret of accommodating the people with a good CITY POST, and making it profitable at the same time, consists in hav-

ing our means adapted to our wants. The mails are sent over the routes between New York and Boston three times a day, twice a day from New York to Washington, once a day from Charleston to New Orleans, once a week between some small country villages, once a fortnight from New York to San Francisco, and once a month from Missouri to Great Salt Lake City. By the very same rule, and for the same reasons, there should be a local distribution of letters in large cities like New York, Boston, and Philadelphia, from six to twelve times a day. The very term "free-letter delivery," as applied to the local distribution of letters in English cities, is a misnomer. It does not exist, nor is it asked for in this country. The local distribution of letters in the cities and towns of Great Britain amounts to just this: One uniform rate of postage is fixed on all single letters—local and otherwise—without regard to distance, and this postage—one penny sterling—pays for transporting the letter to the end of the route; and this, in cities and towns, means to the door of the person addressed. It unquestionably costs a shade less to circulate and deliver letters in a city—those that are mailed there for delivery—than it does to transport them hundreds of miles, and then deliver them. The actual result is this: the large number of local letters in cities, at the postage of one penny for each, pays all the expense of collection and delivery—wages of receivers, mail-men and letter carriers—while these persons collect and deliver all letters that are to go and that come from out of town, without any extra charge, and then the profit on these local letters alone—admitting that the letters from a distance are delivered "free"—is very large. The following table, made up from the official report of the year 1854, needs no explanation:

LOCAL CORRESPONDENCE IN CERTAIN CITIES IN GREAT BRITAIN, WITH THE EXPENSE OF COLLECTION AND DELIVERY.

Cities.	Number of Letters in the Mail.	Local Circulation or Drop Letters.	Gross Revenue from Local Circulation.	Wages of Letter carriers and Receivers.	Net Profit on Local Circulation.
London.....	57,186,159	46,191,569	\$1,385,747	\$761,510	\$624,037
Liverpool.....	9,145,802	7,390,042	221,701	27,035	194,666
Manchester.....	10,088,556	8,149,560	244,487	38,225	206,262
Dublin.....	6,592,834	5,329,134	159,874	38,940	120,934
Edinburgh.....	4,208,094	3,401,670	102,050	20,060	81,990
Bristol.....	4,384,416	3,543,516	106,314	15,855	90,459
Total.....	91,605,861	74,005,791	\$2,220,173	\$901,825	\$1,518,348

The total number of letter receivers and letter carriers in the United Kingdom, in 1854, with the gross amount of their salaries, was as follows:

	Number.	Salaries.
Letter receivers in the Kingdom . . .	4,280	\$336,742
Letter carriers in cities and towns . .	4,385	\$84,575
Letter carriers in rural districts . . .	4,326	\$61,420
Total	13,000	\$1,642,677

Looking at the results in the two tables given above, we find that the money received for postage on the local letters, in six cities only, amounted to a larger sum than the entire cost of letter carriers and letter receivers throughout the united Kingdom of Great Britain and Ireland! And we may mention, in this connection, that the rural letter carriers penetrate all the country districts of Great Britain, the carriers in their walks going from three to six miles from every village post-office, at least once a day.

The gigantic results shown in the English Post-office are due to three or four simple principles. There is one uniform rate of postage on all single letters—those weighing not to exceed half an ounce—and this same rate also pays the postage on all parcels of printed matter—done up in packages open at the ends—so that with one kind of stamp the citizen prepays more than nineteen-twentieths of all the packages he puts in the post-office. There is in every city and village a letter delivery by carriers, from two to twelve times a day, with convenient places at every one or two hundred yards for posting letters and parcels. There is a system of remitting money by mail, through money orders or drafts, for small sums, between all the principal post-offices; and the money-order business, like the uniform postage, is based on so simple and economical a system, and is carried on with such satisfactory results, that there is combined the greatest convenience and smallest cost to the citizen, and the largest economy of management to the Post-office officials.

It is useless to say that the business of collecting and distributing letters in a city in Europe is any different process, and involves any different principles, from that of distributing letters here; for it is not true. And certainly, so far as correspondence is concerned, our social and commercial wants are like those of the residents of London, Manchester, Paris, and Berlin. Could we get at the amount of letter distribution done by private parties in our large cities, it would be found that there is a far greater correspondence carried on outside of, than through the post. And yet there is no regularity, uniformity, safety, or system, and with all the multifarious appliances, we are wretchedly served, as every one knows. Philadelphia has reported through the government Post-office a less correspondence—or at least a smaller postal revenue—in proportion to population, than any other large city in America. There a private individual carries on a very profitable and extensive system of city letter distribution. The fact is, and it can not be disguised, that our Post-office, being an exclusive government function, for long distances, should not allow private parties to carry it on for short distances in cities. We either want an efficient uniform government Post-office over the entire country, or it should be abolished altogether, or thrown open to private parties. We make the Post-office perform nearly three million dollars' worth of labor for the government, and appropriate for the same out of the Treasury less than a quarter of that sum, and then the government allows private parties to step in and set up a post in the very localities where a good postal establishment is most needed, and where it can be made the most profitable. With any thing like a critical examination of our postal establishment, and to a person of any sagacity, it is clearly evident that in the localities where a post is most needed—large cities—and where it would pay the best, there our post is most notoriously inefficient. The postal establishment labors under the following prominent disadvantages:

First. It performs a large amount of service for the government without adequate compensation. *Second.* There is not a uniform rate of postage, and the labor and expense of conducting the postal business is thereby greatly increased. *Third.* The correspondence of the country has never been stimulated and increased by low and uniform postage and the best postal facilities. *Fourth.* Our local correspondence in cities—the most profitable business of the postal establishment, when on a correct basis—labors under every disadvantage, being the cause, and justly, of constant complaint on the part of the citizens. *Fifth.* In all the large cities, in consequence of the irregularity, uncertainty, and inconveniences of the National Post-office, private posts carry off a large share of the business.

If the above premises are correct, the remedies are neither hard to find or difficult to carry out. Find the amount of matter that is sent "free" by government departments, officers and members of Congress, and have a sum paid or appropriated from some quarter sufficient to meet it. Then make one rate of postage, so low that it will not be exorbitant for single letters and the smallest packages for the shortest distances, and let this rate pay as many descriptions and sizes of written and printed packets as possible. Abolish all private posts in cities, and make a government post that is adequate to the wants of the citizens. It may be safely promised that a convenient, reliable, economical, punctual, and rapid distribution of letters in our cities will meet with all that encouragement and that extensive use that attends a good post in European cities. Send all letters and printed packages—perhaps up to a certain amount, say four or eight postages in one parcel, as is done in Great Britain—whether they are prepaid or not, and if not prepaid, charge double postage. Make a money-order system for remitting money in sums not exceeding twenty or twenty-five dollars; at first between all the larger offices, extending it as it becomes known and understood. Return all "dead" and refused letters to the writers, and enforce the payment of such postages as have not been prepaid.

The question of the most profitable rate or rates of postage may be discussed and examined for years, and we are forced to one conclusion; and that is, that there is no convenient, economical, or just system without UNIFORMITY. The truth is, several of our rates of postage are too low, not allowing a fair compensation, and others are too high. Our rate of one cent for drop letters or local letters, one cent for printed circulars, and one cent for transient newspapers, are all too low. They are not compensating; and if raised to two cents, the charge would not be considered high, provided all letters of half an ounce weight, and printed packages up to four ounces, could be sent any and every distance for the same sum. We want a two-cent rate of postage, with a two-cent postage stamp, and a total abolition of all of the one-cent rates and stamps, and the three-cent rates and stamps. It should be the minimum; that is, no letter or transient package should be mailed or sent the shortest distance for less than this sum. We would pay with this two-cent stamp our city or drop letters—and that should include delivery by a carrier, as carriers should work for salaries, and deliver every thing in cities without extra charge—our letters for all distances in the United States, all circulars, and all packages of printed matter, up to four ounces in weight, that are done up open at the ends. Is it not reasonable to suppose that there would be a sufficient increase in letters for city circulation, and to go to a distance, along with the increase of price of postage on drop letters, on printed circulars, and on transient newspapers, to make up for the loss on the three-cent letters, and the few letters that now pay ten cents? And we must bear in mind that one of the greatest arguments for a uniform rate of postage is the simplicity, economy, and cheapness that it effects in

carrying on the postal business. Twice the number of workers, with a change to a uniform rate, will suffice for an increase of letters six-fold. We have given the exact official figures, showing that the mere handling, sorting, distribution, and delivery of letters (all expenses except transportation) in Great Britain

amounted to thirty dollars for each thousand letters, when there were several rates; and but seven dollars—less than one-fourth what it cost formerly—with a uniform postage. UNIFORMITY of postage is the first requisite of the British, as it is of every other postal system where it has been tried.

POSTAL STATISTICS OF THE DIFFERENT STATES.

States.	Postal Revenue, 1886.	Revenue per 1000 Persons.	Number of Letters, 1886.	Letters per 1000, 1886.	Postal Expenses, 1886.	Proportion of Expenses to Receipts.	Postal Revenue, with Government Postage added.	Proportion of Expenses to Receipts.	Cost per Letter.
Massachusetts.....	\$557,659	\$492	11,362,071	10,028	\$385,989	69	\$769,290	50	c. m. 1 5
Connecticut.....	190,924	476	8,889,997	9,700	175,181	92	268,380	66	2 0
New York.....	1,436,100	411	29,259,943	8,432	1,037,316	72	1,981,100	52	1 6
California.....	265,019	791	2,769,354	8,266	268,714	101	865,514	74	4 3
Rhode Island.....	62,543	375	1,274,287	7,630	39,644	63	86,277	46	1 4
Iowa.....	117,415	350	2,392,293	7,141	158,313	131	161,973	95	2 9
New Hampshire.....	100,000	303	2,037,459	6,269	99,943	100	137,950	72	2 2
Michigan.....	156,183	307	3,182,104	6,252	232,837	149	215,454	108	3 2
Vermont.....	96,639	297	1,968,998	6,058	117,331	122	133,314	89	2 7
Wisconsin.....	149,676	271	3,049,556	5,525	170,369	114	206,478	82	2 5
Illinois.....	333,620	268	6,797,370	5,468	553,337	166	460,259	120	3 6
Maine.....	152,710	245	3,111,403	4,987	170,745	112	210,664	81	2 4
Pennsylvania.....	531,220	232	12,045,863	4,737	523,796	89	815,538	64	1 9
Ohio.....	451,707	204	9,203,348	4,154	670,995	151	623,153	103	3 2
New Jersey.....	107,738	189	2,195,117	3,852	132,336	123	148,624	89	2 7
Indiana.....	171,410	149	3,492,409	3,037	303,972	177	236,482	120	3 9
Pacific Territories..	14,046	342	146,812	3,531	38,175	272	19,376	196	5 9
Other Territories...	32,979	162	671,933	3,310	112,265	340	45,495	247	7 4
Total, North.....	\$4,987,583	\$309	98,850,374	6,124	\$5,186,653	104	\$6,980,377	75	2 3
District of Columbia	43,731	741	891,000	15,101	33,161	87	60,326	63	1 9
Maryland.....	187,104	292	3,812,166	5,956	263,471	141	258,109	102	3 1
Louisiana.....	163,579	273	3,332,854	5,555	371,411	227	225,657	165	5 0
Delaware.....	19,643	203	400,320	4,127	19,477	100	27,103	72	2 2
Florida.....	20,058	181	408,674	3,681	105,866	527	27,670	332	11 5
Missouri.....	141,765	163	2,888,406	3,434	287,373	202	195,565	147	4 4
Georgia.....	140,070	150	2,858,868	3,052	326,406	233	133,226	169	5 1
Virginia.....	213,090	144	4,448,494	2,936	413,993	190	300,855	137	4 1
Texas.....	68,005	136	1,885,574	2,771	251,533	870	93,312	263	8 0
Alabama.....	109,225	131	2,225,414	2,605	324,368	297	150,675	216	6 5
South Carolina.....	91,803	130	1,870,449	2,649	270,437	294	126,642	214	6 4
Kentucky.....	121,308	111	2,471,601	2,274	224,422	185	167,343	134	4 0
Mississippi.....	74,444	111	1,516,765	2,257	243,703	384	102,702	242	7 3
Arkansas.....	27,332	110	567,066	2,240	234,177	842	38,334	610	13 3
Tennessee.....	101,485	93	2,067,716	1,893	193,103	195	139,998	141	4 2
North Carolina.....	71,887	73	1,464,668	1,569	206,068	257	99,168	203	6 4
Total, South.....	\$1,553,303	\$144	31,709,035	2,035	\$3,746,313	241	\$2,146,919	174	5 2
Grand total.....	6,587,622	244	131,450,409	4,875	8,971,132	136	9,637,622	99	3 0

By distributing \$2,500,000—the supposed cost of transporting the “franked” matter for government, instead of \$700,000, the sum now paid—among the different States, in the proportions of their present postal revenue, the revenue of each State would then be as seen in the last column but two. In the column of postal expenses the complete amount of expenses is not quite all stated, but all is given that is set down under the head of each State, in the official Report of the Department. If the entire sum were given, it would not alter this comparative statement, or much affect the general result. We see by this—the last column but one—that only 50 per cent. of the postal revenue of Massachusetts is used in expenses for that State, 52 per cent. in New York, and so on with the old, the thickly-settled, and the commercial States, while in Texas \$268 is expended for every \$100 received, and in Arkansas \$610 to \$100 of revenue. The sums here given as the expenses of each State are not supposed to be the exact amounts required for all the postal expenses within the State—as sometimes a mail route runs through several States, and the expenses of mail transportation over it all falls on or is set down to the State where the route commences. But as these routes generally commence at the East or North, and run West or Southwest, the largest show of expenses is made in the States farthest east. We do not claim as a literal fact that the entire expense of each letter mailed in the State of Massachusetts (see last column of table) amounts, on the average, to one cent five mills, and those in Arkansas to just eighteen cents three mills; but it is a fact that when the amount of correspondence, the postal revenue, and the postal expenses of each and every State are all fairly considered, the proportion of money

received in postage in each State is, to each letter mailed in that State, as here given. We know that letters starting in New York sometimes go to Arkansas, Texas, Florida, or New Mexico, and we do not claim that the exact proportion of money due on each letter mailed in each State can be clearly adjusted, and should be charged to each citizen residing in the State. But—and here lies one great argument for a UNIFORM and a Low rate of postage—we do know, by the preceding authentic figures, that the expense of transporting and distributing letters differs very widely in each State; and the general rule is, that the newer, the more sparsely settled, and the less commercial the State, the larger the proportion of expenses to receipts. To illustrate this in a very striking light, let us compare the postal expenses and receipts, and the amount of correspondence in the two States of New York and Massachusetts, with the amount in all of the Southern States and the region west of the Mississippi River. They stand as follows:

Localities.	Number of Letters.	Postal Revenue.	Postal Expenses.
New York and Massachusetts.....	40,622,014	\$2,750,390	\$1,423,305
Southern States and west of Mississippi River....	37,639,417	2,739,277	4,318,750

While the amount of correspondence, and the postal revenue in New York and Massachusetts, exceed all south of the Potomac and Ohio, and west of the Mississippi, the expenses are less than one-third. Again, let us divide the Union into three sections, calling them the Northeast, the Middle, and the Southwestern sections, and see the comparative amount of revenue, expenses, letters, cost per 10,000 letters, and per single

letter. The Northeast section comprises New England, New York, New Jersey, and Pennsylvania; the Middle section, from Delaware to the southern boundary of Virginia and Tennessee, and west to the Mississippi,

including also Missouri and California; the Southwest section includes the balance, the Gulf States, the Territories, Iowa, Arkansas, and Texas. This is the record:

Sections of the Union.	Postal Revenue.	Number of Letters.	Postal Expenses.	Cost per 10,000 Letters.	Single Letter
Northeast section	3,295,533	67,145,120	\$2,682,681	\$400	c. m. 1 8
Middle section	2,478,161	47,861,212	3,798,537	794	8 8
Southwest section	813,928	16,444,077	2,489,914	1514	6 7
First two	5,773,694	115,006,332	6,481,218	564	2 4
Last two	3,292,089	64,306,289	6,288,451	978	4 1
Grand total	6,587,622	131,450,409	8,771,132	682	3 0

From these facts we see and know that the expense of transporting and distributing letters is not in proportion to the distance they are carried. We see that all of the letters circulated from Maine, on the east, to Tennessee and Missouri, throughout our northeastern and middle sections, involve an average expense—transportation and every thing included—of two cents four mills a letter. It costs more to send and take care of a letter that goes fifty or a hundred miles in Florida, Arkansas, or Texas, than it does to take one from Portland, Maine, to Memphis, from Boston to St. Louis, or from New York to New Orleans.

Now our Southern brethren will do us the credit to believe that we propose nothing sectional, nothing narrow, and nothing partial. Every single fact, figure, and circumstance goes to prove, beyond all cavil, that correspondence is carried on to a far greater extent in the thickly-settled social and commercial districts of the North and East, than at the South and West. The people in these districts write the largest share of the letters, and pay by far the largest share of the postage, while with them postal expenses are comparatively light. Were there two nations placed in the relative positions of New York and New England on the one hand, and Mississippi, Louisiana, and the States of the South and Southwest on the other, the one could have a self-supporting mail system, at a uniform rate of postage, not to exceed one-quarter what would be required in the other. In the State of New York alone are written annually 29,259,943 letters, while in all of the States south of the Potomac and Ohio Rivers, Missouri, Arkansas, and Texas included, the number is but 31,709,035. The city of New York alone contributes one-tenth of the postal revenue of the nation, and writes one-tenth of the letters, being a larger proportion than is contributed by every State that borders on the Gulf of Mexico.

These are facts, and they are not held up as a reproach, but to illustrate the financial condition of our postal system, and to show that a good, an active, and an economical postal establishment is of vast importance in large towns, cities, and thickly-settled and commercial districts. The people in those localities where many letters are written, where correspondence is the life-blood of the commercial and social system, feel that they have a right to ask that a postal system shall be adapted to the wants of those on whom its support principally falls. We, as a people residing in cities and thickly-settled States, ask for not one single privilege or one charge for service that is not to be accorded to the lonely settler of New Mexico or the planter of Texas, under the same circumstances, but we do ask for a uniform rate of letter postage of just two cents for all distances; and the facts given in this article—and they challenge examination for their general correctness—these facts clearly prove, beyond a doubt, that this rate will be ample to defray the expenses of all, except, perhaps, in some forest frontiers or thinly-settled regions; and there any extra expense—if there is any—should fall on the entire treasury of the nation, instead of being levied as a partial, a special, and an unjust tax on the industrious active classes, who make extensive use of the post-office.

We want and need a convenient number of receiving-houses and letter-pillars in our cities, after the plan of

the distribution system in England. These "receiving-houses" do not require to be sub-post-offices, or offices for the delivery of letters, but only for the reception of letters and the sale of stamps. Under these circumstances, a very small salary and a small commission on the sale of stamps, is sufficient to compensate the receiver.

The rights of the citizen are not attended to in this country in the management of "dead letters." In this case we have only to look at the satisfactory and just method adopted in Great Britain. There there is no "Dead-letter Office," but there is a "Returned-letter Office." Letters are not reported "dead" except they are anonymous, or when, from other circumstances, the owner can not be found. There, with the great bulk of the letters, a rapid and secure method of returning "miscarried" letters to the writers is adopted, by means of which every letter is returned on the very day it arrives at the Returned-letter Office. It is done so expeditiously, that a clerk returns 200 per day, and 1200 in a week. At this rate all of our "dead letters" could be returned, at a cost to the nation of less than one hundred thousand dollars. With a system of letter delivery in cities and towns, the refused or miscarried letters could usually be sent to the Department and returned to the writers, in from one to three weeks of the date of mailing. In England, letters that miscarry usually get back to the writers within a week of the date of mailing. Oftentimes these dead or miscarried letters would be of great advantage to the writer, particularly in informing him that his letter had not reached its destination. On the face of it would be written usually, as is practiced in England, the cause of its non-delivery.

Any person who will give it an examination will see that we have at this time a most troublesome, perplexing, and absurd system of rates; and it must, we think, be quite as clear that, in a financial and economical point of view, our proposed scale of rates is satisfactory, simple, economical, and adapted to our wants.—See *Bankers' Magazine*, New York, vol. vii., November and December, 1857. On the United States Postage System, refer to *New Englander*, vi. 393 (LEAVITT), i. 392 (BACON); *Hunt's Merchants' Magazine*, ix. 436, ii. 522 (F. O. J. SMITH), x. 250 (W. B. MACLAY), x. 27 (J. M. WHITON), ii. 253 (B. BATES); *Niles's Register*, xxxvi. xxxvii. and years 1830, 1834, 1835; *Democratic Review*, vi. 177; *DE BOW'S Review*, iii., v., xii.; Foreign Postal System, refer to FRASER, xviii. 250; *New England*, vi. 133; *Westminster Review*, xx. 411, xxix. 225, xxxiii. 491; *Quarterly Review*, lxxxvii. 37, lxiv. 282; *Foreign Quarterly*, xiii. 397; *British and Foreign Review*, viii. 451; *Living Age*, ii. 407; *Edinburgh Review*, lxx. 86.

Post Entry. When goods are weighed or measured, and the merchant has got an account thereof at the custom-house, and finds his entry, already made, too small, he must make a *post* or additional *entry* for the surplusage, in the same manner as the first was done. As a merchant is always in time, prior to the clearing of the vessel, to make his *post*, he should take care not to over-enter, to avoid as well the advance, as the trouble of getting back the overplus. However, if this be the case, and an over-entry has been made, and more paid or bonded for customs than the goods

really landed amount to, the land-waiter and surveyor must signify the same, upon oath made, and subscribed by the person so over-entered, that neither he, nor any other person, to his knowledge, had any of the said goods over-entered on board the said ship, or any where landed the same without payment of custom; which oath must be attested by the collector or controller, or their deputies, who then compute the duties, and set down on the back of the certificate, first in words at length, and then in figures, the several sums to be paid.

Potash (Da. *Potaske*; Fr. *Potasse*; Ger. *Pottasche*; It. *Potassa*; Pol. *Potasz*; Russ. *Potash*). If vegetables be burned, the ashes lixiviated, and the solution boiled to dryness in iron vessels, the mass left behind is the *potash* of commerce—the impure carbonate of potass of chemists. It is intensely alkaline, solid, and colored brown by the admixture of a small portion of vegetable inflammable matter, which generally becomes moist. When potash is calcined in a reverberatory furnace, the coloring matter is destroyed, it assumes a spongy texture, and a whitish pearly lustre; whence it is denominated *pearlash*. The latter generally contains from 60 to 83 or 84 per cent. of pure carbonate of potass. The ashes of those vegetables only which grow at a distance from the sea are employed in the manufacture of potash. Herbaceous plants yield the largest portion, and shrubs more than trees. It is principally manufactured in America, Russia, and Poland, the vast forests of which furnish an inexhaustible supply of ashes.

In some portions of the United States and Canada, where timber is an incumbrance upon the soil, it is felled, piled up in pyramids, and burned, solely with a view to the manufacture of potashes. The ashes are put into wooden cisterns, having a plug at the bottom of one of the sides under a false bottom; a moderate quantity of water is then poured on the mass, and some quicklime is stirred in. After standing for a few hours, so as to take up the soluble matter, the clear liquor is drawn off, evaporated to dryness in iron pots, and finally fused at a red heat into compact masses, which are gray on the outside and pink-colored within. Pearlash is prepared by calcining potashes upon a reverberatory hearth, till the whole carbonaceous matter, and the greater part of the sulphur, be dissipated; then lixiviating the mass in a cistern having a false bottom covered with straw, evaporating the clear lye to dryness in flat iron pans, and stirring it toward the end into white lumpy granulations. All kinds of vegetables do not yield the same proportion of potassa. The more succulent the plant, the more does it afford; for it is only in the juices that the vegetable salts reside, which are converted by incineration into alkaline matter. Herbaceous weeds are more productive of potash than the graminiferous species, or shrubs, and these than trees; and for a like reason twigs and leaves are more productive than timber. But plants in all cases are richest in alkaline salts when they have arrived at maturity. The soil in which they grow also influences the quantity of saline matter.

The following table exhibits the average product in potassa of several plants, according to the researches of Vauquelin, Pertuis, Kirwan, and De Saussure:

In 1000 parts.	Potassa.	In 1000 parts.	Potassa.
Pine or fir.....	0.45	Dry beech bark.....	6.00
Poplar.....	0.75	Fern.....	6.26
Trefoil.....	0.75	Large rush.....	7.22
Beechwood.....	1.45	Stalk of maize.....	17.50
Oak.....	1.53	Bean stalks.....	20.00
Boxwood.....	2.26	Bastard chamomile (<i>Anthemis cotula</i> , Linn.).....	19.60
Willow.....	2.85	Sunflower stalks.....	20.00
Elm and maple.....	3.90	Common nettle.....	25.03
Wheat straw.....	3.90	Vetch plant.....	27.50
Barb of oak twigs.....	4.20	Thistles in full growth.....	35.37
Thistles.....	5.00	Dry straw of wheat before earing.....	47.00
Flax stems.....	5.00	Wormwood.....	73.00
Small rushes.....	5.08	Fumitory.....	79.00
Vine shoots.....	5.50		
Barley straw.....	5.80		

Stalks of tobacco, potatoes, chestnuts, chestnut husks, broom, heath, furze, tansy, sorrel, vine leaves, beet leaves, orach, and many other plants, abound in potash salts. In Burgundy, the well-known *cendres gravelées* are made by incinerating the lees of wine pressed into cakes, and dried in the sun: the ashes contain fully 16 per cent. of potassa.

EXPORTS OF POT AND PEARL ASHES FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Exported from	Tons	Value.
Portland.....	1	\$113
Salem.....	1	85
Boston.....	21	2,647
New York.....	3332	426,583
Total.....	3355	\$429,428

Potatoes (Ger. *Kartoffeln*; Du. *Aardappelen*; Fr. *Pommes de terre*; It. *Patate*, *Pom di terra*; Sp. *Patatas manchegas*; Russ. *Jabloki semlenie*), the roots of the *Solanum tuberosum*, of innumerable varieties, and too well known to require any description.

Historical Notice.—The common English or Irish potato (*Solanum tuberosum*), so extensively cultivated throughout most of the temperate countries of the civilized globe, contributing, as it does, to the necessities of a large portion of the human race, as well as to the nourishment and fattening of stock, is regarded as of but little less importance in our national economy than maize, wheat, or rice. It has been found in an indigenous state in Chili, on the mountains near Valparaiso and Mendoza; also near Montevideo, Lima, Quito, as well as in Santa Fé de Bogota, and more recently in Mexico, on the flanks of the Orizaba.

The history of this plant, in connection with that of the sweet potato, is involved in obscurity, as the accounts of their introduction into Europe are somewhat conflicting, and often they appear to be confounded with one another. The common kind was doubtless introduced into Spain in the early part of the 16th century, from the neighborhood of Quito, where as well as in all Spanish countries, the tubers are known as *papas*. The first published account of it we find on record is in *La Cronica del Peru*, by Pedro de Cieca, printed at Seville in 1553, in which it is described, and illustrated by an engraving. From Spain it appears to have found its way into Italy, where it assumed the same name as the truffe. It was received by Clusius, at Vienna, in 1598, in whose time it spread rapidly in the south of Europe, and even into Germany. To England it is said to have found its way by a different route, having been brought from Virginia by Raleigh's colonists in 1586, which would seem improbable, as it was unknown in North America at that time, either wild or cultivated; and, besides, Gough, in his edition of *Camden's Britannia*, says it was first planted by Sir Walter Raleigh on his estate at Youghall, near Cork, and that it was cultivated in Ireland before its value was known in England. Gerard, in his *Herbal*, published in 1597, gives a figure of this plant, under the name of *Batata Virginiana*, to distinguish it from the sweet potato, *Batata edulis*, and recommends the root to be eaten as a "delicate dish," but not as a common food. "The sweet potato," says Sir Joseph Banks, "was used in England as a delicacy long before the introduction of our potatoes; it was imported in considerable quantities from Spain and the Canaries, and was supposed to possess the power of restoring decayed vigor." It is related that the common potato was accidentally introduced into England from Ireland at a period somewhat earlier than that noticed by Gerard, in consequence of the wrecking of a vessel on the coast of Lancashire, which had a quantity on board. In 1663, the Royal Society of England took measures for encouraging the cultivation of this vegetable, with the view of preventing famine. Notwithstanding its utility as a food became better known, no high character was attached to it; and the writers on gardening toward the end of the 17th century,

a hundred years or more after its introduction, treated of it rather indifferently. "They are much used in Ireland and America as bread," says one author, "and may be propagated with advantage to poor people." The famous nurserymen, London and Wise, did not consider it worthy of notice in their *Complete Gardener*, published in 1719. But its use gradually spread, as its excellences became better understood. It was near the middle of the last century before it was generally known either in Britain or North America, since which it has been most extensively cultivated. The period of the introduction of the common potato into the British North American colonies is not precisely known.

The culture of this plant extends through the whole of Europe, a large portion of Asia, Australia, the southern and northern parts of Africa, and the adjacent islands. On the American continent, with the exception of some sections of the torrid zone, the culture of this root extends from Labrador on the east, and Nootka Sound on the west, to Cape Horn. It resists more effectually than the cereals the frosts of the North. In this country it is principally confined to the Northern, Middle, and Western States, where, from the coolness of the climate, it acquires a farinaceous consistence highly conducive to the support of animal life. It has never been extensively cultivated in Florida, Alabama, Mississippi, nor Louisiana—perhaps from the greater facility of raising the sweet potato, its more tropical rival. Its perfection, however, depends as much upon the soil as on the climate in which it grows; for in the red loam on the banks of Bayou Beuf, in Louisiana, where the land is new, it is stated that tubers are produced as large, savory, and as free from water as any raised in other parts of the world. The same may be said of those grown at Bermuda, Madeira, the Canaries, and numerous other ocean isles. The chief varieties cultivated in the Northern States are the Carter, the kidneys, the pink-eyes, the Mercer, the orange, the Sault St. Marie, the Merino, and the Western red; in the Middle and Western States, the Mercer, the long red or Merino, the orange, and the Western red. The yield varies from 50 to 400 bushels and upward per acre, but generally it is below 200 bushels. Within the last ten years an alarming disease, or "rot," has attacked the tubers of this plant about the time they are fully grown. It has not only appeared in nearly every part of our own country, but has spread dismay at times throughout Great Britain and Ireland, and has been felt more or less seriously in every quarter of the globe. To the greater uncertainty attending its cultivation of late years, from this cause, must be attributed the deficiency of the crop of 1849 as compared with that of 1839. This is one of the four agricultural products which, by the present census, appears smaller than it was ten years since.

Sweet Potato.—The sweet potato (*Batata edulis*) is a native of the East Indies, and of intertropical America, and was the "potato" of the old English writers in the early part of the 14th century. It was doubtless introduced into Carolina, Georgia, and Virginia, soon after their settlement by the Europeans, being mentioned as one of the cultivated products of those colonies as early as the year 1648. It grows in excessive abundance throughout the Southern States, and as far north as New Jersey and the southern part of Michigan. The varieties cultivated are the purple, the red, the yellow, and the white, the former of which is confined to the South. The amount of sweet potatoes exported from South Carolina in 1747-'48 was 700 bushels; that of the common potato exported from the United States in 1820-'21, 90,889 bushels; in 1830-'31, 112,875 bushels; in 1840-'41, 186,095 bushels; in 1850-'51, 106,842 bushels. According to the census returns of 1840, the quantity of potatoes of all sorts raised in the Union was 108,298,060 bushels; of 1850, 104,055,989 bushels, of which 89,259,196 bushels were sweet.

COMPARATIVE PRODUCTION OF POTATOES IN THE UNITED STATES IN THE YEARS 1840 AND 1850.

States and Territories.	Irish and Sweet Potatoes	
	1840	1850.
	Bushels.	Bushels.
Alabama	1,708,356	5,721,205
Arkansas	293,608	581,181
California .....	.....	10,212
Columbia, District of	12,035	31,789
Connecticut	3,414,238	2,683,815
Delaware	200,712	305,985
Florida	204,617	704,617
Georgia	1,291,866	7,213,867
Illinois	2,035,520	2,672,214
Indiana	1,525,794	2,281,048
Iowa	234,063	281,363
Kentucky	1,055,085	2,490,666
Louisiana	834,341	1,524,185
Maine	10,392,180	3,456,140
Maryland	1,036,433	973,932
Massachusetts	5,385,652	3,585,314
Michigan	2,109,205	2,361,074
Mississippi	1,680,100	5,003,277
Missouri	753,768	1,724,511
New Hampshire	6,206,606	4,304,919
New Jersey	2,072,069	3,715,151
New York	30,123,614	15,403,997
North Carolina	2,609,239	5,716,027
Ohio	5,805,021	5,243,760
Pennsylvania	9,535,663	6,032,904
Rhode Island	911,973	651,029
South Carolina	2,698,313	4,473,163
Tennessee	1,904,370	3,845,560
Texas .....	.....	1,426,803
Vermont	8,869,751	4,951,014
Virginia	2,944,606	3,130,567
Wisconsin	419,608	1,402,956
Minnesota Territory .....	.....	21,345
New Mexico Territory .....	.....	3
Oregon Territory .....	.....	91,326
Utah Territory .....	.....	44,028
Total	108,158,100	106,146,044

EXPORTS OF POTATOES FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whither exported.	Barrels.	Value.
Russian Possessions in N. America ..	40	\$208
Swedish West Indies	5	10
Danish West Indies	1,164	2,707
Bremen	1	2
Dutch West Indies	400	1,088
Dutch Guiana	55	137
England	7	16
Canada	5,164	5,600
Other British North American Poss.	230	328
British West Indies	17,240	32,910
British Honduras	182	445
British Guiana	3,072	6,035
French West Indies	939	1,745
Cuba	43,952	82,406
Porto Rico	5,183	9,115
Madeira	100	250
Turkey in Asia	100	200
Ports in Africa	20	36
Hayti	184	484
San Domingo	125	249
Mexico	710	1,577
Central Republic	162	378
New Granada	629	1,347
Venezuela	682	1,352
Chili	130	142
Peru	200	600
Sandwich Islands	955	1,237
China	101	1,351
Whale Fisheries	589	676
Total	62,512	\$153,761

IMPORTS OF POTATOES INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whence imported.	Bushels.	Value.
Swedish West Indies	15	\$9
Hamburg	263	150
Bremen	460	250
Holland	169	74
England	2,917	1,852
Scotland	468	316
Ireland	13,178	4,269
British West Indies	63,584	44,633
France on the Atlantic	922	710
Cuba	116	110
Mexico	20	27
Peru	9,137	5,413
Sandwich Islands	26,840	12,789
China	42	22
Whale Fisheries	1,375	605
Total	120,620	\$71,213

Potomac River, in Maryland and Virginia, rises in two branches, the north and the south, in and near the Alleghany Mountains, and forms, through nearly its whole course, the boundary between Virginia and Maryland. It is about 800 miles long, and enters Chesapeake Bay between Point Lookout and Smith's Point by a mouth ten miles wide. At Alexandria it is a mile and a quarter wide, 290 miles from the ocean. It is navigable for ships of the line to the navy-yard in Washington, 800 miles from the sea, and three miles below the head of tide-water. Above this it is obstructed by numerous falls and rapids.—See MARYLAND, CHESAPEAKE.

Pound (Lat. *pondus, weight*), a measure of weight. In England two different pounds are used—the pound avoirdupois, and the pound Troy. The pound avoirdupois weighs 7000 grains Troy, and the pound Troy 5760 grains. The former is divided into 16 ounces, and the latter into 12. The pound sterling was in Sax-on times, about A.D. 671, a pound Troy of silver, and a shilling was its twentieth part; consequently the latter was three times as large as it is at present.—PEACHAM. The value of the Roman *pondo* is not precisely known, though some suppose it was equivalent to an Attic *mina*, or £3 4s. 7d. Our avoirdupois weight (*avoir du poids*) came from the French, and contains sixteen ounces; it is in proportion to our Troy weight as seventeen to fourteen.—CHAMBERS; see also *Bankers' Magazine*, December, 1857, 456-457. An old pound weight of geographical significance, named Easterling, divided into twelve ounces, was in use among the Anglo-Saxons some centuries before the Norman Conquest. The same weight, called the Tower, and the Moneyers' pound, was styled by early French writers the Roman and the Rochelle pound; also known among the Germans as the Cologne pound. A simple system of exchange, by which a pound of silver money, in tale, was made to equal a pound in gross weight, had been arranged by Charles the Great, in France, toward the end of the eighth century. In Britain, under the First William, of Normandy, an ordinance declared, "The weights and measures throughout the kingdom shall remain as our worthy predecessors have established." Queen Elizabeth ordered the ounce of silver, in England, to be cut into sixty pennies; so that the penny, formerly the twentieth of an ounce, thenceforth became the sixtieth part! From the termination of Queen Elizabeth's reign the coinage of English silver has generally retained a purity of .925 thousandths, called the "Sterling Standard." Another pound weight, also divided into twelve ounces, had been brought from Cairo, in Egypt, to Troyes of Champagne, in France, during the Crusades. Carried into England by foreign goldsmiths, Lombard merchants, possibly from Venice, about the year 1496, it gradually superseded the old Easterling weights, and found access into the British Mint, by decision of Henry VIII. In 1543 this king began to debase the fineness of the silver coins, and also reduced their standard weight. The British statute of 1266 established two common measures for money, weights, dry and wet quantities, with presumed consent of the people and approval by the king, which seem to render "wheat and silver money the two weights of the balance, the natural tests and standards of each other." Unfortunately for such decision, neither wheat corn grains nor silver are by nature exact weights suited for a standard, "a rule by which other things may be correctly compared, adjusted, and valued." The accredited proportions of these old measures being accessible, an attempt has been made to test their quantities. Edward IV., in 1461, struck a gold coin of the value of ten shillings, named an "angel," because such an image was represented upon the face of it, with the likeness of a ship on the reverse. Henry IV. (1483 to 1509) introduced "the sovereign," or "rose noble," of gold. "The guinea," designed to be of the value of twenty shillings, but requiring subse-

quent correction, was not ordained till the reign of Charles II. in England. In 1821 a committee of the Royal Society, to whom the matter had been referred, proposed, and it was so decided, by act of George IV., in 1824, 1st. That the parliamentary standard yard, made by Bird, in 1760, be henceforth the legal standard of the British empire; 2d. That the parliamentary standard Troy pound weight, made in 1758, continue unaltered; 3d. That seven thousand grains be declared to constitute the pound-weight avoirdupois, now called the British imperial pound. By act of Congress of the United States, in 1828, "the brass Troy pound weight, procured by the Minister of the United States at London, in the year 1827, for the use of the Mint, shall be the standard of the Mint of the United States, conformably to which the coinage thereof shall be regulated." Yet we possess three several standing weights for coinage accounts, each one derived from a distinct unitary measure taken from as many different nations. 1st. We have a Troy standard for quantities, from Britain; 2d. A metrical standard for qualities, from France; 3d. An avoirdupois standard for proportions, from Spain. The sole remnant retained from the original scale of the mother country being the Troy ounce, now divided and multiplied decimally.—Report of Dr. J. H. GIBBON of the United States Mint, North Carolina. See PENNY.

Pratique. The writing or license of this name was originally addressed by the Southern nations to the ports of Italy to which vessels were bound, and signified that the ship so licensed came from a place or country in a healthy state, and no way infected with the plague or other contagious disease. The pratique is now called a bill of health, and is still of the same intent and import.—ASHE.

Precious Metals, a designation frequently applied to gold and silver. We have given, under the articles GOLD and SILVER, a short account of each metal; and we now propose laying before the reader some details with respect to their supply and consumption. To enter fully into this interesting and difficult subject would require a long essay, or rather a large volume. Mr. Jacob published in 1831 an "Historical Inquiry into the Production and Consumption of the Precious Metals," in which he takes up the subject at the earliest period, and continues it to the above epoch. And though far from being so learned, complete, or satisfactory as might have been expected, this work contains a good deal of valuable information, and deserves the attention of those who take an interest in such inquiries. But within the last five or six years the subject has acquired an interest and importance with which it was not previously invested.

Supply of the Precious Metals.—Since the discovery of America, the far greater part of the supplies of gold and silver have been derived from that continent. Previously to the publication of Humboldt's great work, "*Essai Politique sur la Nouvelle Espagne*," several estimates, some of them framed by individuals of great intelligence, were in circulation, of the quantities of gold and silver imported from America. They, however, differed widely from each other, and were all framed from comparatively limited sources of information. Humboldt brought these estimates together as follows:

Authors.	Epochs.	Dollars.
Ustariz	1492-1724	8,536,000,000
Solorzano	1492-1628	1,500,000,000
Moncada	1492-1595	2,000,000,000
Navarete	1519-1617	1,536,000,000
Raynal	1492-1780	5,154,000,000
Robertson	1492-1775	8,800,000,000
Necker	1763-1777	304,000,000
Gerboux	1724-1800	1,600,000,000
The Author of the <i>Recherches sur le Commerce, Amsterdam, 1779</i>	1492-1775	5,072,000,000

—*Essai sur la Nouvelle Espagne*, tome iii.

But these have been wholly superseded by the more

extensive and laborious investigations of Humboldt. This illustrious traveler, besides being acquainted with all that had been written on the subject, and having ready access to official sources of information unknown to the writers already alluded to, was well versed in the theory and practice of mining, and critically examined several of the most celebrated mines. He was, therefore, incomparably better qualified for forming correct conclusions as to the past and present productiveness of the mines than any of those who had hitherto speculated on the subject. His statements have, indeed, been accused of exaggeration; and we incline to think that there are grounds for believing that this charge is, in some measure, well founded, particularly as respects the accounts of the profits made by mining, and of the extent to which the supplies of the precious metals may be increased. But this criticism applies, if at all, in a very inferior degree to the accounts Humboldt has given of the total produce of the mines, and

the exports to Europe. And making every allowance for the imperfection inseparable from such investigations, it is still true that the statements in question, and the inquiries on which they are founded, are among the most valuable contributions that have been made to statistical science. According to Humboldt, the annual average supplies of the precious metals derived from America have been as follows:

	Dollars a Year at an Average.
From 1492 to 1500.....	250,000
" 1500 to 1545.....	3,060,000
" 1545 to 1600.....	11,000,000
" 1600 to 1700.....	16,000,000
" 1700 to 1750.....	22,500,000
" 1750 to 1803.....	35,300,000

—*Essai sur la Nouvelle Espagne*, iii.

The following is Humboldt's estimate of the annual produce of the mines of America at the commencement of the 19th century:

Political Divisions.	Gold.		Silver.		Value of the Gold and Silver in Dollars.
	Marks of Castile.	Kilogs.	Marks of Castile.	Kilogs.	
Vice-royalty of New Spain.....	7,000	1,600	2,338,320	537,512	23,000,000
Vice-royalty of Peru.....	3,400	782	611,040	140,478	6:40,000
Captain-generalship of Chili.....	12,212	2,807	20,700	6,827	2,060,000
Vice-royalty of Buenos Ayres.....	2,200	506	481,830	110,764	4,850,000
Vice-royalty of New Granada.....	50,505	4,714	.....	.....	2,000,000
Brazil.....	20,900	6,573	.....	.....	4,360,000
Total.....	15,217	17,291	3,460,840	7:5,581	43,660,000

Humboldt further estimated the annual produce of the European mines of Hungary, Saxony, etc., and those of Northern Asia, at the same period, at about £1,000,000 more. The quantity of gold produced in America at the beginning of the century was to the quantity of silver as 1 to 46; in Europe the proportions were as 1 to 40. The value of equal quantities of gold and silver were then in the proportion of 15 or 15½ to 1. From 1800 to 1810 the yield of the American mines continued to increase; and their produce, and that of the European and Russian mines, was then probably rather above than below \$55,000,000. But in the last-mentioned year the contest began which terminated in the dissolution of the connection between Spain and her American colonies. The convulsions and insecurity arising out of this struggle—the proscription of the old Spanish families, to whom the mines principally belonged, who repaired, with the wrecks of their fortunes, some to Cuba, some to Spain, and some to Bordeaux and the south of France—caused the abandonment of several of the mines, and an extraordinary falling off in the amount of their produce. There are no means of estimating the precise extent of this decline; but according to Jacob, who collected and compared all the existing information on the subject, the total average produce of the American mines, inclusive of Brazil, during the twenty years ending with 1829, may be estimated at \$20,000,000 a year; being less than half their produce at the beginning of the century!—*Jacob on Precious Metals*. It has, however, been supposed that Jacob rather exaggerated the falling off. And, at all events, the supplies of bullion obtained from Mexico and South America began, soon after the publication of his work (1831), to increase; and, notwithstanding the anarchy to which they have continued to be a prey, that increase has been maintained down to the year 1853. It appears from the returns sent home by the British consuls that the coinage of gold and silver in the Mexican mints amounted in 1847 to \$16,923,948, and in 1848 to \$19,506,754. But it is well known that considerable quantities of these metals are raised and exported from Mexico without being brought to the mints to be coined. And taking this item into account, we shall not, perhaps, be very wide of the mark if we estimate the entire produce of the Mexican mines in 1847 and 1848 at about 19 and 21½ millions of dollars, of which from 17 to 20½ millions were in silver. In 1842, Mr. B. H. Wilson, consul in

Peru, estimated the produce of the Peruvian mines at about \$5,210,000 a year.—*Parliamentary Paper*, No. 476, Session 1843. And it has since increased to \$6,500,000 or \$7,000,000. The produce of the Bolivian mines is usually estimated at about half the produce of those of Peru. In 1850 the produce of the Chilean mines, according to the official returns, amounted to \$7,020,671.—*Annuaire de l'Economie Politique*, 1853.

Birkmyre's estimate of the production of the precious metals in 1846 and 1850, the most elaborate and valuable of any hitherto published, appeared in the *London Times* of the 19th May, 1851. We subjoin some of its principal portions.

"The quantities of gold and silver produced at the under-mentioned epochs were:

"In 1801 the quantity of pure gold produced in America was 46,331 lbs.; in Europe and Northern Asia (exclusive of China and Japan), 4,916 lbs.; total produce, 51,247 lbs.=55,910 lbs. British standard gold=£2,612,200.

"In 1846 the quantity of pure gold produced in America was 25,503 lbs.; in Europe, Africa, and Asia (exclusive of China and Japan), 89,171 lbs.; total produce, 114,674 lbs.=125,108 lbs. British standard gold=£5,846,721.

"In 1850 the quantity of pure gold produced in America was 261,731 lbs.; in Europe, Africa, and Asia (exclusive of China and Japan), 104,219 lbs.; total produce, 365,950 lbs.=399,247 lbs. British standard gold=£18,651,322.

"The above quantities are probably less than the actual production. The duties on gold in Russia on the produce of the private mines are heavy, varying from 12 to 24 per cent.; in Austria they amount to 10 per cent., in Brazil to 5 per cent., and are understood to lead to a great deal of smuggling. In other countries, such as the United States, where there are no duties, the gold and silver stated in the table are only the quantities brought to the mints to be coined, there being no means of determining the quantity used in jewelry and other arts and manufactures."

The exhaustion of the precious metals in manufactures and the arts throughout Europe and the United States probably exceeds the ordinary estimates. It is known that in England alone the weekly consumption of fine gold is equivalent to 600 ounces—used largely in gilding metals by the electrotype and the water-gilding processes.

COMPARATIVE TABLE, SHOWING THE ANNUAL PRODUCE (APPROXIMATE CALCULATION) IN VALUE OF FINE GOLD AND SILVER FOR 1846 AND 1850, THE FIRST BEING TWO YEARS BEFORE THE DISCOVERY OF THE RICH DEPOSITS OF GOLD IN CALIFORNIA; THE LATTER TWO YEARS AFTER THE DISCOVERY.

Countries.	1846.			1850.		
	Gold.	Silver.	Total.	Gold.	Silver.	Total.
California.....				£12,000,000	£62,088	£12,062,088
United States.....	£237,336	£1,864	£239,200	115,430	11,444	126,874
Mexico.....	249,753	3,457,020	3,706,773	382,901	5,383,353	5,766,254
New Grenada.....	252,407	42,929	295,336	252,407	42,929	295,336
Peru.....	96,241	1,000,583	1,096,824	96,241	1,000,583	1,096,824
Bolivia.....	60,337	460,191	520,528	60,357	460,191	520,548
Chili.....	145,585	297,029	442,614	145,585	297,029	442,614
Brazil.....	259,871	2,003	261,874	289,068	2,227	291,295
Total of North and South America..	£1,301,560	£5,261,619	£6,563,179	£13,341,989	£7,259,824	£20,601,813
Russia.....	£3,414,427	£167,831	£3,582,258	£4,176,860	£171,817	£4,347,477
Norway.....		32,346	32,346		35,607	35,607
North Germany.....	357	138,022	138,379	357	138,022	138,379
Saxony.....		198,200	198,200		198,200	198,200
Austria.....	282,750	282,654	565,404	288,768	286,071	574,839
Piedmont.....	17,541	7,444	25,285	17,841	7,444	25,285
Spain.....	2,468	227,499	229,967	2,493	440,210	442,703
United Kingdom.....		109,980	109,980		160,000	160,000
Africa.....	203,900	1,056	204,956	203,900	1,056	204,956
Borneo.....	305,900	1,584	307,484	305,850	1,584	307,484
Avon.....		517	100,517		517	100,517
Malacca.....	72,240	374	72,614	72,240	374	72,614
Sumatra.....	68,719	330	69,049	68,719	330	69,049
Annam or Tonquin.....	30,585	53,460	84,045	30,585	53,460	84,045
Various countries*.....	50,975	33,000	83,975	50,975	33,000	83,975
Total of Europe, Africa, and Asia..	£4,545,192	£1,254,306	£5,799,498	£5,312,533	£1,528,592	£6,840,975
Total of North and South America..	1,301,560	5,261,619	6,563,179	13,341,989	7,259,824	20,601,813
Grand total.....	£5,846,752	£6,515,925	£12,362,677	£18,654,522	£8,788,416	£27,442,788

* Exclusive of China and Japan, which produce large quantities of gold and silver, the amount of which is quite unknown to Europeans.

Some small portion of the quantities exported to Egypt was probably detained in that country or forwarded to Australia. But by far the greater part, perhaps not less than nineteen-twentieths of the whole, was destined for, and went to, India. But although India did not, for several years prior to 1850, derive any considerable supply of bullion from Europe, she drew during that period large supplies from China. This was a consequence of the vast increase in the importations of opium into the latter. With the exception of tea and silk, China has few native products, other than the precious metals, fit for foreign markets. And the exports of the former being not much more than sufficient to pay for the products sent to her from Europe and America, a very considerable part of the cotton and opium imported from India is paid for in bullion, the increased exports of which are said to have latterly brought serious difficulties. It appears, for example, that at an average of the seventeen years ending with 1850-'51, the annual value of the merchandise exported from India to China amounted to £4,564,400 a year, and that of the merchandise imported to only £643,210, leaving a balance of no less than £3,921,190 a year to be paid in bullion, and in drafts on London and other places indebted to China. The following table, which is deduced from the account compiled by the Indian custom-house, shows the balance between the importation and exportation of treasure into and from India, for 17 years, 1834-'51. Since 1851 this current of gold and silver from Europe has largely increased, swelling the hoards of treasure in China and India.

ACCOUNT OF THE IMPORTS AND EXPORTS OF TREASURE INTO AND FROM INDIA DURING EACH OF THE 17 YEARS ENDING WITH 1850-'51.

Years.	Imports.	Exports.	Excess of Imports.
1834-'35	£1,83,023	£194,741	£1,08,282
1835-'36	2,146,435	108,109	2,038,326
1836-'37	2,036,167	263,994	1,772,233
1837-'38	2,610,101	340,056	2,269,445
1838-'39	3,010,920	347,906	2,663,014
1839-'40	1,945,264	470,523	1,474,741
1840-'41	1,786,253	366,486	1,419,767
1841-'42	1,841,535	515,076	1,326,269
1842-'43	3,443,292	215,797	3,227,495
1843-'44	4,794,673	746,076	4,048,602
1844-'45	5,752,472	1,106,540	2,645,532
1845-'46	2,495,159	816,028	1,679,931
1846-'47	2,939,922	719,870	2,226,052
1847-'48	1,973,391	1,46,093	547,333
1848-'49	4,204,508	2,539,743	1,664,760
1849-'50	3,596,807	971,244	2,426,562
1850-'51	8,311,800	541,289	3,270,520

Total excess of imports..... £36,427,905

Average annual excess of imports..... 2,142,818

Now it appears from this table that the imports of bullion into India during the seventeen years ending with 1850-'51, exceeded the exports by the gross sum of £36,427,905, being at the rate of £2,142,818 a year. The following tables show the countries from which the bullion imported into India during the four years ending with 1850-'51 was derived, and those to which the bullion exported was sent.

The accumulations of gold from California and Australia have created a strong desire for India and China goods, for which specie must be paid in lieu of domestic goods or produce from England or the United States.

TREASURE IMPORTED INTO INDIA FROM 1847-'48 TO 1850-'51.

Where from.	1847-'48.	1848-'49.	1849-'50.	1850-'51.
United Kingdom.....	£58,640	£36,884	£26,690	£503,030
Africa.....	12,689	14,496	16,435	13,354
America.....	84,850	18,125	6,949	9,736
Arabian and Persian Gulfs.....	335,268	336,310	465,189	472,092
Cape of Good Hope.....		200	1,119	2,814
Ceylon.....	67,424	65,847	109,145	371,368
China.....	1,036,343	3,109,002	2,326,917	1,845,284
France.....	2,099			18,378
Hamburg.....			867	
Mauritius and Bourbon.....	84,321	162,531	86,691	138,824
Pegu.....	42,034	54,402	84,902	76,806
Penang, Singapore, and Malacca.....	204,004	330,919	239,694	149,216
Sommesane.....	141	522	52	
Suez.....	4,980	24,006	32,156	210,853
Sumatra.....		1,200		55
Total.....	£1,973,391	£4,204,508	£3,396,907	£3,811,800

TREASURE EXPORTED FROM INDIA FROM 1847-'48 TO 1850-'51.

Where to.	1847-'48.	1848-'49.	1849-'50.	1850-'51.
United Kingdom	£706,659	£1,498,804	£118,488	£10,163
Africa	7,892	15,405	10,221	9,511
America	5,450	2,235	.....	700
Arabian and Persian Gulfs	87,152	68,270	60,400	46,060
Batavia and Java .....	.....	1,047	.....	2,186
Cape of Good Hope .....	.....	.....	£4	700
Ceylon	290,908	681,777	361,828	252,288
China	32,498	528	60,661	21,000
France .....	.....	64	6,600	.....
Java .....	.....	.....	30	.....
Mauritius and Bourbon	172,328	112,084	219,683	29,244
Malta and Gibraltar .....	.....	400	.....	.....
New South Wales	31	300	.....	100
Pegu	89,134	65,164	80,238	142,404
Penang, Singapore, and Malacca	33,205	15,398	28,684	26,242
Sonmeanes .....	.....	.....	183	.....
Suez	690	78,268	24,266	4,692
Total	£1,426,088	£2,530,743	£571,244	£241,289

It appears from these tables that China furnished two-thirds or more of all the bullion imported into India during the four years ending with 1850-'51; and that till the last-mentioned year the imports from Europe were quite inconsiderable, and greatly exceeded by the exports to it. China, indeed, has been long known to be both an importer and an exporter of bullion. But it is only within the last few years, or since the importations of opium became so immense, that her exports of bullion have become so very large as to make them productive of much inconvenience. The imports of bullion into India from the United States have, till recently, been too inconsiderable to deserve notice. A direct intercourse has now been commenced between San Francisco and the eastern hemisphere; but hitherto all shipments of bullion to India and China on American account have been made through London. During the year ending the 30th June, 1852, the Americans sent gold and silver to the amount of \$32,127,379 to England. But though the value of their imports from India and China during that year amounted to \$14,818,991, while that of their exports thither amounted to only \$3,267,675, they did not send to either a single dollar or a single dollar's worth of gold or silver direct from America.—*Report on Commerce and Navigation of the United States for 1852*, p. 36, et seq.

But under such circumstances there will be a corresponding increase of demand in India for the bullion of Australia and America. Indeed, the probability seems to be, from the late extraordinary importation of bullion from Europe, that the supply from China and elsewhere, notwithstanding its magnitude, had not sufficed fully to meet the wants of India. And independent of this circumstance, it is plain that a slight fall in the value of bullion in other countries would render it a still more advantageous article of export to India. And taking the vast extent and population of the peninsula into account, and the habit, universally prevalent in it, of hoarding the precious metals, it is impossible to say, supposing the treasure-current to continue to set in an easterly direction, how great a quantity of bullion might be thrown upon the markets of India and the adjacent countries before any very sensible reduction of its value was manifested. It is difficult satisfactorily to account for the extraordinary exportation of bullion to India in 1850-'52. Most probably it has been owing partly to circumstances connected with the demand for it in India, and partly to those peculiar to its supply in England and the United States. A certain portion (about \$15,000,000) of the annual imports from India and China consists of remittances on account of the East India Company's home charges. But independently of this item, the imports of Indian and Chinese goods into England and the United States have latterly been so very great, that they have left a balance to be defrayed by the export of specie. Most probably, also, the occupation of the Punjab has occasioned a demand for additional supplies of currency for that province, while consider-

able quantities would be wanted for the Burmese expedition. The refusal to receive gold in payment of revenue, though its influence has been exaggerated, has no doubt contributed to bring about the same result, or to increase the demand for silver in India. And it further appears that the balances of treasure belonging to the Indian government in its different treasuries throughout India have lately increased to an inconvenient extent, or to about 16 millions sterling, when from 8 to 10 millions would suffice for every purpose of regularity and security. But measures are now (1853) in progress connected with the liquidation of a portion of the Indian debt which will set free a considerable portion of this surplus treasure; and will thus have the double effect of diminishing or stopping the demand for silver in India, and of enabling the country to avail itself of the services of the capital which has been abstracted from the great work of production.—See an able article in the *Economist*, 3d December, 1853. It would also seem that while circumstances were occurring in India which account for the origin of the drain for bullion to that quarter and its continuance, there was simultaneously an excess of silver in America and Europe, occasioned by the substitution of gold for that metal in the currencies of the United States and of France. And such being the case, the renewed exportation of bullion to the East appears to be sufficiently accounted for, and to have been almost a matter of course.

In addition to the increased product in the American mines, there has been within the last twenty years an extraordinary increase in the produce of the Russo-Asiatic mines and washings, or rather of the latter. In 1830, for example, the produce of the Siberian gold washings was estimated at only 5½ poods; whereas it had increased in 1840 to above 240 poods, and in 1847 to no fewer than 1363 poods. In addition to the washings the Ural mines yield from 310 to 320 poods gold. The produce from both sources amounted in 1847, according to the official returns, to 1741 poods. But it has not been so great since, being in

1848.....	1726 poods.
1849.....	1587 "
1850.....	1485 "
1851.....	1432 "

The official authorities ascribe this falling off to the exhaustion of the deposits, and the unskillfulness of those engaged in the business. But it is doubtful whether the falling off be not more apparent than real, and whether it be not occasioned by the enormous taxes which have been imposed of late years on the gold obtained from the washings. The principal tax varies according to the produce, being 5 per cent. on washings that yield from 1 to 2 poods per annum, increasing by various steps till it amounts to 32 per cent. on those which yield 50 poods. And there are other duties which, though less in amount, are of the same oppressive character.

These exorbitant duties have, no doubt, tended to lessen the produce of the washings. It is, however,

all but certain that their principal effect has been to defeat themselves by tempting the parties concerned to adopt every means by which they might be evaded; and the notorious corruption of the Russian revenue officers renders this comparatively easy. Perhaps, under the circumstances, we may not be far wrong in supposing that from a third part to a half of the produce of the washings is exempted from the duty. But taking it at a third, and supposing the taxed produce of the washings to have amounted in 1851 to 1117 poods, the real produce would be 1489 poods; to which if we add 315 poods for the produce of the mines of the Oural, the aggregate total would amount to 1804 poods. And this, equal to 72,160 lbs. Troy, makes over \$18,905,000.

There has also been of late a considerable increase in the yield of the Spanish mines, which is at present supposed to amount to from \$2,250,000 to \$2,500,000 a year. Including the silver raised in Russia and elsewhere, and that obtained from the refining of lead, the produce of which in the United Kingdom exceeds \$1,000,000 a year (*see* LEAD), the total annual production of the precious metals in Europe may be roughly estimated at about \$7,500,000. On the whole, therefore, it would seem (excluding the produce of the Californian and Australian gold fields) that the aggregate production of the precious metals in Europe, America, and Asiatic Russia, may be supposed to have amounted in 1850-'51 (and it is probably about the same at present, 1853) to \$70,425,000, being about \$15,000,000 greater than their production in 1810, when the American mines had attained their maximum degree of productiveness. Notwithstanding the large addition made to the supply of gold by the Siberian washings, it appears to have been nearly balanced by the excess of silver produced in America and elsewhere. And the old proportion of about 15 to 1 between the values of gold and silver does not appear to have been sensibly affected previously to the discovery of the auriferous deposits in California and Australia.

Supplies of Gold from California and Australia.—But the discovery of these deposits threatens to bring about a most material change in the real, and perhaps also in the comparative values of the precious metals; and is, indeed, among the most remarkable events of which economical history has preserved any account. The gold is found in the *debris* of the quartz rocks in which it had been imbedded, sometimes in grains and flakes, and sometimes in lumps (nuggets), of varying, but occasionally of considerable magnitude. In some localities it is comparatively abundant; and the yield, both in California and Australia, is quite unprecedented, and such as would not previously have been conceived possible. The Californian deposits were discovered late in May or early in June, 1848; and notwithstanding the remoteness of the country, and the fact of its being almost destitute of inhabitants, above 5000 persons were attracted to the spot by the end of the season, who are supposed to have realized above £5,000,000. The news of the discovery and of the unexampled richness of the gold fields having spread on all sides with electrical rapidity, occasioned an extraordinary influx of immigrants from most parts of the world into California. The supplies of gold attained to an unexampled magnitude; cities rose in the wilderness as if by enchantment; the great Bay of San Francisco, which had hitherto been entirely deserted, was crowded with ships and steamers from the most distant countries; and California is now one of the States of the Union, with a population of from 250,000 to 300,000.—*See articles GOLD, CALIFORNIA, and PRICES*, for the production of gold up to the present time.

In addition to the regular shipments, very large amounts, of which no account is taken, are conveyed away from California by parties returning to Mexico, to the Eastern States, Europe, and China. Of these various estimates have been made; but the prevalent opinion in the best-informed quarters seem to be that,

when they are included, and allowance is also made for the quantity retained at home, the total yield of gold in California in 1852 may be moderately reckoned at from \$40,000,000 to \$50,000,000.

But vast as it certainly is, this production is exceeded by that of Australia. The deposits in the latter were not discovered till 1851. And they are so very rich, and the influx of immigrants has been so extraordinary, that the gold fields of Victoria only are estimated to have produced in 1852 no fewer than 4,247,657 oz., which, taken at the rate of \$18 an oz., gives a gross amount of \$76,457,826—(Statement by Mr. KHULL, of Melbourne); to which, adding \$15,000,000 for the estimated produce of the Sydney or New South Wales gold fields, the total produce of the continent will amount to \$91,457,826. On the whole, therefore, the present annual supply of gold and silver may be estimated at about £47,000,000 or \$209,905,000; viz.,

America (except California)	\$43,500,000
Europe	7,500,000
Russo-Asiatic provinces	18,905,000
California	45,000,000
Australia	95,000,000
Total	\$209,905,000

Consumption of the Precious Metals.—In order to form a reasonable conjecture in regard to the probable influence of this vast supply of the precious metals, it is necessary to inquire into their uses and probable consumption. And this inquiry, we regret to say, is still more difficult, and more likely to be infected with errors, than the inquiry in regard to their production. The precious metals are used as coin or currency to facilitate exchanges; as wealth which may be conveniently kept or hoarded; and they are used in the arts, as plate, in gilding, etc. The quantities employed in these functions are very large indeed. They vary, however, in different countries and periods with the circumstances peculiar to each; such, for example, as the greater or less abundance of paper money, and the degree in which the use of coins is lessened by the various devices resorted to for economizing currency; the fashion, as to plate and furniture; the feeling of security at the time; and a number of other circumstances, all liable to great and sometimes sudden changes. The gold and silver employed in Great Britain as currency, and in the customary reserves in the hands of the bankers, is supposed to amount to at least \$200,000,000. In France the precious metals employed in the same way probably amount to double that sum, or to \$400,000,000. The amount in the United States employed for the same purposes may be stated at \$275,000,000. And we believe that we may estimate the entire sum employed as currency in Europe, America (North and South), Australia, the Cape of Good Hope, and Algeria, at about \$1,900,000,000. It would be inconsistent with the objects of this article, and with the limits within which it must be confined, to engage in a discussion of the numerous, and often conflicting, statements and details on which this estimate has been founded. Some information with respect to it may be found in Chevalier's valuable treatise *De la Monnaie* (p. 326, etc.), Paris, 1850; in Stirling's *Gold Discoveries*, p. 182; in the learned and excellent tract of Tegoborski, *Essai de la Découverte des Gîtes Aurifères en Californie et en Australie*, etc., p. 65; and in a host of other publications. The precious metals in circulation in Russia in the early part of 1851 were estimated in the *Petersburg Gazette* (October 12, 1852) at 326,000,000 roubles, equal, at 80 cents per rouble, to \$260,000,000. The greater part (190,000,000 roubles) of this currency consisted of gold. Now, supposing this sum to be employed, as above stated, as currency, we have first to inquire into its probable wear and tear and loss, and then into the probable rate of its increase. And taking into account the extraordinary extension of navigation, and the proportional risk of loss from shipwreck and other casualties, we are disposed to think that the

annual wear and tear and loss of coin may be estimated at about $1\frac{1}{2}$ per cent. of the entire mass of the currency, which, taking the latter at \$1,900,000,000, would amount to \$28,500,000 a year. It is difficult to form any probable estimate of the rate at which the bullion used as currency may be likely to increase, supposing its value not to fall off. But considering the extremely rapid increase of refinement and population in most parts of the civilized world, and especially in America and Australia, we scarcely think that we shall be exaggerating if we estimate this increase at 3 per cent.; which on \$1,900,000,000 would amount to \$57,000,000 a year. It is impossible, however, supposing this estimate not to be very wide of the mark at present, to conjecture how long the currency will go on increasing in this ratio. It may, indeed, be safely taken for granted that the sphere of civilization and commerce is destined rapidly to expand. But their expansion will, no doubt, be accompanied with various contrivances for economizing the use of metallic money, so that the quantity of it in circulation can hardly be supposed to increase for any very lengthened period at the rate stated above. If it did, it would absorb an immense supply of gold. In barbarous countries, and in those entering on the career of civilization, the coins afloat may increase at the rate of 3 or 5 per cent., or more. But in countries which are more advanced its increase will be less, perhaps, than even 1 per cent.

It is equally difficult to acquire any satisfactory information in regard to the quantity of bullion consumed in the arts. Jacob estimated its amount in Europe and America, in 1830, at about \$29,500,000 a year. This estimate was in various respects wide of the mark, and it was, on the whole, considerably under the true amount. And supposing the consumption of the precious metals in the arts to have amounted to 82½ or 85 million dollars in 1830, it must now be much greater. There has every where, but more especially in England, America, Germany, and Russia, been an extraordinary increase of population and wealth during the last twenty-seven years. And the taste for plate, splendid furniture, and luxurious accommodations of all sorts, has certainly increased in at least an equal degree. It is well known that speculators and those who rapidly attain to affluence are the principal buyers of plate and other costly articles. And taking these and other circumstances into account, we are disposed to conclude that the expenditure of bullion in the arts in Europe, America, and Australia can not at present (1853) be under, if it do not exceed, 70 million dollars a year. But of this a portion, estimated at about one-fifth or 20 per cent., is supposed to be obtained from the fusion of old plate, the burning of lace, picture frames, etc. And hence, if we deduct from the 70 million dollars used in the arts 20 per cent. for the old bullion, we have \$56,000,000 for the total quantity of the supplies from the mines annually disposed of in this way; a considerable portion of which, including that used in the gilding of rooms, books, harness, buttons, etc., can never be again recovered or applied to any useful purpose. This quantity, however great it may appear to be, will be increased with the increase of population, and the spread of refinement and the arts; and it will also be certainly increased by any thing like a considerable fall in the value of bullion. Hence it would appear, putting these items together, that the regular annual consumption of bullion as currency and in the arts amounts to about \$141,500,000; viz.,

Wear and tear, and loss of coin	\$28,500,000
Increase of currency.....	57,000,000
Used in the arts	56,000,000
Total.....	\$141,500,000

It may be said, perhaps, that these estimates must be exaggerated, inasmuch as the sum which, it appears from them, is annually consumed exceeds the entire

produce of the mines previously to the supplies from California and Australia. But while we admit the fact to be as stated, we deny the inference which is attempted to be drawn from it. The truth is, that while the discovery of the Californian and Australian deposits has added in so great a degree to the supply of bullion, it has also added very largely to its consumption. It has given an unparalleled stimulus to emigration and commerce. The rise of wages and prices consequent on these extraordinary mutations, and on the increased exports of produce which they have occasioned, is making itself felt in the United States as well as in Europe; and here, consequently, as well as there, a greater supply of bullion will be required to serve as currency. And while this influence is operating on the one hand, on the other the swarms of *parvenus* who are returning from the gold fields, with pockets stuffed with the produce of all sorts of successful adventures, are every where contributing to increase the demand for all sorts of things, but especially for plate, jewelry, and other ostentatious finery.

Exportation of Gold and Silver to the East.—Besides the countries already mentioned, there is a vast portion of the earth's surface, including Turkey in Asia, Persia, Hindostan, China, and other Eastern territories, into which bullion has been largely imported from the remotest era. Humboldt estimated that, of the entire produce of the American mines at the beginning of this century, amounting, as already seen, to \$43,500,000, no less than \$25,500,000 were sent to Asia, \$17,500,000 by the Cape of Good Hope, \$4,000,000 by the Levant, and \$4,000,000 through the Russian frontier. Probably, however, this estimate was a good deal beyond the mark. "Humboldt, cela n'est plus douteux, estimait trop haut la valeur de l'or et de l'argent, qui s'écoulaient au commencement de ce siècle d'Europe en Asie, et portaient trop bas la déperdition qu'ils éprouvaient, dans la même temps, par le frottement et leur conversion en objets d'orfèvrerie et de bijouterie."—*Dupuy-node de la Monnaie*, etc., i. p. 36. There is no longer, we believe, any doubt in regard to the accuracy of the latter part of this statement; and it is pretty generally supposed that the first part is also well founded. But some years ago this immense drain began to diminish, and in 1832 and 1833 it actually set in an opposite direction. Since then it has fluctuated, sometimes inclining to the one side, and sometimes to the other. With the exception, however, of the bullion received by England in payment of the \$21,000,000 due by China, under the treaty of 1842, there was not for some years any very decided movement of bullion from Europe to the East, or from the East to Europe, though, on the whole, the imports into the latter appear to have exceeded the exports; at least, this was certainly the case during the five years from 1844-'45 to 1848-'49, both inclusive. But very recently, or within the last four years (1850-'53) the drain for bullion for the East has set in with renewed force; so much so, that in 1852 no fewer than 12,655,393 oz. silver were shipped from the United Kingdom for India and Egypt.

This continued process of export of gold and silver is attributed by some writers to the excessive use of paper money, whereby the latter supersedes in commercial channels the use of the former. "There can be no doubt that the ultimate effect of a purely specie currency (or a paper currency based entirely on specie) would be in the highest degree beneficial to all departments of industry and enterprise. It is a currency that can not fluctuate. It may expand with the increased quantity of the precious metals, but there is hardly a possibility of its contracting; and its expansion must take place by the operation of causes which operate equally throughout the civilized world."—*North American Review*, January, 1858.

The following table shows the export of coin and bullion from Great Britain to the East during each of the 10 years ending with 1852.

AN ACCOUNT OF THE QUANTITIES OF GOLD AND SILVER, RESPECTIVELY, EXPORTED TO INDIA, CHINA, AND EGYPT, FROM GREAT BRITAIN, DURING EACH OF THE TEN YEARS ENDING WITH 1852, DISTINGUISHING BETWEEN BRITISH AND FOREIGN COIN, AND BETWEEN COIN AND BULLION.

Countries.	Years.	British Gold Coin.	Foreign Gold Coin.	Total of Gold.	British Silver Coin.	Foreign Silver Coin.	Silver Bullion.	Total of Silver.
		Ounces.	Ounces.	Ounces.	Ounces.	Ounces.	Ounces.	Ounces.
	1843	7,877	...	7,877	18,180	122,450	333,779	494,409
	1844	5,944	...	5,944	...	...	...	...
	1845	115	...	115	...	...	...	...
	1846	2,518	...	2,518	...	800	...	800
To the British Possessions in India.....	1847	2,014	...	2,014	...	350	...	350
	1848	1,208	...	1,208	1,287	12,850	...	14,137
	1849	651	...	651	...	...	...	...
	1850	9,628	...	9,628	920	198,826	134,000	328,746
	1851	5,155	...	5,155	...	137,620	145,833	283,453
To China.....	1852	16,356	...	16,356	77,000	626,864	379,893	1,083,747
	1843	...	...	...	...	601,277	...	601,277
	1844	...	...	...	...	263,828	...	263,828
	1845	...	...	...	...	187,614	...	187,614
	1846	...	...	...	...	26,406	...	26,406
To Egypt.....	1850	1,917	...	1,917	60	62,000	...	62,060
	1851	34	...	34	...	38,800	8,500	47,300
	1852	...	...	...	800	...	...	800
	1843	2,500	...	2,500	...	15,000	...	15,000
	1844	40	...	40	40,600	600	...	40,600
	1845	250	...	250	4,200	7,000	...	11,200
	1846	3,186	...	3,186	...	...	...	...
	1847	12,546	200	12,746	2,500	9,000	...	11,500
	1848	2,420	...	2,420	...	...	...	...
	1849	921	...	921	14,000	40,000	...	54,000
	1850	13,919	...	13,919	105,280	141,177	145,488	391,945
	1851	70,437	...	70,437	126,420	2,319,688	3,808,289	6,254,307
	1852	62,341	152	62,493	140,783	8,850,613	2,580,240	11,571,636

GOLD, SILVER, AND BANK-NOTES IN THE U. S.

STATEMENT OF THE AMOUNT OF GOLD AND SILVER SUPPOSED TO BE IN CIRCULATION, OF THE AMOUNT SUPPOSED TO BE IN THE BANKS, OF THE WHOLE AMOUNT SUPPOSED TO BE IN THE COUNTRY, AND OF THE AMOUNT OF BANK-NOTES IN CIRCULATION IN DIFFERENT YEARS, ACCORDING TO THE AUTHORITIES QUOTED IN THE FOOT-NOTES.

Years.	Specie in Circulation.	Specie in the Banks.	Total of Specie in the Country.	Bank-notes in Circulation.
	Millions.	Millions.	Millions.	Millions.
1790*	.....	.....	9	24
1791*	.....	.....	16	9
1792*	.....	.....	18	11½
1793*	.....	.....	20	11
1794*	.....	.....	21½	11½
1795*	.....	.....	19	11
1796*	.....	.....	16½	10½
1797*	.....	.....	16	10
1798*	.....	.....	14	9
1799*	.....	.....	17	10
1800*	.....	.....	17½	10½
1801*	.....	.....	17	11
1802*	.....	.....	16½	10
1803*	.....	.....	16	11
1804*	.....	.....	17½	14
1805*	.....	.....	18	15
1806*	.....	.....	18½	17
1807*	.....	.....	20	18
1811†	.....	15½	.....	28 to 30
1815†	.....	17	.....	45 to 47
1816†	7½	10	26½	68 to 70
1820†	.....	19 3	.....	44 8
1830†	10	22½	32½	61
1834†	.....	.....	.....	94
1835†	.....	.....	.....	103
1836†	25	41	65	140
1837†	35	38	73	140
1838†	52½	35	87½	116
1839†	42	45	87	135
1840†	50	33	83	107
1841**	35 to 45	85	70 to 80	107
1842	.....	28½	.....	83 7
1843	.....	33½	.....	88 5
1844†	50	60	100	75
1845†	52	44	96	90
1846†	55	42	97	105½
1847†	85	35	120	105½
1848†	66	41	112	128½
1849†	77	43	120	114 7
1850†	100	45	154	131
1851†	133	43	186	155
1852†	.....	.....	204	.....
1853†	.....	.....	236	.....
1854†	191	50	250	204 6
1855†	.....	54	.....	187

AUTHORITIES.—* BLODGET. † GALLATIN. ‡ Congressional Reports. § Treasury Report. ¶ WOODBURY. † HAZARD, Commercial Register. ** GOUGE, Journal of Banking. †† HUNT, Merchants' Magazine. ‡‡ Estimates.

The amounts of specie in the banks and of bank-notes in circulation from 1835 to 1855, inclusive, have

been taken from the annual treasury reports on the condition of the banks. The amount of specie supposed to be in circulation in different years is according to the authorities quoted. The estimates are from Doc. 34 (p. 280), appended to the Report on Finances of December 4, 1854, except that for 1855, which has been completed from data more lately received.

AMOUNT OF COINAGE OF GOLD AND SILVER BY THE UNITED STATES MINT.

From January 1, 1794	Amount.
1830.....	\$37,096,112 90
1831.....	3,889,870 00
1832.....	3,877,435 00
1833.....	3,787,550 00
1834.....	7,369,272 00
1835.....	5,629,178 00
1836.....	7,741,800 00
1837.....	3,244,315 00
1838.....	4,124,845 00
1839.....	3,474,896 00
1840.....	8,402,980 00
1841.....	2,217,972 50
1842.....	4,158,920 50
To June 30, 1843.....	12,025,037 50
1844.....	7,668,780 00
1845.....	5,629,047 50
1846.....	6,592,757 50
1847.....	22,595,835 00
1848.....	5,815,562 50
1849.....	11,122,711 50
1850.....	33,847,888 50
1851.....	63,388,889 50
1852.....	57,845,597 50
1853.....	64,291,477 04
1854.....	60,713,865 47
1855.....	41,060,302 93
1856.....	52,479,116 40
Total.....	\$637,537,066 64

We give annexed a statement showing the movement of specie from the United States since the year 1820; also the amount that goes to England. It should be noticed that we do not send our specie to England to pay debts to that country, for the balance of trade between the two countries from 1820 to 1856 was \$5,000,000 in favor of the United States. We send through England specie to pay our excessive importations of foreign manufactured goods from the Continent, and to pay for teas and other foreign productions. The aggregate loss of specie to this country in the decades since 1820 has been as follows:

	Gain.	Loss.
From the year 1820 to 1830.....		\$2,528,849
" " " 1830 " 1840.....	\$50,629,403	
" " " 1840 " 1850.....		21,895,235
" " " 1850 " 1856.....		218,122,045
Deduct gain from 1830 to 1840...		\$237,545,129
Aggregate loss.....		\$50,629,403
		\$186,915,726

STATEMENT SHOWING THE EXPORTS FROM AND IMPORTS INTO OF SPECIE FROM THE UNITED STATES (DISTINGUISHING THE EXPORTS TO AND IMPORTS FROM ENGLAND) FROM OCTOBER 1, 1820 TO JULY 1, 1857.

Year ending	Exports to England.	Imports from England.	Total Exports from the U. S.	Total Imports into the U. S.
Sept. 30, 1821..	1,933,665	645,529	10,478,059	8,064,890
1822..	796,218	99,920	10,810,180	8,669,846
1823..	865,632	282,822	6,372,987	5,097,896
1824..	312,112	149,164	7,014,552	8,379,835
1825..	303,266	82,888	8,932,034	6,150,765
1826..	698,071	122,216	4,704,533	6,880,966
1827..	200,101	34,111	8,014,880	8,151,130
1828..	2,552,209	20,972	8,248,476	7,489,741
1829..	673,833	39,826	4,924,420	7,408,612
1830..	112,229	144,231	2,178,773	8,155,964
Total.....	8,247,342	1,621,679	71,673,434	69,144,646
Sept. 30, 1831..	1,615,643	130,830	9,014,931	7,908,945
1832..	1,112,298	83,689	5,656,849	5,907,504
1833..	244	31,003	2,611,701	7,070,368
1834..	270	5,805,613	2,076,758	17,911,632
1835..	33,037	1,803,438	6,417,775	13,131,447
1836..	2,503	2,322,920	4,324,336	10,490,831
1837..	1,833,070	116,299	5,976,249	10,516,414
1838..	10,135	9,009,546	3,508,446	17,747,116
1839..	3,163,490	1,420,092	8,776,743	5,595,176
1840..	4,583,783	803,306	8,417,014	8,882,313
Total.....	12,160,527	21,027,386	56,839,833	107,469,276
Sept. 31, 1841..	3,018,137	580,530	10,084,332	4,988,633
1842..	1,702,743	205,919	4,813,539	4,087,016
9 mos., 1843*.	400	14,305,714	1,520,791	22,890,559
June 30, 1844..	85,706	1,131,959	5,454,214	5,330,429
1845..	3,673,137	180,828	8,606,495	4,070,242
1846..	973,110	492,711	3,905,268	3,777,732
1847..	8,055	19,312,930	1,907,024	24,121,289
1848..	9,318,633	1,916,952	15,841,616	6,360,224
1849..	764,037	2,671,792	5,404,648	6,051,240
1850..	2,534,185	527,206	7,522,994	4,628,792
Total.....	22,078,208	41,316,601	65,010,921	86,906,156
June 30, 1851..	17,099,081	1,098,667	29,472,752	5,453,592
1852..	34,302,284	1,487,484	42,674,135	5,506,044
1853..	18,631,900	254,799	27,486,875	4,201,382
1854..	27,926,263	85,156	41,281,504	6,758,587
1855..	47,958,015	107,464	56,247,343	3,659,812
1856..	34,161,062	421,971	45,745,485	4,207,632
1857..	50,890,285	4,069,054	69,136,922	12,461,799

* Nine months to June 30, and the fiscal year from this time begins July 1.

Burying of Gold and Silver.—It is singular that, in estimating the consumption of gold and silver, Jacob did not make any allusion to the practice which has uniformly prevailed in all countries harassed by intestine commotions, or exposed to foreign invasion, of burying treasure in the earth. Of the hoards so deposited, a very considerable portion has been altogether lost; and there can be no doubt that this has been one of the principal means by which the stock of the precious metals has been kept down to its present level. Every one is aware that during the Middle Ages *treasure-trove*, or money dug from the ground by chance finders, belonged to the Crown, and formed no inconsiderable part of the royal revenue of England and other countries. The practice has always prevailed in Turkey, Persia, India, China, and generally in all parts of the East. The extortion practiced on the inhabitants, and the want of all security, make them look upon the money they have hidden as their only wealth, the only thing which they can really call their own. "In India," says Mr. Luke Scrafton, "the Hindoos bury their money under ground, often with such secrecy as not to trust their own children with the knowledge of it; and it is amazing what they will suffer rather than betray it. When their tyrants have tried all manner of corporal punishments on them, they threaten to defile them; but even that often fails; for, resentment prevailing over the love of life, they frequently rip up their bowels, or poison themselves, and carry the secret to their graves. And the sums lost in this manner in some measure account why the silver of India does not appear to increase, though there are such quantities continually coming into it, and none going out."—*On the Government of Hindostan*, p. 16,

etc.; see also BERNIER, *Voyage de Mogol*, Amsterdam, 1710, i. p. 209.

The comparative security now enjoyed by the Hindoos must latterly have lessened this practice. But a habit so prevalent and so deeply rooted is not easily eradicated; and though the illegal exactions of their rulers be curbed or put an end to, there is in many parts of India a great deal of robbery and insecurity. At all events, the practice of burying treasure is still very general in it; and at this moment it prevails to a great extent throughout all the vast countries which stretch from the Adriatic to the Chinese Sea. We have been assured by persons well qualified to form an opinion that the stimulus given to the burying of treasure by the intestine commotions now prevalent in China must have already occasioned the disappearance of full 20 or 25 millions sterling! And the previous statements confirm in some measure this estimate. But we must not imagine that the burying of treasure is confined to the East. Wherever property is insecure, it is invariably resorted to. Wakefield tells us that it used to be common in Ireland (*Account of Ireland*, i. 593); and we are informed that it continues to this day to be pretty prevalent in that country. It has always been acted on to a considerable extent in Russia, Germany, Italy, and France; and in the latter, during the revolutionary anarchy, immense sums were buried, of which it is abundantly certain a large proportion will never be resuscitated. The wars and convulsions by which Europe was desolated for more than 20 years made the practice be carried to a great height in all parts of the Continent, and withdrew in this way from circulation a very considerable part of the increased produce of the mines.—STORCH, *Economie Politique*, i. 221, Paris, 1823. And large sums are still, no doubt, disposed of in the same way.

General Remarks.—These statements, how imperfect soever, are sufficient to show that the field over which the precious metals are spread is so immense, and the demand for them so great and various, and so likely to increase, that it is not easy to imagine that their value can be speedily reduced, at least in any sensible degree. Nevertheless, if we be warranted in estimating as above the present supply at \$235,000,000 a year, and their consumption (including an allowance for the increasing stock of coin) at \$141,500,000 a year, it would be idle to suppose that this excess of \$93,500,000 beyond the existing demand should be speedily balanced, or that it should not in the end occasion a serious decline in their value. But much, or rather every thing, will depend on the continuance of the supply; and here we have nothing to go upon but the merest conjecture. The probability, indeed, would seem to be that the supply both from California and Australia will increase for some considerable time to come. Vast, however, as is the area over which the gold deposits are scattered in these countries, still there can be little or no doubt that they will gradually be exhausted. The population attracted to the "diggings" is already so great, while (in Australia, at all events) it is increasing so rapidly, and is so thoroughly imbued with the *auri sacra fames*, that it bids fair in no very long time to rifle all the richest beds. And supposing that they are either wholly, or to a considerable degree, exhausted, it may be doubtful whether the gold obtained by a more laborious search, or by crushing quartz rocks, will yield more than a reasonable profit on the capital employed, if so much.

In all speculations in regard to the probable future supply of gold it should be carefully borne in mind that any considerable fall in its value would unavoidably check its production, and, consequently, tend to lessen or prevent its further fall. It is plain, for example, that a decline of 10 per cent. in the value of gold would, *ceteris paribus*, occasion the abandonment of all those mines, diggings, washings, etc., which only yield a net profit of that amount. We are aware that,

owing to the production of gold, as at present carried on, having more of a gambling character than pertains to most branches of industry, the principle now stated would not operate so speedily as might perhaps be anticipated. But of its ultimate operation there can be no question. And it may, therefore, be laid down that any reduction in the value of gold which is not accompanied by a corresponding improvement in the methods of its production inevitably tends to correct itself, or to check or hinder its further reduction. It is idle, therefore, where so much is uncertain, and indeed altogether unknown, to attempt to draw any conclusions entitled to much attention with respect to the probable future supply of the precious metals. But supposing it to go on for a few years as at present, or not materially to decline, and that their value is in consequence gradually reduced, there is no good ground for apprehending that this reduction will have any injurious results. If it take place, it will be slow, and will not suddenly affect the incomes or the position of individuals. And we have elsewhere endeavored to show that the changes which, under these conditions, may be ultimately effected by a decline in the value of bullion, will, in a national point of view, be eminently desirable and beneficial.—*Treatise on Taxation*, 2d ed., p. 375–387; see also an able article in the *American Review* for October, 1852. We have seen nothing to induce us to change or modify in any degree this opinion. Some stress has been laid on the circumstance of the sums payable under life insurances falling in value with a decrease in the value of money. But the great majority of people are, and all may be, insured in mutual insurance offices, and may provide by proper investments against loss. No fall within the compass of probability is likely seriously to affect the existing race of annuitants. And those who are now buying annuities know what they may expect, and their heirs will have them only to blame if they do not guard against probable contingencies.

Substitution of Gold for Silver.—The production of gold has very largely increased since 1818, as compared with that of silver; and if this state of things go on, the value of silver, measured in gold, can hardly fail gradually to rise. But it is by no means clear that it will go on. The supplies of silver are increasing in most parts of the world, particularly in Mexico and Europe. And the increased supplies of quicksilver obtained from California and other places will powerfully contribute still further to augment the supplies of silver. It is also to be observed that a comparatively considerable rise in the value of silver as compared with gold is sufficient, unless prevented by legislative enactments, to make the latter be used in preference to the former in the currency of those countries in which both metals are legal tender. Hitherto both gold and silver coins have been legal tender in the United States, France, and some other countries. But when such is the case the value of the coins in respect to each other has to be fixed by authority, that is, it has to be enacted that debts may be discharged by payments either of gold or silver money at the rate of so many dollars to the eagle, francs to the Napoleon d'or, shillings to the sovereign, and so on, as laid down in the Mint valuations of the different countries. And we have already explained (*art. COINS*) that, however correct at the periods when they are made, these valuations speedily become incorrect; and that whenever such is the case, it is for every body's advantage to make all payments in the metal which happens to be overvalued as compared with the other. And hence (as seen in the article referred to) the use of gold as money in preference to silver in England, and of silver in preference to gold in France and the United States.

In accordance with these statements, it would seem that the change which has taken place in the relative values of gold and silver, though not very appreciable, is quite enough to make the former be employed in-

stead of the latter in all countries where they are equally legal tender. In 1849, for example, the gold coined in France amounted to only 27,109,560 francs, whereas in 1851 it amounted to 285,237,280 francs! In the United States the coinage of gold has increased in a somewhat similar ratio, having risen from \$9,007,761 in 1849 to \$62,614,492 in 1851, and to \$52,846,187 in 1852. There is, therefore, every probability that in no long time gold coin will be used in these two countries in all considerable payments which are not effected by means of notes or checks. This substitution of gold for silver, while it materially enlarges the field for the employment of the former, proportionally narrows that for the employment of the latter. And hence a very considerable permanent increase may be made to the comparative supply of gold without its value, measured in silver, being materially affected. In the end, no doubt, the values of both metals will be proportioned, independently of variations of demand, to the respective costs of their production. But before this equalization can take place, they must be distributed among the various countries of the world according to the circumstances peculiar to each, including therein the novel conditions of their supply.

In Holland and India that substitution of gold for silver coin, which is taking place in the United States and France, has been hindered by the intervention of government, which has declared that silver only shall be legal tender. In Holland this was effected by laws passed in 1847 and 1849, and in India by enactments in 1835 and 1852. The value of the gold coin that was consequently liberated in Holland has been estimated at about 172,000,000 florins, a considerable portion of which has been absorbed in the new gold currency of France. We may add that the additional quantity of silver required through the cessation of gold as currency for the supply of the Dutch mints, slightly affected the price of the former, which afterward fell to nearly its old level.

In India, where wages have always been very low, the great bulk of the coin in circulation has consisted of silver; and in 1835 it was made the only legal tender. But though not legal tender, gold coins continued to circulate in India; and a proclamation issued in 1841 directed them to be received at the public treasuries. Little attention was paid to this measure at the time; but after the discovery of the gold deposits in Australia, it became obvious, if gold coins continued to be received by the public departments, that eventually none else would be paid into them; and that silver would cease to be employed except in petty payments. This contingency appears to have alarmed the government; and notice was accordingly given on the 22d of December, 1852, that from and after the 1st of January next (1853) gold coins would not be received on account of taxes or other payments due to the public. Silver has, consequently, again become in fact, as well as in law, the sole legal tender of India. A good deal of controversy has taken place in regard to this measure. It is plain, however, that by continuing to act on the proclamation of 1841, government would have practically set aside the law of 1835, which made silver the only legal tender; and would thus have made itself responsible for all the losses that might in consequence have resulted to individuals, while it would also have become liable to the risk of having its own revenues reduced by the anticipated fall in the value of gold. No doubt, therefore, the repeal of the proclamation referred to was consistent with good faith, and in some degree also with sound policy. At the same time, we regret that the situation of affairs in India should have been such as to require that an attempt should be made to exclude gold from the circulation. Most likely it would otherwise have absorbed considerable supplies of that metal; and we incline to think, for the reasons previously stated, that it will do so, notwithstanding its exclusion from the public treas-

ury. In other respects the change would have been of little practical importance. There are extremely few persons in India, as compared with those in England and most European countries, who would have suffered by a fall in the value of money; and government could have readily indemnified itself for any loss it might thereby have incurred. A further substitution of gold for silver will also be probably brought about by using gold coins of less value than formerly. In most countries, for example, gold might be advantageously coined into one-dollar pieces. It would be inconvenient, perhaps, to have gold coins worth less than this; but of this value their employment would be beneficial as well by economizing the use of silver as by their being more convenient and easily carried about.

The lessened demand for silver in Europe and the United States, and the greater demand for it in India, arising out of the circumstances now and previously adverted to, have contributed to that immense exportation of silver to the East to which we have already called the reader's attention. But there are no satisfactory reasons for thinking, unless some fresh changes take place in the circumstances under which gold and silver are produced, that this exportation of silver will be of long continuance. It is difficult, indeed, to say how great a quantity of silver might be imported into India without sensibly affecting its value there; but the increase of its value in Europe, arising from the diminution of its supply, will eventually hinder its being sent elsewhere.

The apprehensions that were formerly so very prevalent, even among those who should have known better, in regard to an immediate and heavy fall in the value of gold have now in great measure subsided. It appears to be now pretty generally admitted that if a fall should take place, it will only manifest itself by slow degrees; and this conclusion would appear to be pretty well founded.

The supplies of gold from Australia have fallen off very greatly since 1852. In proof of this we subjoin a statement by Mr. Hull, of Melbourne, showing the

COMPARATIVE PRODUCE OF THE GOLD FIELDS OF VICTORIA
IN 1852, 1853, AND 1854.

Years.	Ascertained Ounces.	Unrecorded Ounces.	Total Ounces.	Price per oz.	Value.
1852	3,150,342	1,088,325	4,247,667	70s.	£14,866,799
1853	2,274,152	816,190	3,090,342	75s.	11,588,752
1854	1,831,434	561,264	2,392,698	80s.	8,770,796

Now supposing that the supplies from the gold fields of New South Wales and other parts raised the total produce of Australian gold in 1854 to \$50,000,000, still that would be little more than half the estimated produce (\$95,000,000) of 1852; a decline which would go far to check any downward tendency, if such there were, in the value of gold. It is affirmed, indeed, in communications from Victoria, that the produce of the gold fields in the current year (1855) will exceed their produce in 1854. This, however, is doubtful; but supposing it to be the case, and that their produce should amount to \$50,000,000, still that would be nearly \$25,000,000 below its amount in 1852. And though it be quite impossible to say whether the yield of the current year (1855) is destined to increase or fall off in time to come, our anticipations are rather in favor of a decline. The great excitement of the gold fields has already pretty well subsided, both in Australia and California. They are found to be a lottery with many great prizes, but in which notwithstanding the blanks very largely predominate. The probability, indeed, seems to be that the deposits of stream gold will in no lengthened period be comparatively exhausted; and that gold in future will have to be principally obtained by the crushing of quartz rocks, an employment which is rarely found to be productive of more than ordinary profits. The supply of silver from Mexico is now (1855) supposed to amount to from \$28,000,000 to \$30,000,000 a year. On the other hand, however, the

supply of the precious metals from Russia has decreased.

On the whole, it may be concluded that at present no decline need be expected in the value of the precious metals. On the contrary, an increase of their value would seem to be more probable. Most likely, however, it will continue about stationary till it begins to be influenced by some new combination of circumstances. — See article PRICES. Refer also to CALIFORNIA, GOLD, BANKS, COINAGE; also *Bankers' Magazine*, vols. iii. (the last essay on the subject by BARON HUMBOLDT), iv. v. vi. vii. viii. ix. x. xi. xii., New York, 1848-1857.

Premium. See INSURANCE.

Press, the Printing. This great engine was of rude construction from the period of the discovery of the art of printing, up to the close of the 18th century, when many improvements were made. William Caxton, a mercer of London, had a press set up at Westminster, 1471.—*Stowe's Chronicle*. The Earl of Stanhope's presses were in general use in 1806. The printing-machine was invented by Koenig in 1811, and Applegath's followed. The Columbian press of Clymer was produced in 1814; and the Albion press, an improvement on this last, came into use a few years after. Printing by means of steam-machinery was first executed in England at the *Times* office, London, on Monday, November 28, 1814. Cowper's and Applegath's rollers for distributing the ink upon the types were brought into use in 1817. Vast improvements have been made in the United States within a few years, both in hand and steam presses. The most celebrated manufacturers probably are R. Hoe & Co., of New York. Their largest presses for newspapers are capable of throwing off over 20,000 sheets per hour, which is so much in advance of any presses in Europe that they have supplied orders from Paris. The presses of Seth Adams & Co., of Boston, are perhaps the best in the world for book printing. See article BOOKS.

Press-gang, the name given in England to a detachment of seamen, who (under the command of a lieutenant) are empowered, in time of war, to take any sea-faring men, and oblige them to serve on board the king's ships.

Press of Sail, signifies as much sail as the then state of the wind, etc., will permit a ship to carry.

Prices. By the price of a commodity is meant its value estimated in money, or simply the quantity of money for which it will exchange. The price of a commodity rises when it fetches more, and falls when it fetches less money.

1. *Price of freely-produced Commodities.*—The exchangeable value of commodities—that is, their power of exchanging for or buying other commodities—depends, at any given period, partly on the comparative facility of their production, and partly on the relation of the supply and demand. If any two or more commodities respectively required the same outlay of capital and labor to bring them to market, and if the supply of each were adjusted exactly according to the effectual demand—that is, were they all in sufficient abundance, and no more, to supply the wants of those able and willing to pay the outlay upon them, and the ordinary rate of profit at the time—they would each fetch the same price, or exchange for the same quantity of any other commodity. But if any single commodity should happen to require less or more capital and labor for its production, while the quantity required to produce the others continued stationary, its value, as compared with them, would, in the first case, fall; and in the second, rise; and, supposing the cost of its production not to vary, its value might be increased by a falling off in the supply, or by an increase of demand, and conversely. But it is of importance to bear in mind that all variations of price arising from any disproportion in the supply and demand of such commodities as may be *freely produced in indefinite quantities* are temporary only; while those that are occasioned by changes

in the cost of their production are *permanent*, at least as much so as the cause in which they originate. A general mourning occasions a transient rise in the price of black cloth; but supposing that the fashion of wearing black were to continue, its price would not permanently vary; for those who previously manufactured blue and brown cloths, etc., would henceforth manufacture only black cloth; and the supply being in this way increased to the same extent as the demand, the price would settle at its old level. Hence the importance of distinguishing between a variation of price originating in a change of fashion or other accidental circumstance—such, for example, as a deficient harvest—and a variation occasioned by some change in the cost of production. In the former case, prices will, at no distant period, revert to their old level; in the latter the variation will be lasting. When the *price* of a freely produced commodity rises or falls, such variation may evidently be occasioned either by something affecting its value, or by something affecting the value of money. But when the generality of commodities rise or fall, the fair presumption is that the change is not in them, but in the money with which they are compared. This conclusion does not, however, apply in all cases; and we believe that most part of that fall in the price of commodities, which has taken place since the peace, and which has been so generally ascribed to a rise in the value of money, occasioned by a decline in the productiveness of the mines, has been caused by the increased productiveness of industry, arising from the abolition of oppressive restraints on commerce, the opening of new and more abundant sources of supply, and the discovery of new means and improved methods of production.

2. *Price of monopolized Commodities.*—Exclusive, however, of the commodities now alluded to, there is a considerable class whose producers or holders enjoy either an *absolute* or a *partial* monopoly of the supply. When such is the case, prices depend entirely or principally on the proportion between the supply and demand, and are not liable to be influenced, or only in a secondary degree, by changes in the cost of production. Antique statues and gems; the pictures of the great masters; wines of a peculiar flavor, produced in small quantities, in particular situations; and a few other articles, exist under what may be called absolute monopolies; their supply can not be increased; and their price must, therefore, depend entirely on the competition of those who may wish to buy them, without being in the slightest degree influenced by the cost of their production. Monopolies are sometimes established by law; as when the power to supply the market with a particular article is made over to one individual or society of individuals, without any limitation of the price at which it may be sold; which, of course, enables those possessed of the monopoly to exact the highest price for it that the competition of the buyers will afford, though such price may exceed the cost of production in any conceivable degree. Monopolies of this sort used to be common in England, particularly in the reign of Elizabeth; but they were finally abolished by the famous act of the 21 Jac. I. c. 8—an act which, by establishing the freedom of competition in all businesses carried on at home, has been productive of the greatest advantage.—See MONOPOLY. The corn laws establish a partial monopoly of the supply of Great Britain with corn in favor of the agriculturists; but, as competition is carried to as great an extent in agriculture as in any other business, this monopoly does not enable them to obtain a higher price for their produce than is sufficient to pay the expenses of its production, though, owing to the peculiar circumstances under which England is placed, this price is higher than the price in the surrounding countries. Hence it results that the monopoly is injurious to the public, without being of any advantage to those engaged in the business of agriculture. Neither, indeed, can it

be truly said to be advantageous to the landlords. The rights conveyed by patents sometimes establish a valuable monopoly; for they enable the inventors of improved methods of production to maintain, during the continuance of the patent, the price of the article at a level which may be much higher than is required to afford them the ordinary rate of profit. This advantage, however, by stimulating invention, and exciting to new discoveries, of which it is the natural and appropriate reward, instead of being injurious, is beneficial to the public. There are also partial monopolies, depending upon situation, connection, fashion, etc. These and other inappreciable circumstances sometimes occasion a difference of 30 per cent. or more in the price of the same article in shops not very distant from each other. Generally speaking, the supply of monopolized commodities is less liable to vary than the supply of those which are freely produced; and their prices are commonly more steady. But there are various exceptions to this rule, and of these the corn monopoly is one. The great variations in the harvests of particular countries, and their average equality throughout the world, exposes a nation which shuts foreign corn out of its ports to destructive vicissitudes of price, from which it would enjoy a comparative exemption were the ports open. Sometimes the expiration of a monopoly—a patent, for example—has occasioned a sudden and extraordinary increase of supply, and consequent fall of price; entailing, of course, a serious loss on the holders of large stocks of goods produced under the monopoly.

3. *New Sources of Supply.*—The effects on prices produced by the opening of new markets, or new sources of supply, are familiar to every one. The fall that has taken place in the price of pepper, and of most sorts of commodities brought from Europe from the East, since the opening of the trade in 1814, is a conspicuous proof of what is now stated.

4. *Influence of War on Prices.*—The effect of war in obstructing the ordinary channels of commercial intercourse, and occasioning extreme fluctuations in the supply and price of commodities, is well known. In this respect, however, the latter part of the French war is, perhaps, entitled to a pre-eminence. England then dealt with an enemy who had extended his sway over most part of the Continent; and who endeavored, by every means in his power, to shut us out of the Continental markets. Mr. Tooke has given, in his elaborate and valuable work on *High and Low Prices*, a variety of details which strikingly illustrate the effect that the regulations then adopted by the belligerent powers had on prices. “Among the means,” says Mr. Tooke, “devised by the ingenuity and enterprise of adventurers to elude or overcome the obstacles presented by the decrees of the enemy, one in particular, which was resorted to on an extensive scale, deserves mention, as illustrating in a striking manner the degree in which those obstacles were calculated to increase the cost to the consumer. Several vessels laden with sugar, coffee, tobacco, cotton twist, and other valuable commodities, were dispatched from England, at very high rates of freight and insurance, to Salonica, where the goods were landed, and thence conveyed on mules and horses through Servia and Hungary to Vienna, for the purpose of being distributed over Germany, and possibly into France. Thus it might happen that the inhabitants of that part of the Continent most contiguous to this country could not receive their supplies from us without an expense of conveyance equivalent to what it would be if they were removed to the distance of a sea-voyage twice round the globe, but not subject to fiscal and political regulations.” And in consequence of these, and other causes of the same sort, Mr. Tooke mentions that the price of sugar in France, and other parts of the Continent, during the latter years of the war, was as high as 5s. and 6s. a pound; that coffee rose to 7s., indigo to 18s., and so on. But the sums charged for freight and insurance were the most ex-

traordinary. Mr. Tooke states that he has known instances in which the license, freight, and other charges on account of a vessel of about 100 tons burden, making a voyage from Calais to London and back, have amounted to the almost incredible sum of £50,000! A ship, of which the whole cost and outfit did not amount to £4000, earned during the latter period of the war a gross freight of £80,000 on a voyage from Bordeaux to London and back! The freight of indigo from London to the Continent does not at present exceed 1*d.* a pound; whereas it amounted, at the period referred to, to about 4*s.* 6*d.*—*High and Low Prices*, 2*d.* ed. p. 212.

5. *Influence of Taxes on Prices.*—It is unnecessary to dilate on a topic so familiar to every one. When a tax is laid on a commodity, its price necessarily rises in a corresponding proportion; for otherwise the producers would not obtain the ordinary rate of profit, and would, of course, withdraw from the business. The rise in the price of several of the articles in the annexed table is principally to be ascribed to the increase of taxation. These statements will probably suffice to give our readers a general idea of the principles which determine the value of commodities. To go deeper into the subject would involve us in discussions that belong to political economy, and are among the most intricate in that science. The influence of speculation on prices must not, however, be passed over in a work of this sort.

6. *Influence of Speculation on Prices.*—It very rarely happens that either the actual supply of any species of produce in extensive demand, or the intensity of that demand, can be exactly measured. Every transaction in which an individual buys produce in order to sell it again, is, in fact, a speculation. The buyer anticipates that the demand for the article he has purchased will be such, at some future period, either more or less distant, that he will be able to dispose of it with a profit; and the success of the speculation depends, it is evident, on the skill with which he has estimated the circumstances that must determine the future price of the commodity. It follows, therefore, that in all highly commercial countries, where merchants are possessed of large capitals, and where they are left to be guided in the use of them by their own discretion and foresight, the prices of commodities will frequently be very much influenced, not merely by the actual occurrence of changes in the accustomed relation of the supply and demand, but by the anticipation of such changes. It is the business of the merchant to acquaint himself with every circumstance affecting the particular description of commodities in which he deals. He endeavors to obtain, by means of an extensive correspondence, the earliest and most authentic information with respect to every thing that may affect their supply or demand, or the cost of their production; and if he learned that the supply of an article had failed, or that, owing to changes of fashion, or to the opening of new channels of commerce, the demand for it had been increased, he would most likely be disposed to become a buyer, in anticipation of profiting by the rise of price, which, under the circumstances of the case, could hardly fail of taking place; or, if he were a holder of the article, he would refuse to part with it, unless for a higher price than he would previously have accepted. If the intelligence received by the merchant had been of a contrary description—if, for example, he had learned that the article was now produced with greater facility, or that there was a falling off in the demand for it, caused by a change of fashion, or by the shutting up of some of the markets to which it had previously been admitted—he would have acted differently: in this case he would have anticipated a fall of prices, and would either have declined purchasing the article, except at a reduced rate, or have endeavored to get rid of it, supposing him to be a holder, by offering it at a lower price. In consequence of these operations, the prices of commodities, in different places and periods, are brought

comparatively near to equality. All abrupt transitions, from scarcity to abundance, and from abundance to scarcity, are avoided; an excess in one case is made to balance a deficiency in another, and the supply is distributed with a degree of steadiness and regularity that could hardly have been deemed attainable.

It is obvious, from what has now been stated, that those who indiscriminately condemn all sorts of speculative engagements have never reflected on the circumstances incident to the prosecution of every undertaking. In truth and reality they are all speculations. Their undertakers must look forward to periods more or less distant; and their success depends entirely on the sagacity with which they have estimated the probability of certain events occurring, and the influence which they have ascribed to them. Speculation is, therefore, really only another name for foresight; and though fortunes have sometimes been made by a lucky hit, the character of a successful speculator is, in the vast majority of instances, due to him only who has skillfully devised the means of effecting the end he had in view, and who has outstripped his competitors in the judgment with which he has looked into futurity, and appreciated the operation of causes producing distant effects. Even in the securest businesses, such as agriculture and manufactures, there is, and must be, a great deal of speculation. An unlooked-for change of season frequently disappoints the apparently reasonable expectations of those who undertake the former; while the equally capricious variations of fashion have to be encountered by those engaged in the latter; and each is, besides, liable to be affected by legislative enactments, by new discoveries in the arts, and by an endless variety of circumstances which it is always very difficult, and sometimes quite impossible, to foresee. On the whole, indeed, the gains of the undertakers are so adjusted that those who carry them on obtain, at an average, the common and ordinary rate of profit. But the inequality in the gains of individuals is most commonly very great; and while the superior tact, industry, or good fortune of some enable them to realize large fortunes, the want of discernment, the less vigilant attention, or the bad fortune of others, frequently reduces them from the situation of capitalists to that of laborers.

The great cotton speculation of 1825 took its rise partly and chiefly from a supposed deficiency in the supply of cotton, partly from an idea that there was a greatly increased demand for raw cotton in this country and the Continent, and partly from a belief that the stocks on hand were unusually low. Now it is obvious that the success of those who embarked in this speculation depended entirely on two circumstances: viz., *first*, that they were right in the fundamental supposition on which the whole speculation rested, that the supply of cotton was no longer commensurate with the demand; and, *second*, that their competition did not raise the price so high as to diminish the consumption by the manufacturers in too great a degree to enable them to take off the quantity to be actually brought to market. If the merchants had been well founded in their suppositions, and if their competition had not raised the price of cotton too high, the speculation would certainly have been successful. But, instead of being well founded, the hypothesis on which the whole thing rested was perfectly visionary. There was no deficiency in the supply of cotton, but, on the contrary, a great superabundance; and though there had been such a deficiency, the excess to which the price was carried must have checked consumption so much as to occasion a serious decline. The falling off in the imports of cotton from America in 1824 seems to have been the source of the delusion. It was supposed that this falling off was not accidental, but that it was a consequence of the price of cotton having been for a series of years so low as to be inadequate to defray the expenses of its cultivation. The result showed

that this calculation was most erroneous. And besides, in entering on the speculation, no attention was paid to Egypt and Italy—countries from which only about 1,400,000 lbs. of cotton were obtained in 1824, but from which no less than 23,800,000 lbs. were obtained in 1825! This unlooked-for importation was of itself almost enough to overturn the combination of the speculators; and, coupled with the increased importation from America and other countries, actually occasioned a heavy glut of the market.

The risk to which merchants are exposed when they either sell off any commodity at a reduced price in anticipation of a fall, or buy at an advanced price in anticipation of a future rise, is a consequence principally of the extreme difficulty of ascertaining the true state of the fact with respect to the grounds on which an abundant or a deficient supply, or an increasing or decreasing demand, may be expected. Rules can here be of no service; every thing depends upon the talent, tact, and knowledge of the party. The questions to be solved are all practical ones, varying in every case from each other; the skill of the merchant being evinced by the mode in which he conducts his business under such circumstances, or by his sagacity in discovering coming events, and appreciating their character and the extent of their influence. Priority, but, above all, accuracy of intelligence, is in such cases of the utmost consequence. Without well-authenticated data to go upon, every step taken may only lead to error. The instances, indeed, in which speculations, apparently contrived with the greatest judgment, have ended in bankruptcy and ruin, from a deficiency in this essential requisite, are so very numerous, that every one must be acquainted with them. Hence the importance of selecting acute and cautious correspondents; and hence, also, the necessity of maturely weighing their reports, and of endeavoring, by the aid of information gleaned from every authentic accessible source, to ascertain how far they may be depended upon. When a few leading merchants purchase in anticipation of an advance, or sell in anticipation of a fall, the speculation is often pushed beyond all reasonable limits by the operations of those who are influenced by imitation only, and who have never, perhaps, reflected for a moment on the grounds on which a variation of price is anticipated. In speculation, as in most other things, one individual derives confidence from another. Such an one purchases or sells, not because he has any really accurate information as to the state of the demand and supply, but because some one else has done so before him. The original impulse is thus rapidly extended; and even those who are satisfied that a speculation, in anticipation of a rise of prices, is unsafe, and that there will be a recoil, not unfrequently adventure, in the expectation that they will be able to withdraw before the recoil has begun.

It may, we believe, speaking generally, be laid down as a sound practical rule to avoid having any thing to do with a speculation in which many have already engaged. The competition of the speculators seldom fails speedily to render an adventure that might have been originally safe extremely hazardous. If a commodity happen to be at an unusually reduced price in any particular market, it will rise the moment that different buyers appear in the field; and supposing, on the other hand, that it is fetching an unusually high price, it will fall, perhaps, far below the cost of production, as soon as supplies begin to be poured in by different merchants. Whatever, therefore, may be the success of those who originate a speculation, those who enter into it at an advanced period are almost sure to lose. To have been preceded by others ought not, in such matters, to inspire confidence; on the contrary, it ought, unless there be something special in the case, to induce every considerate person to decline interfering with it. The maintenance of the freedom of intercourse between different countries, and the more gen-

eral diffusion of sound instruction, seem to be the only means by which those miscalculations, that are often productive of great national as well as private loss, can be either obviated or mitigated. The effects consequent to such improvident speculations being always far more injurious to the parties engaged in them than to any other class, the presumption is that they will diminish, both in frequency and force, according as the true principles of commerce come to be better understood. But, whatever inconvenience may occasionally flow from them, it is abundantly plain that, instead of being lessened, it would be very much increased, were any restraints imposed on the freedom of adventure. When the attention of many individuals is directed to the same line of speculation—when they prosecute it as a business, and are responsible in their own private fortunes for any errors they may commit—they acquire a knowledge of the various circumstances influencing prices, and give by their combinations a steadiness to them which it is easy to see could not be attained by any other means. It is material, too, to bear in mind, as was previously stated, that many, perhaps it might be said *most*, of those who press so eagerly into the market when any new channel of commerce is opened, or when any considerable rise of price is anticipated, are not merchants, but persons engaged in other businesses, or living, perhaps, on fixed incomes, who speculate in the hope of suddenly increasing their fortune. This tendency to gambling seldom fails to break out upon such occasions; but fortunately these are only of comparatively rare occurrence; and in the ordinary course of affairs, mercantile speculations are left to be conducted by those who are familiar with business, and who, in exerting themselves to equalize the variations of price caused by variations of climate and of seasons, and to distribute the supply of produce proportionally to the effective demand, and with so much providence that it may not at any time be wholly exhausted, perform functions that are in the highest degree important and beneficial. They are, it is true, actuated only by a desire to advance their own interests; but the results of their operations are not less advantageous than those of the agriculturist who gives greater fertility to the soil, or of the mechanist who invents new and more powerful machines.

Those desirous of detailed information as to the prices of commodities in Great Britain, in remoter ages, may consult the elaborate tables in the 3d volume of SIR F. M. EDEN'S work on the *Poor*; and the 4th volume of MACPHERSON'S *Annals of Commerce*. ARBUTHNOT'S *Tables of Ancient Coins, Weights, Measures, Prices, &c.*, are well known; but the statements are not much to be depended upon. *Thé Traité de Métrologie* of M. PAUCTON, 4to, Paris, 1780, is the best work on this curious and difficult subject. See also volumes v. vi. TOOKE on *Prices*, London, 1857; HUNT'S *Merchants' Magazine*, iii. 305 (HILDRETH); *Quarterly Review*, xxix. 214; *American Almanac*, 1836, 101; *Bankers' Magazine*, New York, 1857, 91-94.

"Considerable uneasiness begins to prevail in Paris at the enormous rise that has taken place within the last two years in the prices of food and lodging. It is not only that this state of things drives away the crowds who a few years ago used to resort to Paris to economize, and who spent immense sums in that capital, but, what is of far more importance in a social and political point of view, it creates suffering, and, consequently, discontent among the working classes. In all the capitals of Europe, there has been of late a similar tendency to an increase in prices, partly caused, no doubt, by the uncertainty created by the late war, and by the withdrawal of large numbers of able-bodied men from the ordinary pursuits of agriculture and industry, to swell the ranks of the standing armies kept up by the four great military monarchies of France, Russia, Austria, and Prussia. Perhaps, also, the speculative habits of the present generation have had some share in producing this result."

The above is from a late London paper. The same remark is pertinent to new circumstances in the United States. The advanced prices charged for all commodi-

ties where labor is involved in their production, and where new machinery and new appliances can not be used, are unerring results of an increased volume of the precious metals. According to estimates made by statistical writers who have examined the subject critically, the increase of the precious metals during the six years, 1851-1856, is fully one-third of that existing in the world at the end of the year 1850.

The product of gold in California is thus stated in round numbers:

Years.	Export.	Marginal Addition.	Total.
1848-49...	\$8,060,000	\$806,000	\$8,866,000
1850.....	29,000,000	2,500,000	27,500,000
1851.....	41,250,000	4,125,000	45,375,000
1852.....	58,500,000	5,850,000	64,350,000
1853.....	62,500,000	6,250,000	68,750,000
1854.....	70,500,000	7,050,000	77,550,000
1855.....	67,000,000	6,700,000	73,700,000
1856.....	70,000,000	7,000,000	77,000,000
Total....	\$402,810,000	\$40,281,000	\$443,091,000

Product of gold in California and Australia combined:

Years.	Export.	Marginal Addition.	Total.
1848-49 ..	\$8,060,000	\$806,000	\$8,866,000
1850.....	29,000,000	2,500,000	27,500,000
1851.....	45,760,000	4,576,000	50,336,000
1852.....	107,175,000	10,717,500	117,892,500
1853.....	112,725,000	11,272,500	123,997,500
1854.....	115,640,000	11,564,000	127,204,000
1855.....	124,565,000	12,456,500	137,021,500
1856.....	133,715,000	13,371,500	147,086,500
Total....	\$672,640,000	\$67,264,000	\$739,904,000

At the same time, the rate of interest has increased from an average one of 3 and $\frac{3}{4}$ to 6 and 7 per cent.; and the active demand for capital throughout Europe, in support of heavy undertakings abroad and at home, will probably maintain the current rates for some years to come. We see no present indications of a plethora of capital.

We think it will appear that a greater rise, *pro rata*, has taken place in prices within this short period. In our own country, the prices of market produce, labor, and materials requiring labor for their production, have all increased from thirty to fifty, and in some instances to one hundred per cent. In articles of food in the London markets, the changes in prices between 1851-1857 are shown in the following summary, which we take from "Tooke's *History of Prices*, during the years 1848-1856," just published in London:

Articles.	January, 1851.	January, 1854.	Feb 1857
Coffee.....	53 a 58s.	53 a 60s.	58 a 67
Sugar.....	26 a 28s.	21 a 65s.	36 a 40
Rum, Jamaica.....	26 a 32d.	42 a 46d.	44 a 46
Tobacco.....	4j a 10d.	21 a 3d.	8 a 11
Butter.....	78 a 80s.	104 a —	112 a —
Beef (8 lbs.).....	28 a 30	42 a 46	40 a 46
Beef, prime.....	32 a 36	48 a 50	48 a 50
Mutton.....	34 a 42	48 a 54	48 a 52
Mutton, prime.....	44 a 46	50 a 52	54 a 58
Pork.....	30 a 42	42 a 44	44 a 52
Silk, raw, lbs.....	9 a 17s.	124 a 16j	16 a 25
Flax, tons.....	88 a 46	35 a 52	52 a —
Wool (240 lbs.).....	£14 a —	154 a 16	37 a —
Logwood.....	70 a 80s.	110 a —	110 a —
Seal oil.....	£37 a —	43 a —	50 a —
Olive oil.....	43 a —	63 a —	61 a —
Palm oil.....	29 a —	43 a —	47 a —
Tallow.....	364 a —	60 a —	62 a —
Leather, lbs.....	12 a 23d.	15 a 20	24 a 31
Saltpetre, cwt.....	27j a 294s.	27 a 31	37 a 46
Ashes, Pearl.....	304 a 31	20 a —	45 a —
Copper.....	£84 a —	126 a —	135 a —
Iron, tons.....	44 a 6	94 a —	9 a —
Iron, Swedish.....	11j a —	124 a —	15 a —
Lead, tons.....	17j a —	234 a —	23 a —
Steel, Swedish.....	15 a —	17j a —	20 a —
Tin, tons.....	84 a —	126 a —	143 a —

These facts are important, as demonstrating the progressive advance of prices according to the increased bulk of precious metals. The same result occurred in the century following the discovery of gold in America (1600-1600), although the increased production was far less than it is now. Rents, wages, family supplies, labor generally—all advanced fully one hundred per

cent.; and the probability is that an equal (or greater) ratio of increase will take place between 1850 and 1860. It is true that the present accumulation of precious metals is diffused among a much larger population and over a more extended region of country than in the 16th or 17th centuries; but similar causes will produce similar results, and labor will secure for itself a remuneration commensurate with the increased expenses of living.

Fluctuations in Prices.—Mr. Tooke, an English writer of some celebrity, has lately added two volumes on the prices of 1848-1856. From these volumes (published in London in 1857) we extract the following summary view of the changes in prices since the discoveries of gold in California:

Summary of Conclusions with Reference to the Prices of Commodities and State of Trade, 1848-56.—Without attempting to include in a summary of conclusions all the inferences which arise from the survey of the past few years, we present the following statements as setting forth those results which are best established and most important, viz.: That as regards the great articles of import, such as colonial and tropical produce and commodities largely employed in this country as raw materials of manufacture, the course of prices during the nine years, 1848-56, may be described in general terms, as follows, viz.: During 1848 and 1849 there was a general, and, in several important instances, a strong tendency to lower prices; that in 1850, partly in consequence of larger consumption and partly in consequence of actual or apprehended failures of supply, prices sensibly, and, in some cases, materially advanced; that in 1851 there was again an extensive and severe decline, attributable almost wholly to excess of supply; that in 1852 there was a manifest tendency toward recovery; that in the first nine months of 1853 the upward tendency of the previous year reached its highest point, establishing and maintaining for nine months a range of prices considerably higher than had prevailed for a long period; that from the autumn of 1853 to the close of 1854, there was a sensible reaction from the previous high rates, except as regards some of the articles immediately affected by operations, or the commissariat consumption of the war; and that in 1855 and 1856 the markets were quiet and firm, exhibiting only such fluctuations as arose out of ordinary changes in supply and demand. In a future part we shall inquire how far the fluctuations of prices now referred to were connected with the influx of the new gold.

That the first effects of the California discoveries of 1848 were felt in England in 1850 and 1851, and manifested themselves in the increased demand for British and foreign articles suitable for the export trade to the United States; that the same effects were still more sensibly felt in the course of 1852; that in 1853 the consumption of British goods in California and the United States generally had become so large and rapid as to counteract almost entirely, as regards England, any prejudicial effect upon the balance of trade of the vast imports of grain, rendered necessary by the serious failure in these islands of the harvest of 1853; that the same large American demand for British exports continued through 1854 and 1855, and had prevailed through 1856, interrupted but casually by the extensive failures and discredit which prevailed in the United States and California during portions of the years 1854 and 1855; and that, as the general result of the trade between England and the United States since 1850, the absorption of British exports either in California itself or in those regions of the North American continent to which the supplies of California gold are chiefly sent in the first instance, has increased so rapidly as to render necessary a constant and large transmission of the precious metals from America to England.

That the effects of the Australian discoveries of the

summer of 1851 were felt in this country in a striking manner early in the following year (1852), manifesting themselves in a sudden and large expansion of the stream of emigration from these islands, and in a sudden and large expansion in the shipment of nearly all descriptions of commodities; that the demand for ships hence arising could not, in the then condition of the mercantile marine, be readily supplied; and the consequence was an enormous increase of the rates of freight, and a demand for new ships so urgent, that considerably higher wages were at once conceded in all the ship-building trades; that the same urgent demands for Australia continued in the early part of 1853, were considerably moderated in 1854, still more reduced in 1855, but in 1856 were again marked by considerable activity. That the movement for higher wages successfully commenced in the autumn of 1852; in the ship-building trades became almost universal in the first half of 1853; and previous to September, in that year, had led to a very general addition of from 12 to 20 per cent. to the wages current in 1851; but that the effect of the bad harvest of 1853, the war of 1854-'55, and the glut of the Australian markets, was to produce a considerable reaction from this advance, especially in the factory districts. That the first and immediate effect of the high prices of colonial and other imported articles in 1852 and 1853, and of the high prices and large demand for manufactured goods in the same years, was to occasion vigorous efforts and a large expenditure of capital, with a view to opening up new fields of supply, and creating extended means of production; and that it is principally to the operation of these causes that the steady and frequently declining course of prices since 1853 is to be attributed.

That as far as trustworthy evidence can be obtained, there are no facts in the experience of the last nine years which justify the conclusion that in England the fluctuation of prices, the course of trade, or the increased demand for goods arising out of the large exports to America and Australia, were immediately preceded by or connected with changes in the amount of the aggregate outstanding circulation of bank-notes. In other words, all the evidence available to us points distinctly and uniformly to the conclusion that the fluctuations of the bank-note circulation were determined and regulated by the consequences flowing from previous applications of capital and credit in particular modes. That further, in a great number of specific instances, it can be shown conclusively that fluctuations of price of the most important kind, and in the largest markets of England, took place either without the occurrence of any change whatever in the bank-note circulation or contemporaneously with the occurrence of a change the precise opposite of that which on *a priori* grounds, or on the grounds on which the currency theory is built, would have been expected to precede or accompany the particular alteration in the markets.

That neither is there any such coincidence between variations in the rate of interest and variations in the markets for produce, as to justify the inference of a direct connection between them in the relation of cause and effect. That the first effect of the gold discoveries on the financial condition of England was the remarkable and prolonged depression in the rates of interest and discount, which prevailed during the twelvemonth preceding the spring of 1853; that this effect on the rate of interest was the immediate consequence of an excessive accumulation, principally in the Bank of England, of the early remittances from California and Australia; and that the influence produced by these accumulations on opinion and credit was greatly extended and aggravated by the maintenance at the Bank of England of a rate of discount so low as 2 per cent., from April, 1852, to January, 1853. That the rise of the rate of discount which commenced in January, 1853, and has been maintained during the subsequent three years, is to be traced in its origin and continu-

ance to extended demand for capital for the purpose of new, distant, and costly enterprises, directed either to the construction of public works, to the extension of old and introduction of new processes, or to the exploration of new fields for the supply of commodities; and that, so far as we can judge from recent experience, the absorption of capital for these and other objects becomes more rapid and extensive with every succeeding year.

That the interruption to the trade of England occasioned by the Russian war of 1854-'55 was comparatively slight, and for four reasons, viz.: 1. Because the theatre of war was in a remote part of the east of Europe; 2. Because the enemy had practically no navy that could molest our commerce; 3. Because the raw materials previously obtained from Russia still continued to arrive through neutral ports or were readily replaced by imports from India and elsewhere; and 4, lastly, because the invention of the telegraph, the existence of steam, and the enormous resources of our mercantile marine and postal services, enable us to accomplish in a few weeks' operations what, at the commencement of the century, would have occupied a long series of months. That further, in addition to and far more powerful than any of the five causes just enumerated, was the effect of the continued influx of gold during 1854 and 1855—but especially during the latter portion of 1855, in averting from England and from France the extreme financial pressure and peril which, in the absence of that influx, must inevitably have been produced by the necessity of providing large and constant remittances of gold to the seat of war; and must inevitably have placed entirely out of question the maintenance of the restrictions of the Bank Chart Act of 1844, and perhaps have even imperiled the maintenance of the act of 1819.

That during the years 1848 and 1849, and part of 1850, the losses and discredit which fell with crushing force on a large portion of the middle classes involved in the railway expenditure, did, beyond question, produce some important effect in limiting the consumption of commodities. That, on the other hand, it was a direct consequence of the railway expenditure of the years 1848, 1849, and 1850, that the working classes were provided with fair employment during a period of interrupted trade, and it was also a direct consequence of the cheapness of food, and the low range of general prices which prevailed to the year 1852, that the working classes were able to command, by means of their wages, a larger amount of sustenance and comfort than had been within their reach probably at any former period of the century.—*TOOKE'S History of Prices*, 1857.

Price-current, a list or enumeration of the various articles of merchandise, with their prices, the duties (if any) payable thereon when imported or exported, with the drawbacks occasionally allowed upon their exportation, etc. Lists of this description are published periodically, generally once or twice a week, in most great commercial cities and towns.—For examples, see the articles GENOA, HAVRE, TRIESTE, etc. in this work.

Pride of China. The *Melia azedarach*, or Pride of China, is supposed to have been originally a native of Persia, where it was known as long ago as the year 980, by Avicenna, an Arabian physician, who noticed the venomous principle which resides in its fruit; but some botanists are of the opinion that it is also indigenous to Florida and the United States, or at least has become so from habit; for it is found there growing wild in the forests, and attains its fullest magnitude. It is propagated for ornament or use in all the warm countries of the civilized world. It is also cultivated in conservatories in the temperate and colder parts of Europe and America, and even there it often flowers, and ripens its fruit.

Properties and Uses.—The wood of the azedarach is

of a reddish color, and is organized in the distribution of its fibres similar to those of the ash. It is sufficiently strong and durable to be employed in civil architecture, and is adapted to various uses in the mechanic arts. It has already been employed for pulleys, which in Europe are usually made of elm, and in America of ash. It is said to make good fuel. The fleshy part of the fruit, like that of the olive, yields a fixed oil, which is bitter, and is considered as anthelmintic, and a narcotic stimulant. The leaves are universally used in India for poultices, and both the flowers and seeds are stimulant. The berries, though said by the Arabian physician, Avicenna, to be poisonous, and the pulp of which was mixed with grease, for the purpose of killing rats and dogs, are often eaten by children in the South without injurious effects. According to Mr. Royle, however, the fruit is considered as poisonous when used in large doses. The bark of the root, when green, has a bitter, nauseous taste, yielding its virtues to boiling water, and may be employed as a cathartic or emetic, and is considered as an efficient vermifuge, and also may be used with advantage in intermittents. In Persia, an ointment is made, for the cure of some cutaneous eruptions, by mulling the leaves with lard. It is also said that a kind of toddy is obtained by fermenting the sap of young and vigorous trees. The nuts are often bored by monks, and strung into beads. Hence the names of *Bead-tree*, and *Paternostri di San Domenico*.—BROWNE'S *Trees of America*.

Primage and Average. Primage is a charge in addition to the freight. It was originally intended as a gratuity to the captain for his particular care of the goods, and is sometimes called *hat-money*; but it now belongs to the owners or freighters by charter-party of the vessel, unless by special agreement the whole or portion of it is assigned to the captain. It is collected with the freight. The rate or manner of making this charge depends chiefly upon the custom of the department of trade in which the ship is engaged. Very commonly it is a rate, as 5, 10, or even 15 per cent., upon the amount of the freight. In some trades it is a rate per hogshead, etc., and in some cases it is not allowed, the word primage being canceled or omitted, and the words in full being added to the stipulated rate of the freight, as has been noticed in speaking of the forms of bills of lading. The average referred to in the bill of lading is the liability to general contribution for making good any damage which has been occasioned by any step necessary for general preservation. This forms what is called a "general average," and the notice of it is introduced into the bill of lading to avoid any doubt as to liability on the part of the consignee or claimant of the goods.—See **INSURANCE—SHIPS, and SHIPPING.**

Prince Edward Island. Lat. N. 46° and 47° 10'; long. W. 62° and 65°; area, 2184 square miles; length about 135 miles; and breadth from 4 to 34 miles.

The island of Prince Edward, formerly called St. John's, is situated in a recess, on the west side of the Gulf of St. Lawrence, and is separated from New Brunswick and Nova Scotia by the Strait of Northumberland, which at its narrowest part is only nine miles wide. Capital, Charlotte-Town. The colony is divided into three counties: viz., Queen's, 15,425; Prince, 15,142; King's, 32,111; and its total population in 1848 was 62,678.

The population at several periods was as follows:

1802	20,671
1822	22,600
1827	23,266
1833	32,176
1841	47,033
1848	62,678

The quantity of arable land under cultivation was 215,389 acres; and the whole quantity of land occupied was as follows: Held in fee-simple by occupants, 280,649 acres; under lease, 330,293 acres; by written demise,

31,312 acres; by verbal agreement, 38,786 acres; and by squatters, 65,484 acres. The crops represented in the census of the same year consisted of: wheat, 219,787 bushels; barley, 75,521 bushels; oats, 746,383 bushels; potatoes, 781,575 bushels; turnips, 153,933 bushels; clover-seed, 14,900 pounds; and hay, 45,128 tons. The live-stock on the island was as follows: Horses, 12,845; neat cattle, 49,310; sheep, 92,875; and hogs, 19,683. The industrial establishments were embraced under the following branches: 13 breweries and distilleries, 116 grist-mills, 27 carding-mills, 139 saw-mills, and 246 threshing-machines. The commerce of the island in 1851 is exhibited in the following abstract:

Exports, including 89 vessels, 15,721 tons, at \$16 per ton; 1,427,629 feet, and 6316 pieces, boards and deals; shingles, 220,772 M; oats, 565,695 bushels; cattle, 363 head; dried fish, 7687 quintals; pickled fish, 3624 barrels; oysters, 4377 bushels; and a variety of other products, as timber, scantling, knees, etc., valued in all at	\$607,389
Imports, including ship-chandlery, which is exported again in the building and rigging of ships, and not estimated in the value of the shipping	\$538,735
Less—say for ship-chandlery	475,571
Total commerce	\$1,083,260

The shipping employed in this commerce was as follows:

	Entrances.		Clearances.	
	Vessels.	Tons.	Vessels.	Tons.
Great Britain	18	4,140	45	10,951
British colonies	470	18,042	488	25,374
United States	43	2,724	86	6,327
Other countries	2	87	2	71
Total in 1851	533	24,963	621	41,523
Total in 1850	557	25,017	638	40,322

The number of seamen inward, in 1850, was 2082, and in 1851, 2370; outward, in 1850, 2301; and in 1851, 3631.

The following compares the value of the imports and exports for three years:

	1849.	1850.	1851.
Imports	\$576,040	\$630,475	\$475,871
Exports	2,92,775	325,989	607,389
Total	\$568,515	\$356,464	\$1,083,260

The exports of 1851 include the value of vessels sold to Great Britain and Newfoundland, amounting to \$251,536, which is not included in either 1849 or 1850. In 1849 there were built in the colony 88 vessels, 15,902 tons; and in 1850, 93 vessels, 14,391 tons, valued at \$16 per ton. The total value of articles, the growth, produce, or manufacture of the United States, imported in 1851, was \$77,858, the whole of which, except to the value of \$3200, were carried in British bottoms. In 1850 the value of the same description of articles imported was only \$42,113. The wide difference between the two years arises from the fact that in 1851 the duties on imports were greatly reduced from the rates of the preceding year. With the high rates of duties of 1850, only \$6420 was received on articles of American production; while in 1851, with diminished rates, the duties were increased to \$14,020. The articles exported to the United States in 1851 were as follows: Barley, 17,929 bushels; boards and planks, 12,000 feet; iron, 60 cwt.; cattle, 9 head; firewood, 20 cords; dry fish, 650 quintals; pickled fish, 1786 barrels; hard wood, 74 tons; horses, 3; hackmatack knees, 2215; oats, 222,109 bushels; potatoes, 45,942 bushels; turnips, 5090 bushels; and wool, 1700 pounds. The value of the foregoing, with the value of sundry other articles not enumerated, amounted together to \$119,236. The value of similar articles exported in 1850 was only \$55,886. On the 31st December, 1850, the number of vessels owned and registered in Prince Edward Island was 310, of the burden of 27,932 tons. On the 31st December, 1851, the vessels owned and registered numbered 323, of the burden of 31,410 tons. Prince

Edward Island has valuable fisheries in the Gulf of St. Lawrence, and in the Strait.

Prince Edward Island is chiefly an agricultural colony. Ship-building, however, is carried on to a considerable extent; and new ships have already become a prominent article of export. In the years 1849, 1850, and 1851, there were built in the island, for sale in Great Britain, Newfoundland, or wherever else they might find a profitable market, 270 vessels, with an aggregate of 45,946 tons; giving an annual average of 90 vessels, and 15,315 tons.

	1849.	1850.	1851.
Exports to United States ..	\$32,410	\$55,385	\$119,286
Imports from United States	82,580	41,603	77,808

TONNAGE IN 1850.

	Vessels.	Tons.
Entered from United States	34	2578
Cleared for United States	49	4038
Entered in 1851	45	2724
Cleared in 1851	86	5427

The difference between the imports from the United States in 1850 and 1851 (\$36,255) is accounted for by the reduction of the duties on imports by colonial act, the high duties up to 1851 affecting, to a large extent, the trade with the United States. This reduction of the tariff of Prince Edward Island not only augmented the exports from the United States, but produced a corresponding increase in the imports from that island. Thus, in 1850, the value of exports from Prince Edward Island to the United States was \$55,385; in 1851 it amounted to \$119,286. The trade between the United States and this island being now comparatively free, a still greater increase than that exhibited above may be annually expected.

The revenue, expenditures, and public debt of the colony, in 1851, were as follows:

Revenue.—Customs and imports, £17,769 18s. 7½d.; fines and forfeitures, £110 5s. 1d.; interest on bonds, £161 2s. 0½d.; post-office, £999 2s. 4½d.; land assessments, £2165 1s. 7d.; registers, £159 6s. 2½d.; licenses, £459 10s.; seizures, £44 9s. 8d.; and fees from Secretary's office, £299 15s. 3d. Total, £22,538 14s. 9½d., being an average per head of 7s. 2½d., or of the net customs alone, the average per head was 5s. 8½d.

Expenditures.—Legislature, £1912 4s. 4½d.; education, £2351 14s. 10d.; agricultural societies, £450; miscellaneous, £752 3s. 8½d.; post-office, £1539 10s. 3d.; salaries, £3145 11s. 11d.; compensation to government officers, £774 16s.; public postages, £55 19s. 3d.; crown prosecutions, £793 14s. 4½d.; board of health, £421 15s. 11d.; fish bounties, £370 18s. 9d.; provincial building, £540 15s. 8d.; inquest and shadac packes, £116 11s. 7½d.; printing and stationery, £794 4s. 2½d.; apprehension of deserters, £378 14s. 2d.; interest on liabilities and debentures, £1626 4s.; drawbacks, £220 16s. 4½d.; sundry fees, etc., £173 12s. 11d.; roads, bridges, and wharves, £5978 3s. 2d.; jails, £610 11s. 8½d.; small disbursements, £86 7s. 2½d.; markets, £50 1s. 8d.; light-house, £176 17s. 11½d.; public works, £787 6s. 3d.; and buoys and beacons, £65 0s. 8d. Total, £24,178 10s. 11½d., showing a surplus of expenditures amounting to £1634 16s. 2d. The public debt amounted, in the year above stated, to £17,938.—ANDREWS'S *Report on Colonial and Lake Trade* (Sen. Doc. 112), 1852-'53; MARTIN'S *British Colonies* (London edition); *Report of a Committee (Canadian) on the Income, Expenditure, and Debt of British North America* (11th June, 1853); *U. S. Comm. Rel.*, etc.

Printed Goods. The art of calico-printing is of considerable antiquity, and there exist specimens of Egyptian cotton dyed by figured blocks many hundred years old. A similar process has been resorted to even in the Sandwich Islands, where they use a large leaf as a substitute for the block.—*See art. COTTON.* The copyright of designs secured in England by 2 Vic., 1839.

Printing. *See* PRESS, BOOKS, and NEWSPAPERS.

Prints, impressions on paper, or some other substance, of engravings on copper, steel, wood, stone, etc., representing some particular subject or composition. Prints, like paintings, embrace every variety of subject; and differ very widely in the manner in which they are engraved. Their prices vary according to the style of the engraving, the fineness of its execution, the goodness of the impression, its rarity, etc. The art seems to have taken its rise in the 15th century.

Prisage, or **Butlerage**, was a right of taking two tuns of wine from every ship importing into England twenty tuns or more; which was changed by Edward I. into a duty of 2s. for every tun imported by merchant strangers, and called butlerage, because paid to the king's butler. The term is now fallen into disuse.—BLACKSTONE.

Privateering. In order to encourage privateering, it is usual to allow the owners of private armed vessels to appropriate to themselves the property, or a large portion of the property, they may capture, and to afford them and the crew other facilities and rewards for honorable and successful efforts. This depends upon the municipal regulations of each particular power; and as a necessary precaution against abuse, the owners of privateers are required, by the ordinances of the commercial states, to give adequate security that they will conduct the cruise according to the laws and usages of war and the instructions of the government, and that they will regard the rights of neutrals, and bring their prizes in for adjudication. These checks are essential to the character and safety of maritime nations. Privateering, under all the restrictions which have been adopted, is very liable to abuse. The object is not fame or chivalric warfare, but plunder and profit. The discipline of the crews is not apt to be of the highest order, and privateers are often guilty of enormous excesses, and become the scourge of neutral commerce. They are sometimes manned and officered by foreigners, having no permanent connection with the country or interest in its cause. This was a complaint made by the United States in 1819, in relation to irregularities and acts of atrocity committed by private armed vessels sailing under the flag of Buenos Ayres. Under the best regulations, the business tends strongly to blunt the sense of private right, and to nourish a lawless and fierce spirit of rapacity. Efforts have been made from time to time to abolish the practice. In the treaty of amity and commerce between Russia and the United States in 1785, it was stipulated that in case of war neither party should grant commissions to any private armed vessels to attack the commerce of the other. But the spirit and policy of maritime warfare will not permit such generous provisions to prevail. That provision was not renewed with the renewal of the treaty. A similar attempt to put an end to the practice was made in the agreement between Sweden and Holland in 1675, but the agreement was not performed. The French Legislature, soon after the breaking out of the war with Austria in 1792, passed a decree for the total suppression of privateering, but that was a transitory act, and it was soon swept away in the tempest of the revolution. The efforts to stop the practice have been very feeble and fruitless, notwithstanding that enlightened and enlarged considerations of national policy have shown it to be for the general benefit of mankind to surrender the licentious practice, and to obstruct as little as possible the freedom and security of commercial intercourse among the nations.—KENT'S *Commentaries*. The reader is referred to the *North American Review*, x. 166 (J. GALLISON); NILES'S *Register*, xiv. 129, xvi. Sup. 29; DE BOW'S *Review*, i. 516. *See also* MARITIME LAW, ante, 1821, et seq.

Letters of Marque and Reprisal are grantable by the law of nations, whenever the subjects of one state are oppressed and injured by those of another, and justice is denied by that state to which the oppressor be-

longs."—CHITTY'S *Comm. Law*, vol. iii. page 604. Before granting letters of marque, government is directed by the 5 Hen. V. c. 7, to require that satisfaction be made to the party aggrieved; and in the event of such satisfaction not being made within a reasonable period, letters of marque and reprisal may be issued, authorizing the aggrieved party to attack and seize the property of the aggressor nation, without hazard of being condemned as a robber or pirate. Such letters are now only issued to the owners or captains of privateers during war, or when war has been determined upon. They may be revoked at the pleasure of the sovereign; and when hostilities terminate, they cease to have any effect. Letters of marque and reprisal were first issued in England by Edward I., for the seizure of the enemy's vessels, and for reprisal and retaliation upon the enemy on the sea.—KYMER'S *Pædera*. They were first granted in 1295.—BAKER'S *Chron*. They are usually granted in time of war to private armed ships, and do great mischief to the commerce of belligerent nations.—POWELL.

Privateers, ships of war fitted out by private individuals, to annoy and plunder the public enemy. But before commencing their operations, it is indispensable that they obtain *letters of marque and reprisal* from the government whose subjects they are, authorizing them to commit hostilities, and that they conform strictly to the rules laid down for the regulation of their conduct. All private individuals attacking others at sea, unless empowered by letters of marque, are to be considered pirates, and may be treated as such either by those they attack or by their own government.

Policy of Privateering.—The policy of this system is very questionable. It seems to be a remnant of that species of private war exercised by all individuals in early ages, but which gradually disappears as society advances. In wars carried on by land, the property of the peaceable inhabitants who take no part in the operations of the armies is uniformly protected; and it is difficult to discover any solid grounds why the same rule should not be followed at sea. Privateers rarely attack ships of war. Their object is merely to plunder and destroy merchantmen. They cause an infinite deal of mischief to individuals, and aggravate all the miseries of war, without having the slightest influence on the result of the contest. Experience has also shown that it is not possible, whatever precautions may be adopted, to prevent the greatest abuses from being perpetrated by privateers. The wish to amass plunder is the only principle by which they are actuated; and such being the case, it would be idle to suppose that they should be very scrupulous about abstaining from excesses. A system of this sort, if it be ever useful, can be so only to nations who have little trade, and who may expect to enrich themselves during war by fitting out privateers to plunder the merchant ships of their enemies. In all other cases it seems to be productive only of mischief; though it is, of course, most injurious to those states that have the greatest mercantile navy. Instead, therefore, of encouraging the practice of privateering, we think that a due regard to the rights and interests of humanity would suggest to the great powers the expediency of abolishing it altogether. A few efforts have, indeed, been already made toward this desirable object. Thus it was stipulated in the treaty between Sweden and the United Provinces, in 1675, that neither party should, in any future war, grant letters of marque against the other. In 1767 Russia abstained from licensing privateers; and in the treaty between the United States and Prussia, in 1785, a stipulation was inserted as to privateers, similar to that in the treaty between Sweden and the United Provinces in 1675. But nothing short of a convention and agreement to that effect among the great powers will be able to effect this desirable object.—MARTENS, *Essai concernant les Armateurs*, 1794. See MARITIME LAW, p. 1322, etc.

Prize. Any thing captured by a belligerent using the right of war: in common language, only ships thus captured, with the property taken in them, are so called. Prizes taken in war are condemned by the proper jurisdiction in the courts of the captors; such condemnation is held to divest the title of the proprietor and confer a new ownership. In order to give jurisdiction to a court of prize, it is deemed necessary, by the law of nations, that the property captured should be in possession of the captors in their own ports, those of an ally, or of a neutral; but no belligerent power has a right to capture in the ports of a neutral country, or within a marine league of her shores; nor does a capture made there render the adjudication valid. Subject to capture is hostile property, *i. e.*, the property of persons domiciled in a hostile country, and neutral property contraband of war.—See CONTRABAND.

Prize Money.—The money arising from captures made upon the enemy is divided into eight equal parts, and is equally distributed by order of government, thus: Captain to have three-eighths, unless under the direction of a flag officer, who in that case is to have one of the said three-eighths; captains of marines and land forces, sea lieutenants, etc., one-eighth; lieutenants of marines, gunners, admirals' secretaries, etc., one-eighth; midshipmen, captain's clerk, etc., one-eighth; ordinary and able seamen, marines, etc., two-eighths.—See PRIVATEERS and LETTERS OF MARQUE.

Prizes.—The right to all captures vests primarily in the sovereign, and no individual can have any interest in a prize, whether made by a public or private armed vessel, but what he receives under the grant of the state. This is a general principle of public jurisprudence, *bello parta cedunt reipublicæ*, and the distribution of the proceeds of prizes depends upon the regulations of each state; and unless the local laws have otherwise provided, the prizes vest in the sovereign. But the general practice, under the laws and ordinances of the belligerent governments, is to distribute the proceeds of captured property, when duly passed upon and condemned as prize (and whether captured by public or private commissioned vessels), among the captors, as a reward for bravery, and a stimulus to exertion. When a prize is taken at sea, it must be brought with due care into some convenient port, for adjudication by a competent court; though, strictly speaking, as between the belligerent parties, the title passes, and is vested when the capture is complete, and that was formerly held to be complete and perfect when the battle was over, and the *spes recuperandi* was gone. Grotius and many other writers, and some marine ordinances, as those of Louis XIV., and of Congress during the American war, made twenty-four hours' quiet possession by the enemy the test of title by capture. Bynkershoeck says that such a rule is repugnant to the laws and customs of Holland; and he insists that a firm possession at any time vests the property in the captor, and that ships and goods brought *infra presidia* do most clearly change the property. But by the modern usage of nations, neither the twenty-four hours' possession, nor the bringing the prize *infra presidia*, is sufficient to change the property in the case of a maritime capture. A judicial inquiry must pass upon the case, and the present enlightened practice of commercial nations has subjected all such captures to the scrutiny of judicial tribunals, as the only sure way to furnish due proof that the seizure was lawful. The property is not changed in favor of neutral vendee or recaptor, so as to bar the original owner, until a regular sentence of condemnation has been pronounced by some court of competent jurisdiction belonging to the sovereign of the captor; and the purchaser must be able to show documentary evidence of that fact to support his title. Until the capture becomes invested with the character of prize by a sentence of condemnation, the right of property is in abeyance, or in a state of legal sequestration. It can not be alienated or dis-

posed of, but the possession of it by the government of the captor is a trust for the benefit of those who may be ultimately entitled. This salutary rule, and one so necessary to check irregular conduct and individual outrage, has been long established in the English admiralty, and it is now every where recognized as the law and practice of nations.

The condemnation must be pronounced by a prize court of the government of the captor, sitting either in the country of the captor or of his ally. The prize court of an ally can not condemn. Prize or no prize, is a question belonging exclusively to the courts of the country of the captor. The reason of this rule is said to be, that the sovereign of the captors has a right to inspect their behavior, for he is answerable to other states for the acts of the captor. The prize court of the captor may sit in the territory of the ally, but it is not lawful for such a court to act in a neutral territory. Neutral ports are not intended to be auxiliary to the operations of the power of war; and the law of nations has clearly ordained that a prize court of a belligerent captor can not exercise jurisdiction in a neutral country. This prohibition rests not merely on the unfitness and danger of making neutral ports the theatre of hostile proceedings, but it stands on the ground of the usage of nations. It was for some time supposed that a prize court, though sitting in the country of its own sovereign, or of his ally, had no jurisdiction over prizes lying in a neutral port, because the court wanted that possession which was deemed essential to the exercise of a jurisdiction in a proceeding *in rem*. The principle was admitted to be correct by Sir William Scott, in the case of the *Henrick and Maria*, and he acted upon it in a prior case. But he considered that the English admiralty had gone too far in supporting condemnations in England, of prizes abroad in a neutral port, to permit him to recall the vicious practice of the court to the acknowledged principle; and the English rule is now definitively settled, agreeably to the old usage and the practice of other nations. The Supreme Court of the United States has followed the English rule, and it has held valid the condemnations, by a belligerent court, of prizes carried into a neutral port, and remaining there. This was deemed the most convenient practice for neutrals, as well as for the parties at war; and though the prize was, in fact, within a neutral jurisdiction, it was still to be deemed under the control, or *sub potestate*, of the captor.—KENT'S *Commentaries*, vol. i.

Proa, a narrow canoe about thirty feet long by three feet wide, used in the Ladrone Islands. The lee side is flat, being the mere longitudinal section of the common form, and the head and stern exactly alike. A slight frame-work projects several feet to windward, bearing a small block of wood like a canoe; this float supports the vessel from oversetting to that side, as she would otherwise do, and the frame-work affords support for a weight acting against the pressure of the sail. The vessel is steered by the paddle at either end, and moves with great velocity either backward or forward, being adapted to a side wind in running between two places. The sail is mat, with a boom, upon one mast. *Proa* is also the name for large boats used by the Malays, propelled both by oars and sails.

Produce, Production. See articles **WHEAT**, **FLOUR**, etc.

Promissory Notes. A promissory note may be defined to be a written engagement by one person to pay another person, therein named, absolutely and unconditionally, a certain sum of money at a time specified therein. The definition given by Mr. Justice Blackstone is, that promissory notes, or notes of hand, are a plain and direct engagement in writing to pay a sum specified at a time limited therein, to a person therein named, or sometimes to his order, or often to the bearer at large. Perhaps this definition may be thought faulty in not stating that the engagement is to be ab-

solute and unconditional. Mr. Justice Bayley more succinctly states, that a promissory note is a written promise for the payment of money at all events. Mr. Chancellor Kent follows the definition of Mr. Justice Bayley; and perhaps each is open to the objection that, while it seeks brevity, it is incomplete, as it does not state that the promise is made by one person to pay the money to another person specified. Although a promissory note is, in contemplation of law, entitled to all the privileges belonging to such an instrument by the Commercial Law, as well as by the Common Law, without being negotiable, yet it is the latter quality which gives it its principal importance and value in modern times, and makes it a circulating credit, so extensively useful and so generally resorted to in the commerce of the world. Promissory notes are now generally made negotiable, by being stated therein to be payable to A or order, or to the order of A, or to A or bearer, or to the bearer generally. Perhaps the silent but steady progress in England, from the simple use of the non-negotiable notes, before the reign of Queen Anne, to the present almost universal negotiability of such instruments in our day, can not be better expressed than by referring to the language of Blackstone, where he adverts to the fact that promissory notes are payable "to a person therein named," and then cautiously adds, or "sometimes to his own order, or oftener to the bearer." The reverse language might be far more justly used in the present day; and it might be correctly stated that promissory notes are now generally negotiable by being payable to order, or to the bearer; and that they are rarely limited to be payable only to a particular person named therein. We may add in this connection, that the person who makes the note is called the maker, and the person to whom it is payable is called the payee; and when it is negotiable by indorsement, and is indorsed by the payee, he is called the indorser, and the person to whom the interest is transferred by the indorsement is called the indorsee. Every indorsee is of course deemed the holder, and so is every person who, by a transfer of a note payable to the bearer, becomes entitled thereto. The Scottish law seems precisely coincident with the English law as to promissory notes, except so far as respects the remedial process thereon; there being some peculiar privileges annexed thereto in Scotland.

It seems scarcely necessary to point out the distinction between bills of exchange and promissory notes in their general structure and character. In a bill of exchange there are ordinarily three original parties, the drawer, the payee, and the drawee, who, after acceptance, becomes the acceptor. In a promissory note there are but two original parties, the maker and the payee. In a bill of exchange, the acceptor is the primary debtor in the contemplation of law to the payee; and the drawer is but collaterally liable. In a promissory note, the maker is, in contemplation of law, the primary debtor. If a note be negotiable, and is indorsed by the payee, then there occurs a striking resemblance in the relations of the parties upon both instruments, although they are not in all respects identical. The indorser of a note stands in the same relation to the subsequent parties as the drawer of a bill, and the maker of the note is under the same liabilities as the acceptor of a bill.

The origin of promissory notes is quite as obscure as that of bills of exchange. There is no doubt that promissory notes in writing (*chirographa*) were well known and in use among the Romans. Of this we have an instance in the Digest: *ab Aulo Augurio Gaius Seius mutuum quandam quantitatem accepit hoc chirographo: ille scripsit, me accepisse, et accipi ab illo mutuos et numeratos decem; quos ei reddam kalendis illis proximis cum suis usuris placitis internos: Quero, an ex eo instrumento usura peti possint, et quae? Modestinus respondit, si non appareat de quibus usuris conventio facta sit, peti eas non posse.* But this instrument never seems

to have been known as a negotiable instrument among the Romans, or as a general medium used in purchases and sales, with that superadded quality; but its negotiability seems to be exclusively the invention of modern times. Probably the origin of negotiable promissory notes is somewhat later than that of bills of exchange, and grew out of the same general causes as the latter, viz., to facilitate the operations of commerce, and to extend the negotiability of debts. Mr. Kyd's remarks on this subject seem at once well founded and satisfactory, at least as conjectures. "As commerce," says he, "advanced in its progress, the multiplicity of its concerns required, in many instances, a less complicated mode of payment than by bills of exchange. A trader, whose situation and circumstances rendered credit from the merchant or manufacturer, who supplied him with goods, absolutely necessary, might have so limited a connection with the commercial world at large that he could not easily furnish his creditor with a bill of exchange on another man. But his own responsibility might be such that his simple promise of payment, reduced to writing for the purpose of evidence, might be accepted with equal confidence as a bill on another trader. Hence, it may reasonably be conjectured, promissory notes were at first introduced." Undoubtedly negotiable promissory notes were well known upon the continent of Europe long before their introduction into England. They were probably first brought into use in England about the middle of the 17th century, although Lord Holt has been thought to assign to them a somewhat later origin. They seem at first to have been called bills of debt, or bills of credit, indifferently. Indeed, as Lord Mansfield has observed, there seems much confusion in the "Reports" in the times of King William and Queen Anne, so that it is difficult, without consulting the records, to ascertain whether the action arose upon a bill or note, as the words "bill" and "note" were used promiscuously. There was a long struggle in Westminster Hall as to the question whether promissory notes were negotiable or not at the Common Law, for there could be no doubt that they were by the Law Merchant, at least as recognized upon the continent of Europe. Lord Holt most strenuously, and with a pride of opinion not altogether reconcilable with his sound sense and generally comprehensive views, maintained the negative. The controversy was finally ended by the statute of 3 and 4 Anne, ch. 9 (1705), (made perpetual by the statute of 7 Anne, ch. 25, sec. 3,) which, after reciting that promissory notes had been held not negotiable, proceeded to enact, "That all notes in writing, made and signed by any person or persons, body politic or corporate, or by the servant or agent of any corporation, banker, goldsmith, merchant, or trader, who is usually intrusted by him, her, or them, to sign such promissory notes for him, her, or them, whereby such person or persons, body politic and corporate, his, her, or their servant or agent as aforesaid, doth or shall promise to pay to any other person or persons, body politic and corporate, his, her, or their order, or unto bearer, any sum of money mentioned in such note, shall be taken and construed to be, by virtue thereof, due and payable to any such person or persons, body politic and corporate, to whom the same is made payable; and also every such note payable to any person or persons, body politic and corporate, his, her, or their order, shall be assignable or indorsable over, in the same manner as inland bills of exchange are or may be, according to the custom of merchants; and that the person or persons, body politic and corporate, to whom such sum of money is or shall be by such note made payable, shall and may maintain an action for the same, in such manner as he, she, or they might do upon any inland bills of exchange, made or drawn according to the custom of merchants, against the person or persons, body politic and corporate, who, or whose servant or agent as aforesaid, signed the same; and that any person or persons, body politic

and corporate, to whom such note, that is payable to any person or persons, body politic and corporate, his, her, or their order, is indorsed or assigned, or the money therein mentioned ordered to be paid by indorsement thereon, shall and may maintain his, her, or their action for such sum of money, either against the person or persons, body politic and corporate, who, or whose servant or agent as aforesaid, signed such note, or against any of the persons that indorsed the same, in like manner as in cases of inland bills of exchange." In most of the States of America this statute has been either expressly adopted by statute, or recognized as part of their Common Law. A few only have deemed it inapplicable to their situation; and in some States the circulation of promissory notes still remains clogged with positive restrictions or practical difficulties, which greatly impede their use, and value, and circulation. Most, if not all commercial nations, have annexed certain privileges, benefits, and advantages to promissory notes, as they have to bills of exchange, in order to promote public confidence in them, and thus to insure their circulation as a medium of pecuniary commercial transactions. In England and America they partake in a very high degree of the character of specialties, and are deemed to import *prima facie*, to be founded upon a valuable consideration, and may be generally declared on without specially stating what the particular consideration is; in which circumstance they differ from other unsealed contracts, whether written or unwritten. Between the original parties the consideration may indeed, as a matter of defense, be inquired into. But where they are negotiable, and in the possession of a *bona fide* holder for a valuable consideration, without any notice of any inherent infirmity or vice in their original concoction, they are binding upon the antecedent parties, and the consideration is not inquirable into, and becomes immaterial. In Scotland they are entitled to all the privileges of bills of exchange, among which, besides the common privileges in England and America, is the privilege of a summary process to enforce payment upon their dishonor, differing from the ordinary process. The like summary process is given by the French law. [And a similar statute has recently been enacted in England.] Heineccius, in the passages already referred to, states that they are indorsable like bills of exchange, and are subject to the law of prescription, and, in case of dishonor, are open to the same process and mode of execution as bills of exchange.—**STORY ON PROMISSORY NOTES.** See **BILLS OF EXCHANGE AND EXCHANGE.**

Promontory (Latin *pro*, and *mons*, a mountain). In *Geography*, a point of land, whether high or low is indifferent, projecting into the sea.—See **CAPE.**

Protection, in *Commercial legislation*, means the protecting or bolstering up of certain branches of domestic industry by prohibiting the importation of the produce of such branches from abroad, or loading it, when imported, with heavy duties. This policy was at one time universally prevalent. But its extremely injurious influence having been demonstrated over and over again, it has been abandoned by all intelligent statesmen. And notwithstanding the powerful interests by which it was supported, it has nearly disappeared from our legislation; and it will, no doubt, eventually disappear from the legislation of all countries.

Providence, city, the principal port of entry, and semi-capital of Rhode Island; situated in 41° 49' 22" N. lat., and 71° 24' 48" W. long. from Greenwich, and 1° 28' 24" E. long. from Washington. It is 30 miles north of Newport, 42 miles south-southwest from Boston, 70 miles east of Hartford, 173 miles east of New York, and 396 from Washington. Population in 1820, 11,767; in 1830, 16,832; in 1840, 23,171; in 1850, 31,513; in 1854, 50,000. In point of population and wealth Providence is the second city in New England. Its present limits contain about nine square miles. The

compact portion of the city is built on both sides of the Providence River, over which are constructed two broad and substantial wooden bridges, above which the river expands into a broad and beautiful cove.

There are in Providence 26 banks, with an aggregate capital of \$10,419,690; a savings-bank; three insurance companies, with a capital of \$390,000, besides several mutual insurance companies without specified capital. The manufactures of Providence are extensive. The city also contained in 1857, 73 steam-engines, and within 100 rods of the city line are 12 or 15 more, that for all practical purposes belong here; 56 jewelry establishments, employing 1400 hands, and yielding an annual product of \$2,771,600; three bleaching and dyeing works, employing 350 hands, and finishing 50,980,000 yards of goods; 22 manufactories of machinery, steam-engines, boilers, castings, etc., employing 2062 hands; 9450 tons of coal; 11,095 tons of pig-iron; 9801 tons of other iron, and producing annually 83,800 stoves, 9,000,000 pounds of nails and spikes, 80 steam-engines, 220 boilers, 3,584,000 pounds of nuts, etc., and other articles to the total value of \$2,561,000; two screw factories, that yield an annual product of \$1,086,000; two butt factories, that produce \$235,000, and a great variety of smaller manufactories, yielding together an annual product of \$17,400,000.

Providence possesses great commercial facilities, which have been well improved. The harbor, at the head of Narraganset Bay, 33 miles from the ocean, is spacious, and has sufficient depth of water for the largest ships. Somewhat more than 100 vessels belong to the port. The registered tonnage in 1853 was 16,361 tons. Two lines of packets ply regularly to New York, two to Albany, one to Philadelphia, and one to Baltimore. A railroad 41 miles long extends from Providence to Boston, with which it is connected.

Provisions. Under this term, taken in its most extensive sense, in reference to man, may be comprised all those articles used as food by the inhabitants of this and other countries; but commercially it is understood to comprise only fresh and salted butchers' meat, hams and bacon, butter and cheese, eggs, and a few other articles.

VALUE OF LIVE STOCK, ACCORDING TO THE CENSUS OF 1850, OF THE UNITED STATES.

States and Territories.	Swine.	Value of Live Stock.	Value of Animals slaughtered.
Alabama.....	1,904,540	\$21,690,000	\$4,828,000
Arkansas.....	836,727	6,647,000	1,163,000
California.....	2,776	3,351,000	107,000
Columbia, District of.....	1,635	71,000	9,000
Connecticut.....	76,472	7,467,000	2,202,000
Delaware.....	56,261	1,849,000	373,000
Florida.....	209,453	2,880,000	514,000
Georgia.....	2,168,617	25,728,000	6,339,000
Illinois.....	1,915,907	24,209,000	4,972,000
Indiana.....	2,263,776	22,478,000	6,567,000
Iowa.....	323,247	3,689,000	821,000
Kentucky.....	2,891,163	29,661,000	6,462,000
Louisiana.....	597,301	11,152,000	1,458,000
Maine.....	54,638	9,705,000	1,646,000
Maryland.....	352,911	7,977,000	1,954,000
Massachusetts.....	81,119	9,647,000	2,500,000
Michigan.....	205,847	8,005,000	1,328,000
Mississippi.....	1,582,734	19,403,000	8,636,000
Missouri.....	1,702,625	19,887,000	3,367,000
New Hampshire.....	63,487	8,871,000	1,622,000
New Jersey.....	250,370	10,679,000	2,633,000
New York.....	1,013,252	73,570,000	13,573,000
North Carolina.....	1,812,813	17,717,000	5,767,000
Ohio.....	1,964,770	44,121,000	7,439,000
Pennsylvania.....	1,040,366	41,500,000	8,219,000
Rhode Island.....	19,509	1,532,000	667,000
South Carolina.....	1,065,503	15,060,000	8,502,000
Tennessee.....	3,104,800	29,978,000	6,401,000
Texas.....	632,022	10,412,000	1,716,000
Vermont.....	66,296	12,043,000	1,861,000
Virginia.....	1,829,843	33,656,000	7,502,000
Wisconsin.....	159,276	4,837,000	920,000
Minnesota Territory.....	734	92,000	2,000
New Mexico Territory.....	7,814	1,424,000	82,000
Oregon Territory.....	30,235	1,876,000	164,000
Utah Territory.....	914	546,000	67,000

—See articles BACON, PORK, WHEAT, FLOUR, etc.

Prunes and Prunelloes, a species of dried plums, of which there are many varieties. The finest are imported from France, in the south of which this fruit is very abundant. The best prunes are packed in hampers or baskets made of white osiers, weighing from six to ten pounds each; the second quality in quarters, and the third in puncheons.

Prussia (one of the Zoll-Verein). The Prussian territory is not much more than two-fifths of the size of that of Austria, and the larger portion of it lies within the limits of the great and comparatively barren plain which extends from the Bohemian and Carpathian Mountains to the Baltic Sea. The smaller and more fertile part of the Prussian territory, called the Grand Duchy of the Lower Rhine, lies in the lower part of the basin of that river, and is separated from the main body of the kingdom by the intervention of Hanover, Saxony, and other German states. There are, besides, several smaller districts scattered in the heart of Germany; and with a territory thus scattered and disjointed, the rank of Prussia as a great state has been sustained chiefly through the superiority of her internal organization, and the wary, temporizing, and even shuffling policy of her government, forced upon them, indeed, by the defenselessness of a kingdom without natural frontiers, or physical centrality, or a people united by language, and national feeling, and interest. Agriculture is the chief occupation of the people; but in the Rhenish provinces the cotton, and in Silesia the linen manufactures, are carried on to a great and increasing extent. Prussia necessarily maintains a large standing army, but has no naval power; the king, however, has recently purchased the port of Jade from the Grand Duke of Oldenburg for the purpose of a naval station, and has begun the formation of a fleet. The kingdom was till recently an absolute monarchy, but has now received a Constitution.

The first treaty of amity and commerce between the United States and Prussia was negotiated in 1785. This was renewed in 1799, and expired in 1815. In 1828 a new treaty was concluded between the two governments, which is still in force. Under the former treaties the vessels of the two high contracting parties were reciprocally allowed to import the goods which were of the produce or manufacture of their respective nations. The latter treaty, however, stipulates entire reciprocity and freedom of commerce. The vessels of each nation are allowed to import into the other the productions of their own or of any other country. The direct trade between the United States and Prussia is, however, very inconsiderable. There is scarcely any article of American production demanded in Prussia, except tobacco, rice, and raw cotton; nor is there any bulky article of Prussian produce wanted in the American markets.

VESSELS ENTERED AND CLEARED.

	1854.		1855.	
	Number.	Tonnage.	Number.	Tonnage.
Entered loaded.....	4794	414,803	5134	511,661
Of which were (national)	2182	211,648	2516	244,169
(foreign.)	2612	203,155	3118	267,501
Entered in ballast.....	2936	274,756	.....	.....
Cleared loaded.....	6576	585,663	6123	600,454
Of which were (national)	2898	277,923	2577	272,583
(foreign.)	3768	307,740	3526	327,965
Cleared in ballast.....	981	88,443	.....	.....

IMPORTS AND EXPORTS TO AND FROM THE UNITED STATES AND PRUSSIA, FROM 1850 TO 1855, BOTH INCLUSIVE.

Years.	Value of Imports into United States.	Value of Exports from United States.
1850.....	\$27,469	\$98,636
1851.....	20,542	85,913
1852.....	21,263	98,386
1853.....	47,875	28,717
1854.....	47,773	.....
1855.....	237,814	31,266

The following statement exhibits the value of ex-

ports, the produce and manufacture of Prussia, to the United States during a period of five years, from 1851

to 1855, both inclusive, specifying the places at which said exports were shipped for the United States:

Years.	VIA—						Total.
	Hamburg.	Bremen.	Holland.	France.	Belgium.	England.	
1851*	\$47,969	\$474,791	\$15,387	\$933,284	\$197,746	\$285,008	\$1,955,185
1852	239,843	1,410,705	47,746	1,648,972	442,020	1,616,848	5,416,734
1853	873,930	1,566,973	21,279	1,801,435	420,169	1,614,685	5,777,421
1854*	175,021	1,071,689	14,614	1,069,115	393,717	1,611,134	3,575,200
1855	264,714	1,982,313	67,314	1,926,249	840,604	1,942,463	7,024,562†

* These returns are for the port of New York only, and for six months. The Department is not in possession of the requisite data to exhibit the general trade for these years. The other years, however, show the general annual value of the indirect trade. † This includes \$905, *via* Rotterdam.

With Great Britain and France, Prussia maintains an active and annually increasing commercial intercourse. This trade is chiefly conducted through the port of Stettin. In 1852 the general navigation of this port was as follows:

VESSELS ENTERED THE PORT OF STETTIN IN 1852.

From England	280
" France	20
" United States	5
" Russia	15
" Denmark	30
" Mediterranean	20
Total number of vessels entered	370

VESSELS CLEARED FROM THE PORT OF STETTIN IN 1852.

For England	180
" France	50
" Denmark	30
" Russia	25
" Belgium	3
" Sweden	4
" Norway	10
" Holland	6
Total number cleared	308

From the United States the imports into this port are: rice, ashes, rosin and turpentine, and whale-oil; though, owing to its high price within the past few years, the article last named has almost ceased to be imported from the United States. Sugar has also disappeared from the list of imports, for the reason that the refineries in the Baltic ports chiefly use beet-root sugar.

The value of imports from the United States into this port for the years 1851, 1852, and 1853, and the duties levied thereon, are thus given in Prussian official reports:

1851	\$329,870—Amount of duty	\$26,160
1852	134,310	13,270
1853	79,833	5,920

The port of Memel is also the centre of no inconsiderable share of the direct trade between the United States and Prussia. From 1st July to 31st December, 1854, there entered this port from the United States, in the direct trade, five vessels, measuring an aggregate tonnage of 2505 tons, and floating 8171 bales of cotton, valued at \$411,500. Outward cargoes consisted of hemp, rope, canvas, yarn, mats, bags, and leather.

At the port of Königsberg there arrived from the United States from 1st July, 1854, to 1st January, 1855, seven American vessels, floating cargoes in value \$898,000—namely, 9680 bales of cotton, 1700 gallons of oil, and 3600 boxes of sugar. Outward cargoes consisted of hemp, yarn, bristles, feathers, raven's-duck, cordage, horse-hair, soap, and tallow, to the aggregate value of \$730,000.

The general foreign trade of this port is considerable. Its exports consist of grain, woollens, silks, soap, starch, sealing-wax, and refined sugar. Its imports, however, largely exceed in value its exports. The former in 1851 amounted to about 6,000,000 thalers, while the latter only reached a little over 4,000,000.

The harbor of Königsberg admits small vessels only; large ships land at Pillau, which is also the port of Elbing and Braunsberg.

Dantzic is the only remaining port of Prussia in which foreign trade is conducted. It is situated on the left bank of the Vistula, three and a half miles

from its outlet at Weichselmünde, and is accessible to vessels drawing from eight to nine feet water. Larger vessels lie in the Neufahrwasser, at the mouth of the river, or in the roads, which afford good anchorage for vessels of any burden. Its exports consist of wheat, rye, barley, oats, peas, flour, linseed, rape-seed, biscuit, provisions, ashes, zinc, bones, timber, staves, hemp, flax, linens, wool, etc. The imports comprise woolen and silken stuffs, and other manufactured goods; colonial products, dyes, wine, oil, spice, fruit, salt, and furs.

At Stettin, port dues are: Tonnage duty, 14 silver groschen per last, laden, and one half only if in ballast. This would be about 16.1 cents per ton if laden, and 8.05 cents per ton if in ballast. Pilotage dues, 2½ thalers per 25 lasts, and 15 silver groschen for every 10 lasts upward. This equals \$1 72½ per 50 tons, and 34½ cents per every 20 tons upward.

Port Regulations.—The following regulations apply to all the Prussian ports: On a ship arriving in the road or port, the master must submit to the police regulations of the port, which are made known to him or the officer in command; the master is then required to proceed to the custom-house and deliver a complete manifest of the cargo. This manifest or general declaration is required to state clearly if the whole cargo is to be entered at the port, and the part, if any, which is to be carried farther in the ship; that part to be stated under a special head. The merchandise, as per bills of lading, is then entered regularly. The statements for entry are to be drawn up, specifying the description, weight, measure, or quantity, agreeably to a zolltariff for the payment of duties. Excepting various articles imported in an unpacked state, the following measures are to be adopted: For beer in casks, tuns of 100 Prussian quarts; for wines, brandy, and vinegar, in casks (eimers) of 60 Prussian quarts; for herrings, barrels; for burned chalk, tuns of 4 Prussian bushels; for all other packed articles, centners of 110 pounds gross weight. If there be several packages of similar articles, and each package contains an equal quantity, they may be entered together, according to their number and size, and with a general statement of the contents. If the contents of the packages vary, it will be necessary to specify the contents of each. The luggage of passengers must be noted as such in the manifest. If it consist of usual traveling luggage, it will be sufficient to state the several boxes or parcels; but if it include goods, these must be stated according to number and description. The personal property of the master, with the exception of provisions, must be stated like other goods, but omitting the declaration to a consignee; and it must also be stated in the declaration what are the articles which are not in the ship's hold. A form is presented to the master to fill up as his report. It must be filled up exactly according to this form, and written clearly in the German language. This declaration is binding on the master, and each error that may be discovered on the unloading, or on examination, subjects him to a penalty stated in the customs laws. If the master has not a report with him, he may have one prepared in the port by a customs officer; in which case he delivers all his papers to the officer, who stamps and numbers them, the last number being marked as such. The master, at the same time, informs the officer of the goods or luggage

belonging to himself or to passengers, if there be no account of the same; the officer makes out a list thereof, which is signed by the master, and returned, in order to be inserted in the report. If the report has to be prepared on shore, it must be delivered to the customs officers within 24 hours after the arrival of the ship in the road; if not, possession will be taken of the ship at the master's expense. Customs officers may take possession of the ship at once, free of expense. It is required of the master to procure the necessary information for the report, in the arranged manner, on receipt of the cargo. If he does not so prepare himself, the customs officers assume the whole direction of landing the cargo, according to the regular instructions in such cases. Respecting the ship's provisions, if they consist of articles which pay a consumption duty, a separate report is required in duplicate: one is returned to the master after revision, in order that he may take on board an equal quantity of similar provisions when he sails. If he fails in this, or if the sailing is delayed beyond a twelvemonth, the consumption duty must be paid on the provisions remaining on hand. The master is, however, at liberty to deposit the provisions at the custom-house until he sails, subject to the consumption duty if not taken away. Articles not properly forming a part of the cargo are so considered if they undoubtedly appertain to the ship's inventory, and are articles for the use of the voyage. Articles which are not considered as such, are to pay duty if they be subject to a consumption tax; or they may be landed, in order to be deposited in the custom-house. If a vessel remains in the road, and does not enter the port, and only discharges the cargo into lighters, the consumption of provisions in the road is duty free. A report of the provisions is sufficient, and no further control over the same is observed, except in

particular cases when considered necessary. If the master is bound for another destination, and only enters the harbor through distress, then a general inspection is only made, in order that no part of the cargo may be disposed of. A report, however, is to be made of the cargo. In cases of shipwreck, on the salvage of the cargo, the kind and quantity is ascertained, with the assistance of the regular officers, and the cargo shall be placed in security until further directions are issued. The cargo of vessels which winter in Prussian ports must be declared without unnecessary delay, in as far as the ship's papers and the knowledge of the master afford information. An inspection of the outer parts and decks of the vessel, and the stores or articles thereon, takes place at once, and the ports or hatchways of the ship's hold are then locked. Until the declaration, inspection, and locking up of the vessel take place, it is watched at the expense of the captain; which guarding, in particular cases, may continue as long as the customs officers may consider necessary. Ships which only anchor in the roads, and do not enter the port, are not considered within the control of the customs officers; they must not, however, hold intercourse with the shore or the port, without delivering a report and their papers. If the ship remain in the roads longer than 24 hours after the declaration is made, without entering or proceeding to unload, unless the one or the other be prevented by stress of weather, then an officer repairs to the ship, examines the decks, etc., and locks up the hatches, etc., of the hold. To the officers who are on service on board the vessel, proper maintenance is to be allowed, the same as is afforded to travelers of the trading class. The following table exhibits the foreign commerce of the United States with Prussia for 37 years, giving the domestic and foreign exports, the imports, and tonnage.

COMMERCE OF THE UNITED STATES WITH PRUSSIA FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared	
	Domestic.	Foreign.	Total.		Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	....	....	....	\$1,399	....	....	....	....
1822.....	....	....	....	....	....	....	....	....
1823.....	\$7,268	\$563	\$7,836	....	....	....	120	....
1824.....	5,163	....	5,163	....	....	....	....	....
1825.....	4,918	12,650	17,568	21,250	....	....	....	217
1826.....	15,129	3,421	18,550	107,615	....	....	313	....
1827.....	8,515	....	8,515	89,758	....	....	156	....
1828.....	15,430	....	15,430	136,064	....	....	117	....
1829.....	14,411	....	14,411	22,935	....	....	188	....
1830.....	16,501	....	16,501	16,605	....	....	232	....
Total...	\$87,335	\$16,639	\$103,974	\$345,626	....	....	1126	217
Sept. 30, 1831.....	\$27,043	....	\$27,043	\$50,970	....	....	387	....
1832.....	11,116	....	11,116	27,927	....	....	179	....
1833.....	12,812	....	12,812	124,570	....	....	....	....
1834.....	15,300	\$3,510	18,810	14,045	....	....	....	299
1835.....	53,063	2,632	55,745	38,543	....	....	289	....
1836.....	66,410	....	66,410	81,301	....	....	....	1,177
1837.....	106,558	33,427	139,985	497,829	....	....	....	4,625
1838.....	65,661	19,283	84,944	6,629	....	....	240	1,433
1839.....	20,313	43,590	72,813	70,412	....	....	816	1,284
1840.....	43,353	43,115	86,468	59,304	....	....	506	1,577
Total...	\$430,629	\$145,517	\$576,146	\$971,530	....	....	2367	10,345
Sept. 30, 1841.....	\$149,211	\$26,765	\$175,976	\$36,119	....	....	547	3,342
1842.....	149,141	7,547	156,688	18,192	....	....	....	2,063
9 mos., 1843*.....	222,039	18,330	240,369	....	....	....	2173	1,905
June 30, 1844.....	194,606	23,963	218,574	12,609	....	....	164	5,009
1845.....	502,007	65,114	567,121	31,082	....	....	947	9,521
1846.....	396,210	39,645	435,855	31,584	....	....	1176	7,275
1847.....	182,259	19,907	202,166	7,608	....	....	....	5,127
1848.....	145,074	15,355	160,459	22,817	....	....	....	3,750
1849.....	34,703	9,516	44,219	17,687	....	....	240	606
1850.....	70,645	27,991	98,636	27,469	....	....	....	4,887
Total...	\$2,045,895	\$254,163	\$2,300,063	\$205,167	....	....	5247	43,485
June 30, 1851.....	\$80,469	\$5,444	\$85,913	\$30,542	....	....	184	1,635
1852.....	93,233	133	93,386	21,263	....	....	255	1,558
1853.....	26,911	1,806	28,717	47,875	....	....	....	293
1854.....	....	....	....	47,773	....	....	....	295
1855.....	20,466	10,800	31,266	397,814	....	....	....	1,174
1856.....	70,367	9,395	79,762	161,169	....	....	208	1,327
1857.....	80,738	14,311	45,009	66,127	....	....	949	1,384

—See article ZOLL-VEREIN for a general account of the foreign commerce.

* Nine months to June 30, and the fiscal year from this time begins July 1.

Prussian Blue, or Prussiate of Iron (Ger. *Berlinerblau*; Fr. *Bleu de Prusse*, It. *Azzurro Prussiano*, Sp. *Azul de Prussia*; Russ. *Лазор Бейлинская*), a beautiful deep blue powder, accidentally discovered at Berlin in 1710. It is of considerable importance in the arts, being extensively used by painters; it is manufactured in this country. Many attempts have been made to render Prussian blue available for the dyeing of broad-cloths, but without much success. The difficulty is to diffuse the color equally over the surface; for, from its extraordinary vivacity and lustre, the slightest inequalities strike and offend the eye. Prussian blue resists the air and sun extremely well; but it can not be used in the dyeing of cottons, or any sort of stuff that is to be washed with soap, as the alkali contained in the soap readily dissolves and separates the coloring matter.—BANCROFT on *Colors*. Blue is a favorite color with the Chinese, and in 1810-'11 the imports of Prussian blue into Canton from England amounted to 1899 piculs, or 253,200 lbs. But for some years past the Chinese have not imported a single pound weight. The cause of the cessation of the trade deserves to be mentioned. A common Chinese sailor, who came to England in an East Indiaman, having frequented a manufactory where the drug was prepared, learned the art of making it; and on his return to China he established a similar work there, with such success that the whole empire is now amply supplied with native Prussian blue! The West has derived many important arts from the East; but we incline to think that this is the first well-authenticated instance of any art having ever been carried from the West to the East by a native of the latter. But in all that respects industry, ingenuity, and invention, the Chinese are incomparably superior to every other people to the east of the Indus.

Prussian or German Commercial Union. Next to the efforts of the Prussian government to diffuse the blessings of education, their efforts to introduce a free commercial system into Germany constitute their best claim to the gratitude and esteem of their own subjects, and of the world. Germany, as every one knows, is divided into a vast number of independent, and mostly petty states. Until a very recent period, every one of these states had its own custom-houses, and its own tariff and revenue laws; which frequently differed very widely indeed from those of its neighbors. The internal trade of the country was, in consequence, subjected to all those vexatious and ruinous restrictions that are usually laid on the intercourse between distant and independent states. Each petty state endeavored either to procure a revenue for itself, or to advance its own industry, by taxing or prohibiting the productions of those by which it was surrounded; and customs officers and lines of custom-houses were spread all over the country! Instead of being reciprocal and dependent, every thing was separate, independent, and hostile: the commodities admitted into Hesse were prohibited in Baden, and those prohibited in Wirtemberg were admitted into Bavaria. It is admitted that nothing contributes so much to the growth of industry and wealth in modern times as the perfect freedom of internal industry, and that intimate correspondence among the various parts of the country which renders each the best market for the produce of the other. How different would have been our present condition had each county been an independent state, jealous of those around it, and anxious to exalt itself at their expense! But, until within these few years, this was the exact condition of Germany; and, considering the extraordinary obstacles such a state of things opposes to the progress of manufactures, commerce, and civilization, the wonder is, not that they are comparatively backward in that country, but that they should be so far advanced as they really are.

But, thanks to the intelligence and perseverance of Prussia, this anti-social system has been well-nigh sup-

pressed; and the most perfect freedom of commerce established among the great bulk of the Germanic nations. The disadvantages of the old system had long been seen and deplored by well-informed men; but so many interests had grown up under its protection, and so many deep-rooted prejudices were enlisted in its favor, that its overthrow seemed to be hopeless, or, at all events, exceedingly distant. The address and resolution of the Prussian government, however, triumphed over every obstacle. Being fully impressed with a strong sense of the many advantages that would result to Prussia and Germany from the introduction of a free system of internal intercourse, they pursued the measures necessary to bring it about with an earnestness that produced conviction, and with a determination, *coute qui coute*, to carry their point.

The first treaties in furtherance of this object were negotiated by Prussia with the principalities of Schwarzburg-Sondershausen and Schwarzburg-Rudolstadt, in 1818 and 1819, on the principle that there should be a perfect freedom of commerce between these countries and Prussia; that the duties on importation, exportation, and transit, in Prussia and the principalities, should be identical; that these should be charged along the frontier of the dominions of the contracting parties; and that each should participate in the produce of such duties, in proportion to its population. All the treaties subsequently entered into have been founded on this fair and equitable principle; the only exceptions to the perfect freedom of trade in all the countries comprised within the league or tariff alliance being confined, first, to articles constituting state monopolies, as salt and cards, in Prussia; 2d, to articles of native produce, burdened with a different rate of duty on consumption in one state from what they pay in another; and, 3d, to articles produced under patents conferring on the patentees certain privileges in the dominions of the states granting the patents. With these exceptions, which are not very important, the most perfect freedom of commerce exists among the allied states. Since 1818, when the foundations of the alliance were laid, it has progressively extended, till it now comprises more than three-fourths of the Germanic states, exclusive of Austria. Ducal Hesse joined the alliance in 1828, and Electoral Hesse in 1831; the kingdoms of Bavaria, Saxony, and Wirtemberg joined it afterward, as have Baden, Nassau, and almost all the smaller states by which it had not been previously joined, with the exception of Mecklenburg-Schwerin and Mecklenburg-Strelitz. But these, with Hanover, will be very shortly included in the league. In 1852 the tariff alliance comprised—

	German Square Miles.	Population in 1849
Prussia.....	5188	16,669,153
Luxemburg.....	47	189,783
Bavaria and her detached territories.....	1396	4,526,650
Saxony (Kingdom of).....	272	1,894,431
Wirtemberg and the two Hohenzollerns.....	384	1,815,558
Hesse (Electoral).....	208	773,544
Hesse (Duchy) and Homburg.....	154	862,917
The Thuringian States.....	237	1,014,954
Baden (Duchy of).....	276	1,360,599
Brunswick (Duchy of).....	68	247,070
Nassau.....	85	425,686
Frankfort.....	2	71,678
Totals.....	8307	29,800,063

Throughout the whole extent of this immense country, from Aix-la-Chapelle, on the confines of the Netherlands, eastward to Tilsit, on the confines of Russia, and from Stettin and Dantzic, southward to Switzerland and Bohemia, there is nothing to interrupt the freedom of commerce. A commodity, whether for consumption or transit, that has once passed the frontier of the league, may be subsequently conveyed, without let or hindrance, throughout its whole extent. Instead of being confined within the narrow precincts of their own territories, the products of each separate country of the alliance may be sent to every one else;

so that each may apply itself, in preference, to those departments in which it has some natural or acquired advantage; and each has to depend for its success, not on the miserable resource of customs regulations, but on its skill and industry. The competition thence arising is most salutary; and, should the peace of Europe be preserved, we run little risk in saying that all sorts of industry will make more progress among the states comprised within the tariff alliance, during the next ten years, than they did during the half century previous to its being organized. An assembly of representatives from the allied states meets annually, to hear complaints, adjust difficulties, and make such new enactments as may seem to be required. The Prussian tariff has been adopted, with certain modifications. The duties are received into a common treasury, and are apportioned according to the population of each of the allied states. In addition to its other advantages, the new system has reduced the cost of collecting the duties to a mere trifle, compared with its former amount; and has enabled hundreds of custom-houses, and thousands of customs officers, to be employed in the different departments of industry. The existing discrepancy in the weights and measures used in different parts of Germany occasions considerable inconvenience; and we are glad to observe that the equalization of weights and measures, and their reduction to a common standard in all the allied states, is declared to be one of the objects of the league. It is also expressly provided that the tolls, or other charges in lieu thereof, shall in all cases, whether they belong to the public or to private individuals, be limited to the sums required to keep the roads in a proper state of repair; and that the tolls existing in Prussia shall be considered as the highest that are to be levied, and shall not in any case be exceeded.

We are able to lay before the reader the following extract from a work printed by order of the House of Representatives, giving an account of the objects to be attained by the Prussian Commercial League: "Prussia," it is there said, "has evidently taken the lead in this wise and important measure, to which the smaller states have gradually acceded. The whole commercial policy of this enlightened power has been distinguished for its liberality, being founded on the desire of placing her intercourse with all nations on the basis of reciprocity. The commercial league of Germany is intended to carry out this principle, and not to be directed, as has been supposed, against any particular nation; as it is well known that Prussia, in her treaties with maritime powers, has invariably adopted the system of reciprocity, to whatever extent those with whom she negotiates are willing to carry it. The establishment of this community of commercial interests forms a part of the fundamental compact by which the new Germanic Confederation was created, after the dissolution of the Confederation of the Rhine; to be subsequently adopted, however, at the option of such of the co-states as should choose to accede to it. Its effects can not fail to promote commerce, and every other branch of industry, as it removes all those vexatious and endless difficulties which previously obstructed the freedom of intercourse. Navigable rivers and highways are now opened to the unfettered use of the German people; the custom and toll houses, with their officers and barriers, have been withdrawn from the interior, and the whole intercommunication resembles that of the subjects of any one of the states within its own territories. To these benefits may be added the assured prospect of improvement in the finances of the great and smaller sovereignties composing the league. This advantage will grow out of the simplicity or unity of the new system, a saving in the cost of collection, and from the increased consumption which renovated industry and progressive prosperity so invariably cause."—*Digest of Customs Laws*, vol. iii. p. 227.

Prussian Duty on Cottons.—The duty on cotton goods

being that in which we are most interested, we have taken some pains to ascertain its real influence. This duty amounts to 50 rix dollars per Prussian quintal on all cotton goods, without respect to quality or price; and, taking the quintal at 113 lbs. avoirdupois, and the rix dollar at 3s., it is equal to £7 10s. per 113 lbs. Now we have learned from statements obligingly furnished to us by a large wholesale house in the city, 1st. That a quintal (113 lbs.) of *coarse shirting*, worth 4d. per yard, contains 497 yards; it consequently costs £8 6s., and the Prussian or tariff alliance duty of £7 10s. on it is, therefore, equivalent to an *ad valorem* duty of 90 per cent. 2d. That a quintal of *superior shirting*, worth 1s. a yard, contains 457·65 yards; it consequently costs £22 17s. 7d., making the Prussian duty on such goods 32½ per cent. 3d. That a quintal of *printed cottons*, worth 1s. 6d. a yard, contains 633 yards; it consequently costs £47 9s., making the Prussian duty on such goods 15½ per cent. 4th. That a quintal of *fine printed cottons*, worth 2s. 6d. a yard, contains 678 yards; it consequently costs £84 15s., making the Prussian duty on such goods 8½ per cent. It is plain, therefore, that, except on the coarsest and cheapest species of goods, the Prussian or tariff alliance duty is very far from being oppressive; and, as the value of coarse goods is principally dependent on the cost of the raw cotton and the wages of labor, being but little influenced by superiority of machinery, it is not very probable that we should export them largely to Prussia, even were the duty materially reduced. No doubt, however, it would conduce greatly to the interests of the people comprised within the league, though we do not know that it would sensibly affect us, were the duty assessed on an *ad valorem* principle, and made 20 or 30 per cent. on all goods; and we should think that this might be done without any material difficulty. The subjoined translation of the more important clauses of the customs treaty of the 22d of March, 1833, sets the principles on which the alliance is founded in a clear point of view.

Customs Treaty, concluded the 22d March, 1833, between the Kings of Bavaria and Wirtemberg, on the one part; and the King of Prussia, the Prince Electoral Co-regent of Hesse, and the Grand Duke of Hesse on the other part.

I. The existing customs unions between the states above named shall henceforth constitute a general Union, united by a common system of customs and commerce, embracing all the countries which are comprised therein.

II. In this general reunion are also comprised the states which have already adhered, either for the whole of their territory, or for a part, to the system of customs and commerce of one or other of the contracting states, having regard to their special relations, founded upon the conventions of adhesion concluded with the states which have intervened.

III. But there will remain excluded from the general reunion the parts separated from the countries of the contracting states which, because of their situation, are not yet included either in the reunion of the Bavarian or Wirtemberg customs, nor in those of Prussia and Hesse. Nevertheless, the regulations now in force to facilitate the commerce of these territories with the principal country will be maintained. Other favors of this kind can not be accorded without the unanimous consent of the contracting states.

IV. In the contracting states there shall be established uniform laws for the duties of import, of export, and of transit, except such modifications as, without injury to the common object, result necessarily from the particular legislation of each contracting state, or from local interests. Thus, exceptions and modifications to the common tariff may take place, as to rates of duties of entry, of export, and of transit (according as the direction of the routes of commerce may require), established upon articles recognized as of minor conse-

quence in extensive commerce; provided always, that these modifications be preferred by separate states, and that they shall not be disadvantageous to the general interests of the Association. The administration of the duties of import, export, and transit, as well as the organization of the authorities which are engaged therein, in all the states of the Association, shall be established upon a uniform footing, having regard, however, to the particular relations existing in those countries. The laws and ordinances which, according to those principles, ought to be uniform in the contracting states, and which are to constitute the law of the tariff and the regulations of the customs, shall be considered as an integral part of the present treaty, and shall be published at the same time.

V. There can neither be alterations, nor additions, nor exceptions, to the acts above mentioned (Article IV.), but by the unanimous consent of all the contracting parties, and in the form required for the making (*confection*) of the laws. The preceding applies equally to all the ordinances which would establish, for the administration of the customs, dispositions entirely different.

VI. Liberty of commerce, and community of the receipts of customs, as regulated by the following article, will commence simultaneously with the operation of the present treaty.

VII. Dating from this epoch, all duties of import, of export, and of transit shall cease on the common frontier of the Bavaro-Wirtemberg and Prusso-Hessian customs reunions. All articles of free commerce in one of those territories may be imported freely and without duty into all the others, except only as follows:

A. Articles monopolized by the states (playing-cards and salt) conformable to Articles IX. and X.

B. Indigenous articles, now subject in the interior of the contracting states to different duties, or excepted from all duty in one state, and imported into another, and which according to article II. ought consequently to be subject to a duty of compensation.

Finally, C. Articles which, without prejudice to patent rights or conceded privileges in one of the contracting states, can not be imitated or imported, and ought consequently to be excluded during the existence of the patents and privileges from importation into the state which has granted them.

VIII. Notwithstanding the freedom of commerce, and the exemption from duties, established by Article VII., the transport of articles of commerce, subject by the common tariff to duties of import or export on the frontiers of the Association, can not take place between the states of Bavaria and Wirtemberg, and the states of Prussia, of Electoral Hesse, or of Grand Ducal Hesse, and reciprocally, except by the public roads, military routes, and navigable rivers. For this purpose there shall be established on the interior frontiers common *bureaus* of verification, to which the conductors of merchandise must, on exhibiting their licenses, declare what are the articles which they are employed to transport from one territory to another. This disposition will not be applicable to retail commerce in raw materials, nor to the petty commerce of the frontiers or the fairs, nor to the effects of travelers. Process for the verification of merchandise will go no farther than is required for security of the duties of compensation.—See Article VII.

XIII. The contracting parties reciprocally renew their adhesion to the principle that the tolls, or other charges in lieu thereof, shall only be sufficient to defray the expense of maintenance and repairs of the roads, whether the tax be for the state or for private rights. It was thus that has been approved the supplement to the duty of customs, created in Bavaria and Wirtemberg, to replace the duty of tolls, paving, causeways, bridges, and generally of all analogous taxes. The tolls, etc., now existing in Prussia, according to the general tariff of 1828, shall be consider-

ed as the *highest rates*, and shall not be exceeded in any of the contracting states. In accordance with the principle thus announced, the individual duty for closing the gates of cities shall be abolished; as also the duty of paving of causeways, where it still exists; and all paved roads will be considered as causeways of a description liable only to the duty on causeways established by the general tariff.

XIV. The contracting governments agree to unite their efforts to introduce into the states a uniform system of coins, weights, and measures; to commence immediately the requisite negotiations for this purpose; and, subsequently, to direct their efforts toward the adoption of uniform custom-house weights. The contracting states, in the impossibility of establishing this uniformity before this treaty goes into operation, agree, for facilitating the forwarding of merchandise where it has not already been done, to revise their tariff as to weights and measures, assuming for a basis the tariffs of the other contracting states. They will cause such modifications to be published, for the government of the public and of their custom-house *bureaus*. The common tariff (Article IV.) shall be divided into two principal divisions, according to the system of weights, measures, and moneys of Bavaria, and that of Prussia. The declaration of the weights and measures of articles subject to duty shall, in Prussia, be according to Prussian weights and measures; in Bavaria and Wirtemberg, according to those of Bavaria; and in the two Hesses, according to the weights and measures there legally established. In expediting custom-house acts, the quantity of merchandise must be expressed according to the two principal divisions of the common tariff. Until the contracting states agree upon a system of common money, the payment of duties in each state shall be made in the same currency as in use for payment of its other taxes. But from the present time, the gold and silver coins of all the contracting states, with the exception of small money (*scheidemünze*), shall be received into all the *bureaus* of receipt of the Association; and for this purpose tables of value shall be published.

XV. The duties of navigation upon the rivers, comprising therein those which apply to vessels, shall always be mutually acquitted according to the acts of the Congress of Vienna, or of special conventions, upon all the rivers to which these regulations apply, unless other determinations be adopted in this respect. The contracting states agree to enter without delay into negotiations for that which particularly regards the navigation upon the Rhine and the neighboring streams, in order to effect an arrangement by which the import, export, and transit of the productions of all the states of the Union upon said streams shall be, if not absolutely free, at least relieved as far as possible from duties of navigation, under the reserve of charges of reconnaissance. All the advantages granted by one state of the Union to its subjects, in the exercise of the navigation upon said streams, shall extend equally to the navigation of the other associated states. Upon the other streams to which neither the acts of the Congress of Vienna, nor any other treaties apply, the duties of navigation shall be according to the special regulations of the governments interested. Nevertheless, the subjects of the contracting states, their merchandise and vessels, shall throughout be treated on those streams with perfect equality.

XVI. Dating from the day on which the general custom-house regulations of the Union shall come into operation, the duties of public stores (*étapes*), and of transshipments (*umschlagnechte*), which still exist in the territories belonging to the Association, shall cease, and no one shall be liable to forced delay, nor to the discharging and storage of his merchandise, except in cases authorized by the common regulations of the customs or navigation.

XVII. No duties shall be claimed for canals, locks,

bridges, ferries, cranes, weighing, and storage; and the establishments destined to facilitate commerce shall not be allowed rent, except when actually used. Charges can not be increased; and the subjects of the other contracting states shall be on a perfect equality with the subjects of the countries having those establishments. If the establishments for weighing and cranes are only used by the custom-houses, no charge shall be made, if the articles have been previously weighed at a custom-house.

XVIII. The contracting states engage to continue their common efforts for the encouragement of industry by the adoption of uniform regulations, so that the subjects of each state may enjoy, as extensively as possible, the privilege of seeking work and occupation in every other state. From the coming into operation of the present treaty, the subjects of any one of the contracting states, trading or seeking employ in the territory of any other of those states, shall not be subject to any impost which does not equally affect the native similarly employed. Manufacturers and merchants who are only making purchases for their trade, or travelers who have no goods with them, but simply patterns for the purpose of soliciting commissions, shall not, when thus employed, have any duty to pay in another state, if authorized to carry on such commerce in the state where they have their domicile; or if employed in the service of native manufacturers or merchants. When trading in the markets and fairs, or when they are selling the produce of the soil and fabrics, in any one of the states of the Association, the subjects of the other contracting states shall be treated in all respects as subjects of the same states.

XIX. The sea-ports of Prussia shall be open for commerce to all the subjects of the states of the Union, on payment of the same duties as are paid by Prussian subjects, and the consuls of the several states in the sea-ports or places of foreign commerce, shall be bound, in cases of need, to assist with their advice and support the subjects of the other contracting states.

XX. To protect against contraband their common custom-house system, and to insure the regular payment of the duty of consumption in the interior, the contracting states have concluded a reciprocal cartel, which shall be enforced as soon as possible, but at the farthest at the same time with the present treaty.

XXI. The community of receipts of the contracting states, stipulated by the present treaty, shall comprehend the product of duties of entry, of export, and of transit, in the Prussian states, the kingdoms of Bavaria and Wirtemberg, the Electorate, and the Grand Duchy of Hesse, comprising therein those countries which have down to the present time acceded to the custom-house system of the contracting states. The following are excluded from the community of receipts, and remain reserved for the particular benefit of the respective governments: 1. The imposts collected in the interior of each state on indigenous products, comprising therein the compensatory duties reserved in Article XI. 2. The toll on rivers, to which are applicable the regulations of the acts of the Congress of Vienna, or special conventions.—Article XV. 3. Duties of paving, of causeways, of bridges, of ferries, of canals, of locks and ports, charges of weighing and storage, as well as similar receipts, whatever may be their name. 4. The fines and confiscations which, beyond the part allowed to informers, remain the property of each government throughout its territory.

XXII. The produce of the duties received into the common treasury shall be divided among the states of the Association, in proportion to the population which may be found in the Union, subject to deduction, 1st. Of the expenses specified in Article XXX.; 2d. Of the restitution of erroneous receipts; 3d. Of the restoration of duties and diminutions made in consequence of special common conventions. The population of every state which has entered or may enter into the

Association, by treaty with one or other of the contracting states, under the engagement made by the latter, to make an annual contribution for the participation of the former to the common revenue of the customs, shall be added to the population of the states which make this contribution. There shall be made every three years, dating from a period to be hereafter fixed, an exact enumeration of the population of the associated states: the states shall reciprocally communicate the results thereof.

XXIII. All restitutions of duties not authorized by the legislation of the customs shall remain charged to the treasury of the government which shall have granted it. Conventions, hereafter to be concluded, will regulate in what cases similar restitution may be accorded.

XXIV. In conformity with the object of this association of customs tending to facilitate a freer and more natural commercial intercourse, the favors accorded for the payment of custom-house duties at certain places in which fairs are held, especially the privileges of abatement (*rabat privilegien*), can not be extended to those states of the Association where they do not exist; on the contrary, they shall be restricted and abolished as far as possible, regard being had to the means of subsistence of the places heretofore favored, and to the commercial relations which they have with foreigners; but others can on no account be granted without the general consent of the contracting parties.

XXXIII. There shall every year, on the 1st day of June, be an assembly of plenipotentiaries of the governments of the Union empowered generally to deliberate; and each state may send thither a duly authorized representative. The plenipotentiaries will choose from among themselves a president, who, however, shall have no pre-eminence over the other members. The first assembly shall be held at Munich. At the close of each annual assembly, the place of next meeting will be determined, having reference to the nature of those subjects which will then come under discussion.

XXXIV. The assembly of plenipotentiaries will have under its consideration the following subjects: A. To consider the complaints which may have arisen in any of the states of the Association concerning the execution of the general treaty, of special conventions, of the law, and of custom-house regulations; also of the tariff, when these shall not have been adjusted during the year by correspondence between the different ministers. B. The definite reparation among the states of the Union of the total common receipts, based upon the observations made by the superior authorities, and verified by the central *bureau*, as may be rendered necessary by the common interest. C. To deliberate upon propositions and suggestions made by the governments for the perfection of the administration. D. Discussions upon alterations, demanded by any of the contracting states, in the laws, tariffs, and custom-house regulations, as well as in the organization of the administration, and in general upon the development and perfection of the general system of customs and commerce.

XXXV. If, in the course of the year, when the plenipotentiaries are not in session, extraordinary incidents should occur, which require prompt decision on the part of the states of the Union, the contracting parties will consult upon these through their diplomatic agents, or they will order an extra sitting of their plenipotentiaries.

Recent Changes in the German Customs Union.—The discussions in the assemblies of the League have, especially of late years, been a good deal influenced by political considerations. A league, denominated the *Steuer-Verein*, had been formed in opposition to, or in rivalry with, the Prussian League, by Hanover, Oldenburg, and Brunswick. It was evident, however, inasmuch as the interests of these and the other German states were identical, that it would be a great public ad-

vantage were these associations merged into one. But owing to political, commercial, and financial jealousies, this desirable object was of very difficult attainment. Happily, however, these difficulties have been surmounted; and a treaty negotiated between Hanover and Prussia, on the 7th of September, 1851, provided for the incorporation, from the 1st of January, 1854, of the former kingdom, and the other states included in the Steuer-Verein, with the Prussian Union. Some modifications have been introduced by the treaty into the basis of the League, but they are of little importance, except the to parties immediately interested.

Treaty with Austria.—More recently a great deal of discussion has taken place between Prussia and the subordinate German states on the one hand, and Austria on the other, in regard to the formation of a Customs Association which should include the latter; and in order to pave the way for this desirable consummation, Austria issued a new tariff on the 25th of November, 1851, in which she made many important modifications in the prohibitive system on which she had previously acted, at the same time that she established a free commercial intercourse between Hungary (which had previously a separate customs establishment) and the other states of the empire. And though this wise and liberal meas-

ure has not yet led to the incorporation of Austria into the Customs Union, it has led to the conclusion of an extremely important commercial treaty between Austria and Prussia, dated the 19th of February, 1853. The contracting parties engage to suppress, with a few specified exceptions, all prohibitions against importing the products of the one into the territories of the other; they next establish a complete freedom of trade between the two countries in all articles of raw produce; and they further stipulate that the duties to be imposed on manufactured products shall be moderate and reasonable. It has a variety of other clauses, all of which have a liberal character. The duration of the treaty is limited to 12 years; but we have little doubt, should peace be preserved, that the advantages of which it will be productive will be so many and so great, that long before the expiration of 12 years its provisions will be still further liberalized, and that it will lay the foundations of a lasting intercourse, of which we can neither foresee the extent nor the beneficial influence.

In consequence of these and other changes the duties in the tariff of the German Customs Union have undergone many modifications. But except on coarse and heavy goods, they continue, speaking generally, to be moderate. We subjoin

AN ACCOUNT SHOWING THE PROPORTION OF THE REVENUES OF THE GERMAN CUSTOMS UNION RAISED IN THE DIFFERENT STATES IN 1851, AND THE DISTRIBUTION THEREOF, ACCORDING TO THEIR POPULATION, FROM THE OFFICIAL RETURNS, PUBLISHED AT BERLIN IN 1852.

States.	Import Duties.				Export and Transit Duties payable to each State.	Import, Export, and Transit Duties payable to each State.
	Population.	Amount of gross Receipts.	Amount of net Receipts for Distribution.	Amount payable to each State according to its Population.		
		Thalers *	Thalers.	Thalers.	Thalers.	Thalers.
Prussia.....	16,669,153	15,572,929	14,347,476	11,211,383	244,203	11,455,586
Luxemburg.....	183,793	77,114	† 10,445	127,645	2,241	1,9,886
Bavaria.....	4,526,650	1,210,539	904,591	3,044,546	53,463	3,098,009
Saxony.....	1,894,431	2,119,847	1,995,287	1,274,161	29,736	1,393,897
Wurtemberg.....	1,805,558	348,527	330, 37	1,214,337	21,325	1,235,712
Baden.....	1,360,599	652,625	353,482	915,115	16,070	931,185
Hesse Cassel.....	731,584	433,046	342,256	492,051	8,641	500,692
Hesse Darmstadt.....	862,917	412,803	402,501	580,333	10,192	590,575
Thuringian States.....	1,014,554	391,793	391,793	682,640	15,931	698,571
Brunswick.....	247,070	390,143	229,523	166,175	3,534	169,709
Nassau.....	425,686	74,8,9	71,310	256,309	5,028	291,339
Frankfort.....		861,492	636,334	....	....	....
Total.....	29,728,385	22,545,687	20,065,240	19,994,795	410,564	20,405,159
		† Less	10,445†			
			19,994,795			

* The thaler, 69 cents American currency. † Frankfort is regulated by a specific arrangement, and not by population.

† A special payment by Prussia, on account of the Union.

Pumice-stone (Ger. *Bimstein*; Fr. *Pierre ponce*; It. *Piedra ponce*; Sp. *Piedra pomez*; Lat. *Pumex*), a light, spongy, vitreous stone, found usually in the neighborhood of volcanoes. It is used for polishing metals and marble, and smoothing the surface of wood and pasteboard. It is said to form a good glaze for pottery. The lighter pumice-stones swim on water, their specific gravity not exceeding .914. The island of Lipari, in the Mediterranean, is chiefly formed of pumice-stone, and may be said to be the magazine whence all Europe is supplied with this useful article. There are several species of pumice-stones, but those only that are light and spongy are exported.

Puncheon, a measure of capacity for liquids, containing eighty-four gallons, or one-third of a tun.

Putchock. An article of this name is imported in considerable quantities from the northwest coast of India into China, and is regularly quoted in the Canton price-currents. It is the root of a plant that grows abundantly in Sindo. When burned, it yields a fine smoke, and a grateful and diffusive smell. The Chinese beat it into a fine powder, which they burn as incense in the temples of their gods.—HAMILTON'S *New Account of the East Indies*.

Pyroligneous Acid (Gr. *πυρ*; Lat. *lignum, wood*). This term is generally applied to the acid liquor which passes over along with tar and gaseous products when wood is subjected to destructive distil-

lation. This acid liquor is an impure vinegar, from which acetic acid is obtained as follows: The pyroligneous acid, freed from tar, is saturated with chalk or powdered slaked lime, filtered and evaporated, by which an impure acetate of lime is obtained; this is gently heated, so as to destroy part of its empyreumatic matter without decomposing the acetic acid; it is then mixed with sulphate of soda, which yields, by double decomposition, sulphate of lime and acetate of soda; the acetate of soda is filtered off the sulphate of lime, evaporated, heated, and redissolved and crystallized. In this way a pure crystallized acetate of soda is, by proper management, obtained, which is mixed in a retort or still with a proper proportion of sulphuric acid, and a gentle heat applied, which causes the strong acetic acid to distill over, and sulphate of soda remains behind. This acetic acid is in a high state of concentration; it is lowered by the addition of water, and if intended for the table or for domestic use, as a substitute for other forms of vinegar, it is usually colored with a little burned sugar. The charcoal which is the residue of this distillation of wood is of an excellent quality—that employed in the manufacture of gunpowder is thus prepared. This manufacture of vinegar is now carried on upon a very large scale, and the greater part of the vinegar used for domestic purposes and in the arts, in many of which it is largely consumed, is derived from this source.

Q.

Quadrans, in *English money*, the fourth part of a penny. Before the reign of Edward I., the smallest coin was a *sterling*, or penny marked with a cross, by the guidance of which a penny might be cut into halves for a half-penny, or into quarters, or four parts, for farthings. But, to avoid the fraud of unequal cuttings, that king afterward coined half-pence and farthings in distinct round pieces.

Quadrant, in *Geometry*, the arch of a circle, containing 90°, or the fourth part of the entire periphery.

Quadrant also denotes a mathematical instrument, of great use in astronomy and navigation, for taking the altitudes of the sun and stars, as also for taking angles in surveying. This instrument is variously contrived, and furnished with different apparatus, according to the various uses it is intended for; but they all have this in common, that they consist of a quarter of a circle, the limb of which is divided into 90 degrees. Some have a plummet suspended from the centre, and are furnished with sights to look through. The principal and most useful quadrants are the common surveying quadrant, astronomical quadrant, Adams's quadrant, Cole's quadrant, Gunter's quadrant, Hadley's quadrant, horodictical quadrant, Sutton's or Collins's quadrant, and the sinical quadrant.

Quarantine, a regulation by which all communication with individuals, ships, or goods, arriving from places infected with the plague, or other contagious disease, or supposed to be peculiarly liable to such infection, is interdicted for a certain definite period. The term is derived from the Italian *quaranta*, forty, it being generally supposed that if no infectious disease break out within 40 days, or six weeks, no danger need be apprehended from the free admission of the individuals under quarantine. During this period, too, all the goods, clothes, etc., that might be supposed capable of retaining the infection are subjected to a process of purification. This last operation, which is a most important part of the quarantine system, is performed either on board ship, or in establishments denominated *lazarettos*.

Policy of Quarantine.—The regulations as to quarantine are entirely precautionary; they have their origin in the belief that various diseases, but especially the plague, are contagious; and supposing such to be the case, the propriety of subjecting those coming from an infected or suspected place to a probation is obvious. Indeed, no government could, until the belief in question be proved to be ill-founded, abstain from enforcing precautionary measures, without rendering itself liable to the charge of having culpably neglected one of its most important duties—that of providing, by every means in its power, for the safety of its subjects. Latterly, however, it has been contended that the plague is never imported—that it is always indigenous; originating in some peculiar state of the atmosphere, or in something peculiar in the condition of the people; and that, consequently, quarantine regulations merely impose a heavy burden on commerce, without being of any real utility. But though there does not seem to be any reason for doubting that infectious diseases have originated in the way described, the fact that they have, in innumerable instances, been carried from one place to another, seems to be established beyond all question. Even if the evidence as to the importation of infectious diseases were less decisive than it is, or the opinions of medical men more divided, it would not warrant the repeal of the restraints on the intercourse with suspected ports. This is not a matter in which innovations should be rashly introduced; wherever there is doubt, it is proper to incline to the side of security. In some cases, perhaps, quarantine regulations have been carried to a needless extent; but they have more frequently, we believe, been improperly relaxed.

Institution of Quarantine.—The notion that the plague was imported from the East into Europe seems to have prevailed in all ages. But it would appear that the Venetians were the first who endeavored to guard against its introduction from abroad, by obliging ships and individuals from suspected places to perform quarantine. The regulations upon this subject were, it is most probable, issued for the first time in 1484.—BECKMANN, *History of Inventions*. They have since been gradually adopted in every other country. Their introduction into England was comparatively late. Various preventive regulations had been previously enacted, but quarantine was not systematically enforced till after the alarm occasioned by the dreadful plague at Marseilles in 1720. The regulations then adopted were made conformably to the suggestions of the celebrated Dr. Mead, in his famous “Discourse concerning Pestilential Contagion.”

Lazarettos or Pest-houses are establishments constructed to facilitate the performance of quarantine, and particularly the purification of goods. They have usually a port in which ships from a suspected place may anchor; and, when perfect, are provided with lodgings for the crews and passengers, where the sick may be separated from the healthy; and with warehouses, where the goods may be deposited; all intercourse between the lazaretto and the surrounding country being, of course, interdicted, except by permission of the authorities. The lazarettos of Leghorn, Genoa, and Marseilles are the most complete of any in Europe. The facilities they afford to navigation are very great; for, as ships from suspected places may discharge their cargoes in the lazaretto, they are not detained longer than they would be were there no quarantine regulations. The goods deposited in the lazaretto, being inspected by the proper officers, and purified, are then admitted into the market.

Bills of Health.—The period of quarantine varies, as respects ships coming from the same place, according to the nature of their bills of health. These are documents, or certificates, signed by the consul or other competent authority in the place which the ship has left, describing its state of health at the time of her clearing out. A *clean* bill imports that at the time of her sailing no infectious disorder was known to exist. A *suspected*, or, as it is more commonly called, a *touched* bill, imports that rumors were afloat of an infectious disorder, but that it had not actually appeared. A *foul* bill, or the *absence of clean bills*, imports that the place was infected when the vessel sailed. The duration of the quarantine is regulated by the nature of these instruments. They seem to have been first issued in the Mediterranean ports in 1666, and are obviously of great importance.

By an act of Congress passed February 25, 1799, respecting quarantine and health laws, it is provided that the quarantines and other restraints required by the health laws of any State, respecting any vessel arriving in or bound to any port or district, shall be duly observed by the officers of the revenue of the United States, and by the masters and crews of the revenue cutters, and by the military officers stationed upon the sea-coast; and all such officers of the United States are required faithfully to aid in the execution of such laws. The secretary is authorized, when a conformity to the quarantine and health laws requires it, to prolong the terms limited for the entry of vessels, and the report or entry of their cargoes, and to vary or dispense with any other regulations applicable to such reports or entries, provided that no State is thus enabled to collect a duty of tonnage or import without the consent of Congress, and provided that no part of the cargo be taken out or unladen otherwise than as by law is allowed. When, by the health laws of any State,

any vessel arriving within a collection district is prohibited from coming to the port of entry or delivery for such district, and it is required by such health laws that the cargo of such vessel may be unladen at some other place, the collector, after due report to him of the whole of such cargo, may grant his special permit for unloading, under the care of the surveyor, or one or more inspectors, at some other place where such health laws permit, and upon the conditions which shall be directed by the Secretary of the Treasury, or which such collector may judge expedient for the security of the public revenue; provided that all the articles so unladen shall be deposited at the risk of the parties concerned in such warehouses or inclosures as the collector shall designate, there to remain under the joint custody of such collector and of the owner, or person having charge of such vessel, until the same be entirely discharged, and until the goods so deposited may be safely removed, without contravening such health laws. And when such removal may be allowed, the collector having charge of such goods may grant permits to the respective owners or consignees, their factors or agents, to receive all goods which shall be entered, and whereof the duties accruing shall be secured upon the payment by them of a reasonable rate of storage, which shall be fixed by the Secretary of the Treasury.

Suitable warehouses, with wharves and inclosures, are provided, where goods may be unladen and deposited for any vessel subject to a quarantine, pursuant to the health laws. When, by the prevalence of any contagious or epidemical disease in or near the port of entry for any collection district, it shall become dangerous or inconvenient for the officers of the revenue to discharge their respective offices at such port, the secretary, or, in his absence, the controller, may authorize the removal of the collector, and the other officers employed in his department, to any other more convenient place within or near to such collection district, where such officers may exercise the same authority, and are liable to the same duties, according to existing circumstances, as in such lawful port or district; and of such removal public notice must be given.—BLUNT'S *Shippers' Assistant*.

The quarantine laws of the different States are too voluminous to give in detail, and therefore there is here annexed only a synopsis of the quarantine laws in force in New York city.

It is the duty of the pilots to hail all vessels entering into the port of New York, and find whether they are subject to quarantine; and if they are, to bring them to anchor in the quarantine grounds; also, to prevent any violation of the quarantine regulations while they have charge of a vessel, such as communication between a vessel subject to quarantine and the shore, etc., and to report all infringements of regulations to the health officer.

Vessels arriving at the port of New York are subject to quarantine as follows: 1st. All vessels direct from, or touching at any place where yellow fever, bilious malignant, or other pestilential or infectious fever existed at the time of their departure, or on board of which, during the voyage, any case of such fever has occurred, arriving between the 31st day of May and the 1st day of October, shall remain at quarantine for at least 30 days after arrival, and at least 20 days after cargo has been discharged, and shall perform such further quarantine as the health officer shall prescribe. 2d. All vessels arriving between the 1st day of April and the 1st day of November, exclusive of the above-specified; all vessels from a foreign port, on board of which, during the voyage, or while at the port of departure, any person has been sick, or from any place in the ordinary passage from which they pass south of Cape Henlopen, arriving between the 31st day of May and the 16th day of October; and all vessels from any place (including islands) in Asia, Africa, or the Mediterranean, or from any of the West Indian, Bahama, Ber-

muda, or Western Islands, or from any place in America, in the ordinary passage from which they pass south of Georgia, arriving between the 1st day of April and the 1st day of November, are subject to quarantine and other regulations, as the health officer may prescribe. The health officer must board every vessel subject to quarantine or visitation immediately on her arrival, and make his examination.

The powers of the Board of Health are ample to protect the port. The regulations are similar to those generally adopted, and include a fine of \$2000, and imprisonment of twelve months, to any master or crew of a vessel that shall refuse to submit to quarantine, and also a fine of \$500 and imprisonment for any violation of quarantine.

Quarter, the fourth part of any thing. As a term of weight it denotes the fourth of a hundred weight, or 28 pounds; as a dry measure it signifies the fourth of a chaldron.

Quarter, that part of a ship's side which lies toward the stern, or is comprehended between the aftmost end of the main chains and the sides of the stern, where it is terminated by the quarter pieces.

Quarter of a Point, in *Navigation*, is the fourth part of the distance between two cardinal points, which is $2^{\circ} 48'$.

Quarter Days. The days usually regarded in England and most Continental countries (but not in Scotland) as beginning the four quarters of the year. They are, 1. Lady Day (25th of March); 2. Midsummer Day (June 24th); 3. Michaelmas Day (September 29th); and, 4. Christmas Day (December 25th).

Quarter Deck. The portion of the uppermost deck of a ship between the main and mizen masts. This is the "parade" in men-of-war.

Quarter Master, in the *Navy*, an inferior officer appointed to assist the mates in their several duties.

Quarters imply the several stations where the officers and crew of a ship of war are posted in time of action.

Quassia (Ger. *Quassienholz*; Fr. *Bois de quassie*; Sp. *Leno de quassia*), a beautiful tall tree (*Quassia amara*), growing in North and South America and the West Indies. The wood is of a pale yellow color, and inodorous. Taste intensely bitter. It affords to water an intensely bitter decoction, which is occasionally used in medicine, and was formerly substituted by some brewers for hops, but is now prohibited under severe penalties. It affords a safe and efficacious fly-water or poison for flies. It is believed that it would succeed well in our Southern States, and form a valuable addition to our forests.

Quebec, the capital of Canada, and of the British possessions in North America, on the northwest bank of the River St. Lawrence, about 340 miles from its mouth, in lat. $46^{\circ} 48' 49''$ N., long. $71^{\circ} 10' 45''$ W. Population in 1850, 40,233. Quebec is situated on a ridge, or promontory, formed by the St. Lawrence on the south and west, and the River St. Charles on the east. The extremity of this headland, called Cape Diamond, is about 345 feet above the level of the water, and on it the citadel is built. The town extends from the citadel, principally in a northeast direction, down to the water; and is, from the difference of elevation, divided into the upper and lower towns. The fortifications, which are very strong, extend across the peninsula, the circuit within them being about two and three quarter miles. From their situation many of the streets are uneven; they are also, for the most part, narrow; but they are either well paved or Macadamized. The greater number of the houses are built of stone, with shingle roofs. Some of the public buildings are elegant, and well adapted for their purposes. The harbor, or basin, lies between the town and the island of Orleans. It is safe and commodious: the water is about 28 fathoms deep, with a tide rising from 17 to 18 feet; and at springs from 23 to 25 ditto. Que-

bec was founded by the French in 1608. In 1629 it was taken by the English; but was restored in 1632. It was again taken by the English under General Wolfe, who fell in the engagement, in 1759; and was finally ceded to England by the treaty of Paris in 1763. The rapid increase of population in, and of emigration to, Upper Canada has occasioned a proportional increase of intercourse between Quebec and Montreal, and the Canadian ports on Lakes Ontario, Erie, etc. The first steamboat that plied on the St. Lawrence was launched in 1812; but there are now a great many steamers, some of them of large burden, employed in the conveyance of goods and passengers between Quebec and Montreal; and in the trade between Quebec and Halifax, in Nova Scotia. And by means of the Rideau and Welland canals, an uninterrupted line of steam communication is formed between the Atlantic and Amhurstburg, one of the remote settlements of Upper Canada, a distance of more than 1500 miles; which is now extended through Lake Huron to the western extremity of Lake Superior, about 700 miles beyond Amhurstburg; giving to Quebec a command of internal navigation inferior only to that of New Orleans. The navigation at Quebec closes at the end of November or beginning of December, and opens in April. Below Quebec the river is seldom frozen over; but the masses of floating ice, kept in constant agitation by the flux and reflux of the tide, render navigation impracticable. The waters of the St. Lawrence are very pure; and in point of depth and magnitude it is one of the noblest rivers in the world.—BOUCHETTE'S *British Dominions in America*. Quebec is a free warehousing port.

The trade of Quebec is very extensive. It engrosses, with Montreal, almost the entire trade of the province with the mother country, the West Indies, etc. Great numbers of emigrants leave England for Canada; but the larger number subsequently re-emigrate to the United States. It has a regular intercourse, by means of steamers, with Montreal and other ports higher up the St. Lawrence, and with Halifax and other ports on the Atlantic. Still, however, it must not be forgotten that in so far as the United Kingdom is concerned, the trade with Canada and Quebec is, in some degree, forced and factitious, and has not been a source of profit, but the reverse. In former years it was, in fact, mainly a consequence of the discriminating duties laid in British ports on timber from the north of Europe; and but for this preposterous arrangement, the trade between Great Britain and Quebec would have been extremely unimportant. Now, however, some branches of the trade appear to have acquired a solid footing; and notwithstanding the reduction of the discriminating duties in favor of

Baltic timber, the imports into Great Britain from Canada and other parts of British America of red-pine, and of pine and spruce planks, especially the latter, have of late very largely increased. Excepting timber, furs and ashes are the most important articles sent from Canada. A considerable part of the corn and flour exported from Quebec is the growth of the United States. The principal articles of import into Canada consist of corn, cottons, woollens, silk, and other manufactured goods; glass ware, spirits and wines, iron and hardware, sugar and tea, etc. The total value of the imports into Canada (of which, however, by far the largest portion goes to Montreal) in 1848 amounted to £2,107,164 currency (24s. 4d. currency=20s. sterling). Declared value of British produce and manufactures exported to Canada in 1851, £2,451,534. It is material, however, to bear in mind that little more than half the imports are paid for by the exports; they are, in fact, principally paid for by the Treasury at home, and are to be regarded as the means sent out by England to pay the troops and meet the other heavy expenses she has to incur in the preservation of this unprofitable colony.

ACCOUNT OF THE NUMBER OF VESSELS AND THEIR TONNAGE WHICH ARRIVED AT THE PORT OF QUEBEC, INCLUDING THOSE BOUND FOR MONTREAL, AND FROM SEA, FROM 1846 TO 1856 INCLUSIVE.

Years.	Vessels.	Tons.
1846.....	1448	573,104
1847.....	1173	474,545
1848.....	1044	426,968
1849.....	1064	431,053
1850.....	1479	434,291
1851.....	1185	595,934
1852.....	1655	454,102
1853.....	1188	532,517
1854.....	1315	530,323
1855.....	677	346,449
1856.....	907	471,444

Among the arrivals in 1856 were the following foreign vessels: 38 Norwegian, aggregate tonnage, 17,730 tons; 15 United States, 8596 tons; 8 German, 3015 tons; 6 Prussian, 2056 tons. The total from all countries was 74 vessels, 34,824 tons.

VALUE OF THE EXPORTS AND IMPORTS OF QUEBEC AND MONTREAL.

Years.	Exports.		Imports.	
	Quebec.	Montreal.	Quebec.	Montreal.
1841	£1,127,726	£700,070	£217,916	£2,063,135
1842	991,489	728,729	216,669	2,021,106
1843	1,367,651	388,199	402,227	1,289,571
1844	1,436,845	754,231	655,868	2,475,034
1845	2,056,851	720,797	712,398	2,620,252
1846	1,866,456	658,338	750,952	2,303,903
1847	1,831,399	843,982	796,917	2,063,440
1848	1,357,326	391,841	625,845	1,481,418

STATEMENT SHOWING THE COINS CHIEFLY IN USE IN THE BRITISH NORTH AMERICAN COLONIES, WITH THEIR VALUES IN THE RESPECTIVE COLONIES, IN HALIFAX CURRENCY (FRACTIONS OMITTED).

Coins.	Eastern (Upper) Canada.	Western (Lower) Canada.	Nova Scotia.	New Brunsw- wick.	New- found- land.	Prince Edward Island.	
	Island Currency.	Halifax Currency.					
GOLD.							
British sovereign.....	£ s. d. 1 2 2	£ s. d. 1 4 4	£ s. d. 1 5 0	£ s. d. 1 2 3	£ s. d. 1 2 3	£ s. d. 1 10 0	£ s. d. 1 2 2
British guinea.....	1 3 4	1 5 6	1 5 6	1 3 4	1 3 4	1 10 0	1 2 2
American eagle, coined before July 1, 1834.....	2 10 0	2 13 4	2 10 0	2 10 0	2 10 0	2 10 0	2 10 0
Ditto, coined since.....	2 10 0	2 10 0	2 10 0	2 10 0	2 10 0	2 10 0	2 10 0
Spanish milled doubloons.....	3 14 6	3 14 6	4 0 0	3 15 6	3 16 6	3 16 6	3 16 6
SILVER.							
British crown (half-crown in proportion).....	0 5 6	0 6 0	0 6 3	0 5 6	0 5 6	0 7 6	0 5 6
Shilling (sixpence in proportion).....	0 1 1	0 1 3	0 1 3	0 1 1	0 1 2	0 1 6	0 1 1
French crown.....	0 5 6	0 5 6	0 5 6	0 5 6	0 5 6	0 7 6	0 5 6
French half-crown.....	0 2 9	0 2 9	0 2 9	0 2 9	0 2 9	0 3 6	0 2 9
American dollar.....	0 5 0	0 5 0	0 5 0	0 5 0	0 5 0	0 6 3	0 5 0
Spanish milled dollar.....	0 5 0	0 5 0	0 5 0	0 5 0	0 5 0	0 6 3	0 5 0
South American dollar.....	0 5 0	0 5 0	0 5 0	0 5 0	0 5 0	0 6 3	0 5 0
Mexican dollar (coined in 1831, 1832, or 1833).....	0 5 0	0 5 0	0 5 0	0 5 0	0 5 0	0 6 3	0 5 0
Pistareen.....	0 0 10	0 0 10	0 0 10	0 0 10	0 0 10	0 0 10	0 0 10
French five-franc piece.....	0 4 8	0 4 8	0 4 8	0 4 8	0 4 8	0 4 8	0 4 8

Paper Currency.—There is no established government bank in the province; but there are several private chartered banks, of which the Quebec Bank is the principal.—For a complete account of the trade of the Provinces, see CANADA and MONTREAL.

Quercitron Bark. The bark of the *Quercus nigra*, or American oak: it is a highly valuable dye-stuff, and is used in the production of some of the most durable yellows.—For a more full account of this dye-stuff, see articles DYES and OAK.

Quicksilver, or Mercury, one of the metals, and so fusible that it can not be reduced to a solid state but at a degree of cold equal to forty below zero of Fahrenheit's thermometer. Its use in refining silver was discovered A.D. 1540. There are mines of it in various parts, the chief of which are at Almadur or Almeida, in Spain, and at Udria, in Carniola, in Germany, discovered by accident in 1497. A mine was discovered at Ceylon in 1797. Quicksilver was congealed in winter at St. Petersburg in 1759. It was congealed in England by a chemical process, without snow or ice, by Mr. Walker, in 1787.—See MERCURY. For notices of quicksilver mines, see *American Journal of Science*, xxviii. 219; HUNT's *Merchants' Magazine*, xviii. 108.

The exports of quicksilver from California, the production of the California mines, for three years, were as follows, allowing the flasks to hold 75 pounds at a value of 50 cents a pound:

Years.	Flasks.	Value.
1853.....	18,800	\$705,000
1854.....	20,563	785,112
1855.....	28,917	1,084,387
1856.....	22,179	881,724

The exports of quicksilver of domestic production from the United States, for the year 1856, amounted to \$881,724, and was solely from the port of San Francisco. The exports of foreign quicksilver amounted to \$16,011 of which \$15,589 was from New York. The imports of quicksilver for the same time amounted to \$3625, of which \$2649 was into New Orleans, and the production of the mines of Mexico.

Quicksilver is found in the largest quantities in Spain and California. Almaden, in Spain, has long been famed for its mines of this metal, which, according to Bowles, are the richest in their produce. In China quicksilver is chiefly used in the manufacture of vermilion and other articles of commerce.

The quantity of quicksilver produced from the New Almaden mines, Santa Clara county, California, is about 100 bottles per month, or nearly 1,000,000 pounds per annum. The other quicksilver mines worthy of note are, one at Huancavelica, in Peru; in Hungary, Transylvania, and the district of Deux Ponts, in Germany. There is a mine of cinnabar near Alicante, and another not far from San Felipe, in Spain. Mercury has also been found in China and Japan; and though the amount of the produce is unknown, it is believed to be considerable.

According to Dumas, the following mines yield annually as follows: Almaden, in Spain, from 2,700,000 to 3,456,000 pounds avoidupois; Idria, 648,000 to 1,080,000 pounds; Hungary and Transylvania, 75,600 to 97,200 pounds; Deux Ponts, 43,200 to 54,000 pounds; Palatine, 19,440 to 21,600 pounds; Huancavelica, 324,000 pounds. The total annual product, including California, can not be less than from 6,500,000 to 7,000,000 pounds.

Quills (Fr. *Plumes à écrire*; Ger. *Posen, Feder kiel*; It. *Penne de scrivere*; Russ. *Stivoli*; Sp. *Canones para escribir*), the hard and strong feather of the wings of geese, ostriches, swans, turkeys, crows, etc., used in writing. They are classified according to the order in which they are fixed in the wing, the second and third quills being the best. Crow quills are chiefly used for drawing. The goodness of quills is judged partly by the size of the barrels, but more by the weight; hence the denomination of quills of 14, 15, etc., loths per mille, each mille consisting of 1200 quills. The quills of the porcupine are much employed by the Indians in North America as personal ornaments; the quills are dyed, and the colors appear to be durable; they are applied both to articles of dress and household furniture.

Quince-tree. The common quince (*Cydonia vulgaris*) is a low tree, seldom exceeding fifteen or twenty feet in height, with a crooked stem, and tortuous, rambling branches. The bark is smooth and brown, approaching to black. The leaves are roundish or ovate; dusky green above, and whitish underneath. The flowers, which put forth in England by the middle of April, and in the middle and northern parts of the United States in May and June, are large, with the petals pale red or white, and the sepals of the same length as the petals. The flowers are succeeded by large fruit of a globular, oblong, or pear-shaped form, of a rich yellow or orange color, when ripe, of an austere taste, and emitting a peculiar and rather pleasant smell.

Geography and History.—The quince is supposed to have been originally a native of Sidon, a city of ancient Crete, now the island of Candia; but it is much more probable that it was only first brought into notice in that city. It is considered at present as indigenous to the south of France, particularly on the borders of the Garonne, and to Germany, on the banks of the Danube. By some the tree is thought to be indigenous to Britain; and Phillips states, in his *Pomarium Britannicum*, that quinces grow in such abundance in some parts of the Wealds of Sussex, as to enable private families to make quince wine in quantities of from one hundred to two hundred gallons in a season.

The quince was known to the Greeks and Romans, and both nations held it in high estimation. Columella says, "Quinces not only yield pleasure, but health." He speaks of three kinds—the "Struthian," the "Must Quince," and the "Orange Quince." Pliny mentions many kinds, some growing wild in Italy, and others in cultivation, so large that they weighed the boughs on which they grew down to the ground. He also says that some were of a green, and others of a golden color, the latter of which were called *chrysomela*. The only kind that was eaten raw he states to have been raised by grafting the large quince upon the stock of a small variety, called *struthia*. "All kinds of this fruit," continues he, "are grown in boxes, and placed within the waiting-chambers of our great personages, in which men wait to salute these personages as they come forth every morning." It appears from the same author that quinces were used to decorate the images of the gods, which were placed in sleeping-chambers, round the beds; whence it follows that the Romans did not think that there was any thing either injurious or unpleasant in their smell. He gives directions for preserving the fruit, by excluding the air from them, or boiling them in honey; or by plunging them in boiling honey, a practice in use with this and other fruits in Genoa at the present day. He also writes much on the medicinal qualities of this fruit. "Quinces," says he, "when eaten raw, if quite ripe, are good for those who spit blood, or are troubled with hemorrhage." The juice of raw quinces he states to be a sovereign remedy for the swollen spleen, the dropsy, and difficulty of taking breath, particularly to those who can not conveniently breathe except when in an upright position. The flowers of the quince, either fresh or dried, he tells us, are good for inflamed eyes. The root of the tree was used, not only as a medicine, but as a charm against scrofula.

The wood of the quince, when found of sufficient dimensions, is applied to the purposes of turnery; but from its small size this tree is almost entirely cultivated for its fruit, or as stocks on which to graft the mountain ash and the pear. In France, however, this tree is sometimes grown for hedges. The fruit is seldom eaten by itself, but is generally preserved in sirup, or is made into marmalade, or is mixed with apples in tarts.

—BROWNE'S *Trees of America*.

R.

Rags (Du. *Lompen, Vodden*; Fr. *Chiffes, Chiffons, Drapcaux, Drilles*; Ger. *Lumpen*; It. *Strasci, Strazze*; Russ. *Trepje*; Sp. *Tropos, Harapos*), shreds or fragments of worn linen, woolen, or cotton cloth. Though commonly held in little estimation, rags are of great importance in the arts, being used for various purposes, but especially in the manufacture of paper, most of which is entirely prepared from them. As the mode in which rags are collected must be well known to every one, the following statements apply only to the trade in foreign rags.

Woolen Rags.—Woolen and linen rags are imported in considerable quantities from the continent of Europe, particularly from Italy and Sicily. Woolen rags are chiefly used for manure in England, especially in the culture of hops; but rags of loose texture, and not too much worn or decayed, are unraveled and mixed up with fresh wool in the making of yarn—a practice more favorable to the cheapness than to the strength and durability of the fabrics into which this old wool is introduced.

Linen Rags are principally imported from Rostock, Bremen, Hamburg, Leghorn, Great Britain, Ancona, Messina, Palermo, and Trieste. Their export from Holland, Belgium, France, Spain, and Portugal, is strictly prohibited. The imported rags are coarser and inferior in appearance to the English; but, being almost exclusively linen, they are stronger, and bear a price disproportioned to the apparent difference in quality: this disproportion has been materially augmented since the introduction of the process of boiling the rags in ley, and afterward bleaching them with chlorine, has rendered foreign rags fit for making fine paper, and indeed, in some respects, preferable for that purpose, by their affording greater strength of texture combined with equal whiteness of color. There is considerable variety in the appearance of rags from different ports; but in general those from the north of Europe are darker and stronger than those from the Mediterranean ports. The latter are chiefly the remains of outer garments, and have become whitened by exposure to the sun and air; but since the improvements in bleaching, this does not enhance their value.

IMPORT OF RAGS INTO THE UNITED STATES FOR THE YEAR
ENDING JUNE 30, 1857.

Whence imported.	Pounds.	Value.
Sweden and Norway	20,800	\$326
Swedish West Indies	990	10
Danish West Indies	25,984	85
Hamburg	1,011,763	30,897
Bremen	208,896	5,471
Dutch West Indies	176	4
England	5,055,345	147,560
Scotland	358,984	9,302
Malta	280,376	6,139
British North American Poss. .	1,020	22
British West Indies	429,050	10,549
British Guiana	1,940	52
France on the Atlantic	60,428	2,991
Canary Islands	6,576	178
Cuba	721,135	18,733
Portugal	6,700	211
Sardinia	1,873,277	61,399
Tuscany	18,907,207	655,859
Papel States	422,950	15,080
Two Sicilies	6,153,180	212,293
Austria	2,726,081	87,700
Austrian Possessions in Italy ..	260,966	11,008
Turkey in Europe	44,075	536
Turkey in Asia	2,307,781	58,428
Egypt	3,821,055	97,970
Haiti	25,130	377
New Granada	698	26
Brazil	652	10
Uruguay, or Cisplatine Repub.	60,071	1,266
Buenos Ayres, or Argentine Rep.	91,813	1,705
Chili	48,887	747
China	600	4
Total, 1856-'57	44,582,080	\$1,448,125
1855-'56	38,727,017	1,239,108
Increase	5,855,063	\$208,957

Railroad, or Tramroad, a species of road having tracks or ways formed of iron, stone, or other solid material, on which the wheels of the carriages passing along it run. The object in constructing such roads is, by diminishing the friction, to make a less amount of power adequate either to impel a carriage with a greater velocity, or to urge forward a greater load. The essential requisites of a railroad are two or more smooth parallel surfaces for the wheels to run upon, and formed and placed in such relation as to give the maximum strength and safety with the minimum friction. The friction on a perfectly level railroad, properly constructed, is estimated to amount to from one-tenth to one-seventh only of the friction on an ordinary level road; so that, supposing the same force to be applied in both cases, it would move a weight from 10 to 7 times as great on the former as on the latter. But if there be a very moderate ascent, such as one foot in fifty, which in an ordinary road would hardly be perceived, a great increase of power on the railroad is required to overcome the resistance that is thus occasioned. The reason is, that the ordinary load on a level railroad is about seven times as great as on a common turnpike road; so that when the force of gravity is brought into operation by an ascending plane, its opposing power, being proportioned to the load, is seven times as great as on a common road. Hence the vast importance of having railroads either level or as nearly so as possible. It is also of great importance that railroads should be straight or at least free from any abrupt curves. Carriages being kept on the road by flanges on the wheels, it is obvious that, where the curves are quick, the friction on the sides of the rails, and consequent retardation, must be very great.

The great success, rapid extension, and present necessity of railroads, are in consequence of the appreciation of the value of time and saving of labor, which are the characteristics of the present age. Distance is now measured by the time consumed in its passage; and the saving of cost in the carriage of goods is the aggregate of the saving in time and the saving in labor. We can not in the scope of this article give more than a summary of the history of railroads, and the statistics necessary to show the present condition and progress of railroads.

The aim and advantage of railroads may be stated concisely to be, to obtain with the minimum expenditure of power the maximum result of speed, draught, and safety in the carriage of passengers and freight. To show how this can be done would be to illustrate the whole science of railroad engineering, and does not come within the compass of this work. It will be sufficient to show the improvement over the age before railroads, and the progress since the invention of railroads, we have made up to this time. 1st. As to speed. In 1804 a locomotive was constructed in Wales, that performed the unprecedented feat of drawing ten tons on a tramroad at the rate of five miles an hour. Wood on railroads, in 1825, says: "Nothing can do more harm to the adoption of railroads than the promulgation of such nonsense as that we shall see locomotive engines traveling at the rate of 12, 16, 18, and 20 miles per hour." Ritchie on railways, in 1846, says: "An express train on the Great Western Railway, drawing 59 tons, has traveled for three hours at the rate of 63 miles per hour." And we know that the speed of 100 miles per hour has been obtained several times in the past few years. In 1778 a contract was made to establish a coach for passengers between Edinburgh and Glasgow, a distance of 44 miles. The coach was drawn by six horses, and the journey between the two places, to and fro, was completed in six days. Even so recently as the year 1750, the stage-coach from Edinburgh to Glasgow took 36 hours to make the journey. In the

year 1849 the same journey was made, by a route three miles longer, in one hour and a half. In the year 1763 there was but one stage-coach between Edinburgh and London. This started once a month from each of these cities. It took a fortnight to perform the journey. At the same epoch the journey between London and York required four days. In 1835 there were seven coaches started daily between London and Edinburgh, which performed the journey in 48 hours. In 1849 the same journey was performed by railway in twelve hours.

2d. The great increase of draught, or decrease of friction, needs but brief illustration. It is stated as a result of experiments on the Massachusetts railroads, that the cost of merchandise transportation is 3.095 cents per ton per mile, with an average speed of ten miles an hour. The average cost of transportation of heavy merchandise on the improved Macadamized roads of England is 27 cents per mile, with an average speed of three miles per hour. We see, therefore, that the cost of transportation on railroads has been reduced to 11½ per cent. of the cost of transportation on improved turnpikes, while the speed has been increased 233 per cent. at the same time. 3d. As to the increase of safety. On the French railroads, 212 miles in length, of 1,889,718 passengers, who traveled 816,945 miles in the first half of 1843, *not one* was either killed or wounded, and only three servants injured. Comparing this with the traveling by horse coaches in the same region, we find that in seven years, from 1834 to 1840, 74 persons were killed, and 2073 were wounded. According to Dr. Lardner, the chances of a passenger meeting with a fatal accident in traveling one mile on a railroad are 65,363,735 to 1. And again, the chances of his meeting with bodily injury in the same distance are 8,512,486 to 1; and also that 366,036,923 passengers must travel one mile in order to cause the death of one railroad employe. On comparing the safety of railroad traveling on the roads of New York with those of Great Britain, it is found that for the last four years there were a greater number of passengers killed and a less number injured upon the roads of New York, in proportion to the number carried, than upon those of Great Britain. In New York one passenger was killed out of every 1,262,165 who traveled, one either injured or killed out of every 341,125. One passenger was killed for every 47,164,426 miles traveled, and one was either injured or killed for every 12,747,142 miles traveled. Excluding all the accidents growing out of the imprudence and fault of the passengers themselves, it appears that one was killed out of every 6,310,828 who traveled, and one was either injured or killed out of every 664,300. Excluding the accidents caused by their own carelessness or imprudence, there was but one passenger killed for every 235,822,132 miles traveled, and but one either injured or killed for every 24,823,382 miles traveled. A vast number more lives would have been lost if the same number of passengers had been conveyed the same number of miles in one-horse wagons or in the old-fashioned four-horse coaches.

"There be three things which make a nation great and prosperous—a fertile soil, busy work-shops, and easy conveyance of men and things from one place to another."—BACON. And we can form some estimate from the foregoing, of what share railroads have had in giving us one of these three elements of prosperity.

History.—Wooden railways were employed as a substitute for common roads, in the colonies of England early in the 17th century.—*ITCHIE on Railways*, p. 19. The earliest record of their existence is in the life of the Lord-keeper North, wherein it appears that about the year 1670 they were used at Newcastle-on-Tyne, for transporting coal from the mines to the river, and enabled one horse to draw from four to five chaldrons. Subsequently these plates were covered with iron; but the introduction of rails wholly of iron seems not to have taken place till 1768.—*HORNBLLOWER'S Report to*

House of Commons in 1811. A projection or flange on the outer side of the rails kept the wheels of the carriages upon them. They were called "Tramroads;" and the objections to them were the great amount of friction against the side flange and the wood surface of the plate.

In 1789 was constructed the first public railway in England, at Loughborough, by Mr. William Jessop; and he introduced cast iron edge-rails, and wheels with the flanges cast upon them instead of on the rail. Tramroads were, however, in use up to 1808. The first railroad built in the United States was in 1827, from Quincy to a point on Massachusetts Bay, three miles in length, for the purpose of conveying granite to Boston from the quarries of Quincy. The rails used were of wood. The first passenger railroad was the first 13 miles of the Baltimore and Ohio in 1830, from Baltimore to Elkridge.

Rails.—"In 1803 malleable iron rails were first tried, but not approved of. In 1808 they were introduced into some coal works of Cumberland, and used with complete success."—*GILLESPIE on Railways*.

Since then they have been formed of a great variety of shapes. The principal are, 1st. The flat rail used on branch coal-roads and on roads where horse-power is used, and where economy is considered essential. 2d. The rail called the "fish-bellied," from the rounded profile of its under side. The form of this rail is indicated by theory as almost perfect for strength; but on account of the unsteadiness, from requiring a high support, it is now generally abandoned. 3d. The **Ω** rail, or inverted **U**. This rail is admirably adapted for strength and security, but is more complex for rolling than the rail commonly in use, namely, the **T** rail inverted, **Λ**; and has only been used to a moderate extent, and principally in England. 4th. The inverted **H** rail, so called, but more like an **I** in form. This form was found by Professor Barlow to possess the maximum strength from a given quantity of material. This rail is used in England, but has been found to be deficient in stability. The **T** (inverted) rail is the one generally used in this country; and for the facility in rolling, strength, and stability, is decidedly the best form. The weight commonly used is about 60 pounds to the yard; but a heavier rail is more economical in the end; and the weight of rails has been increasing from 35 pounds, the weight first used, to that of sixty pounds to the yard.

Rails were first laid on stone sleepers or blocks, as giving the most solid support; but this plan has gradually been abandoned, as the want of elasticity was the cause of a rapid destruction to the rolling stock. Longitudinal sleepers of wood were also tried; but after much practical experience, the present form of transverse wooden sleepers, laid on broken stone or gravel bed, was adopted as the best foundation, and is now in common use.

Locomotives.—After a full trial of horse-power and stationary steam-engines, the plan of an engine, and which the present locomotive is in many respects only an improvement of, was invented. There has been some controversy as to who should have the credit of the invention. It appears, however, that in 1759 Dr. Robinson, then a student in the University of Glasgow, suggested to Watt the application of the steam-engine to wheel-carriages; and in 1782, Murdoch, to whom Trevithick was a pupil, made a model of a steam-carriage. In 1784 Watt described such an application in his patent.

In 1801 Oliver Evans, of Philadelphia, moved a steam dredging-machine a mile and a half on wheels turned by its own engine. In 1802 Richard Trevithick, in conjunction with Andrew Vivian, both Cornwall engineers, built and took out the first patent for a locomotive; and in 1804 Richard Trevithick built a second locomotive, which on a road in South Wales drew ten tons at the rate of five miles an hour. It

was many years, however, before any improvement took place, owing chiefly to the *imaginary* difficulty of getting the locomotive wheels to "bite," or keep from slipping on the rails. Great ingenuity was brought to task to remedy this imaginary evil; and in 1812 a rail with racks or sockets was laid, and an engine with teeth to fit in the rack was built. In 1818 an engine with hind legs was invented to prevent the slipping. All these contrivances were, however, shown to be useless by the discovery in 1814, by actual experiment, that no friction was needed. And in this same year the first really successful locomotive was invented by George Stephenson, which ran six miles an hour, and drew 30 tons. Little progress was made from this time until 1829, when Robert Stephenson constructed the "Rocket" engine, which on trial ran with an average speed of 15 miles an hour, and with a maximum speed of 29½ miles an hour. Since that time locomotives have been built to run over one hundred miles an hour, and to draw a train of cars up an inclined plane of 500 feet to the mile. The performances of a modern locomotive, in fact, are among the most wonderful of all mechanisms.

Railroad Management.—Although one of the most powerful elements in our prosperity, and in fact now a necessity, it can not be denied that railroads generally have been failures considered as profitable investments to the stockholders. The business of our railroads is ample to make them good investment; and therefore there can be but one cause for so general a failure; namely, *unremunerative tariffs*. Occasional instances of bad management have taken place, but it is obvious that this can not be the cause of so general a failure. The gold discoveries of California and Australia have advanced the prices of labor, fuel, etc., from 30 to 50 per cent., and, consequently, the expenditures of railroads in a similar ratio. During this time there has been no corresponding increase in the tariffs of our railroads. This, in connection with the fact that the depreciation of the rails, rolling stock, etc., have not been sufficiently allowed for, explain the cause; and make a remedy obvious. To show the authority for this statement, we give the expenditures, etc., on railroads at different periods since their first practical adoption. These show that there was a gradual decrease to 1845, and since that time an increase in expenditures.

The annual cost of maintaining in operation a well-managed road is almost 1½ cents for each ton per mile carried over it, and 44 cents for each mile run by all the engines, besides \$500 for each mile of road. If it be likewise a passenger road, there is to be added three-fourths of a cent per mile for each passenger carried.—CHARLES ELLET, Jun., Civil Engineer, Franklin Institute, 1842.

The complete average expense per train per mile of running on the principal roads was estimated

In the United States, in 1838,* at.....	100 cts.
In England, 1840†.....	72 "
Utica and Schenectady Railroad, 1839 to 1841.....	115 "
Western Railroad (Massachusetts), 1840 to 1844 ..	71 "
Average of Massachusetts railroads, 1845.....	65 "
" " " 1846.....	73 "
" " " 1847.....	75 "
" " " 1848.....	76 "
" " " 1849.....	76 "
" " " 1850.....	74 "
" " " 1851.....	76 "
" " " 1852.....	77 "
" " " 1853.....	82 "
" " " 1854.....	98 "
" " " 1855.....	105 "

* Chevallier DE GERSTNER.

† Professor VIGNOLES.

It will be seen from this statement that the expenses have been steadily increasing since 1845. To exhibit this more plainly, we give a table showing the gross receipts and expenses, and also the net receipts of the Massachusetts railroads for ten years.

OPERATIONS OF THE RAILROADS OF MASSACHUSETTS FROM 1846 TO 1855.

Years.	Total Receipts per Mile run.	Total Expenses per Mile run	Net Receipts per Mile run.
	\$ Cts.	\$ Cts.	Cts.
1846	1 56	73	83
1847	1 55	75	81
1848	1 50	76	74
1849	1 51	76	75
1850	1 52	74	78
1851	1 50	76	74
1852	1 44	77	67
1853	1 52	82	70
1854	1 57	98	59
1855	1 09	1 05	64

From this it will be seen that the gross receipts (or tariff) increased only .08 per cent. in ten years, while the net receipts decreased 23 per cent.; and the expenses increased 44 per cent. This comparison holds equally true with many of our railroads.

The following facts regarding eight of the principal railroads of Massachusetts are developed by reports to the Legislature:

1. The cost of passenger transportation is 1.062 cents per passenger per mile.
2. The cost of merchandise transportation is 3.095 cents per ton per mile.
3. In passenger transportation \$41.98 per cent. of the receipts therefrom are absorbed in expenses.
4. In merchandise transportation \$89.52 per cent. of the receipts therefrom are absorbed in expenses.
5. The expenses of railroads are almost invariably determined by the weight carried over the rails. For instance—the Eastern road, upon which passenger traffic predominates, is operated at an expense of \$3670 per mile of the length of the road; while the Lowell, upon which merchandise traffic predominates, is operated at an expense of \$12,478.
6. The cost of renewals of iron upon railroads is an infallible index of the magnitude of expenses. For the preceding reasons, the cost of that item on the Eastern road is but \$390 per mile of the length of the road, while upon the Western it is \$1399.
7. Of the expenses of railroads, thirty per cent. are absorbed in maintenance of way, or road bed; twenty per cent. in fuel and oil; twenty per cent. in repair of engines, tenders, and cars; ten per cent. in special freight expenses; and the remainder in passenger, incidental, and miscellaneous expenses.
8. The weight of the engines, tenders, and cars upon passenger trains is nine-fold greater than the weight of the passengers.
9. The weight of the engines, tenders, and cars upon freight trains, is scarcely one fold greater than the weight of the merchandise.
10. For cheapness, railroads can not compete with canals, in transportation of heavy descriptions of merchandise; the cost of carrying merchandise upon the Erie Canal ranges from two to sixteen mills per ton per mile; while upon sixteen of the principal railways of New York and Massachusetts the cost of carrying merchandise ranges from thirteen to sixty-five mills per ton per mile.

It being granted that the present tariffs are too low, the *remedy*, or how to make railroads more profitable, is the chief point. We extract from a paper written by Charles Ellet, Jun. civil engineer, which elucidates a good system.

1st. Every road should form its own tariff of tolls, based upon its own trade.

2d. *In arranging the tariff, let the first step be to ascertain the true cost of transportation upon the particular road for which the tariff is intended.* The actual cost of transportation is clearly the minimum limit of admissible reductions in favor of those objects of transportation which are deemed, from motives of policy, most worthy of special encouragement. There may be, and ought to be, material discriminations in every tariff; but no article ought to be conveyed for less than the actual cost of its transportation, fairly made out from the proper experience of the line. Having determined the true cost of transportation, and adopted that as a minimum charge, below which the toll on no article

shall be suffered to fall, the company will be secured against one frequent source of immense extravagance—that of carrying freight for *nothing*, or *less than nothing*. With this information in hand, it is practicable to construct a *tariff of expenses*, which should in every case precede the adoption of a tariff of charges.

3d. *The next step in the process should be to ascertain the highest charge which each article will bear.*

4th. *The true charge for each article and each position, it must be apparent, will be found somewhere between the actual cost of transportation and the prohibitory charge.* The next step in the construction of a toll-sheet should then be to form a third tariff, by adding together, for each article and each position, the cost of transportation and the prohibitory charge, and taking half their sum as a near approximation to that charge which will yield the greatest net revenue. Yet there is no fact better susceptible of the strictest mathematical demonstration than this, that the *charges which will yield the maximum net revenue on railroads doing a miscellaneous business must be from one to two cents per ton per mile greater than that which will produce the maximum gross revenue*. If, then, a company aims to obtain the greatest possible gross revenue, it can only succeed by a great sacrifice of dividends. In fact, the gross revenue may be enormous, and yet be insufficient to pay their expenses.

Railway Legislation.—Notwithstanding the vast advantages which the opening of so many new and improved lines of communication have conferred on the country, we can not help thinking that these advantages might have been much greater, and that, in the instance of railway legislation, the public interests have been overlooked to a degree that is not very excusable. It is, we admit, no easy matter to decide how far the interference of government should be carried in matters of this sort. But, at all events, this much is obvious, that when government is called upon to pass an act authorizing private parties to execute a railway or other public work, it is bound to provide, in as far as practicable, that the public interests shall not be prejudiced by such act, and that it should be framed so that it should not, either when passed, or at any future period, stand in the way of the public advantage. We believe, however, that a little consideration will serve to satisfy most persons that this important principle has, in the case of railways, and indeed of most descriptions of public works, been, in this country, all but wholly neglected.

Within a few years past the railway interest has become one of the most important in this country, not only on account of the large pecuniary investments which have been made therein, but also on account of the effect which its development has had in increasing the value and changing the relations of property, trade, and commerce, and in modifying the social conditions of our people. These varied interests, and the new circumstances which have been called into existence by the vast and rapid expansion of the railway system, have required additional legal enactments from time to time, but the same supervision and restraints of law which are considered necessary to guard and protect other public interests have not been imposed upon this one to an extent commensurate with its increasing importance. The railroad corporations, in which there is a larger investment than in the banks, over which the law exercises supervision, are permitted to control an immense amount of capital, and interests of the greatest magnitude, with no other check than is afforded by an annual statement of their affairs, notoriously incorrect, and in many cases made so systematically, for the purpose of concealing from the stockholders and the public violations of law and want of fidelity to their trusts.

One of the best guarantees for the faithful performance of duty that can be given to the public and the stockholders by railroad managers is to render, at fre-

quent intervals, full and accurate statements of the results of the operations of the works, and the manner in which these officers have discharged their trusts. It is not difficult to demonstrate that the publication of such ample statements does not, in the long run, injure the interests of any corporation, and that it is the most certain security against malversation in the administration of its affairs.

Under the General Railroad Act of 1850 each of the railroad corporations in the State of New York is required to make an annual report to the State Engineer and Surveyor in the form prescribed, showing its financial condition and cost, its length, and other characteristics; the business done during the year and the expense thereof, a statement of the receipts and payments, and a list of accidents which have occurred involving injury to life or limb; and this officer is required to arrange the information thus furnished, and submit it, together with the reports, to the Legislature. —*Report of the New York State Engineer, 1855.*

Austrian Railroads.—The government of Austria has at length conceded to a public company all the railways that have been completed, and those which are to be constructed, in the Lombardo-Venetian territories, and the Central Italian Railway. The lines already completed by the state are as follows:

	Kilometres.
Venice to Coccaglio.....	204
Milan to Como.....	45
Milan to Treviglio.....	32
Verona to Mantua.....	36
Mestre to Casarsa.....	94
Coccaglio to Bergamo.....	26
Total.....	437

The railways to be constructed are as follows:

	Kilometres.
Bergamo to Monza.....	37
Bergamo to Lecco.....	30
Milan to Buffalora.....	32
Milan to Piacenza and Pavia.....	32
Milan to Cesto Calende.....	55
Railroad round Milan.....	6
Mantua to Borgoforte.....	20
Casarsa to Nebresina.....	89
Total.....	355

The length of railways completed is equal to 373 English miles, and the length of those to be constructed is equal to about 223 English miles. The Central Italian Railway concession is for 280 kilometres, so that the entire concession, when complete, will comprise about 680 English miles of railway. The state grants to the company the free use of the line from Nebresina to Trieste, with the joint use of the terminus at Trieste. The company is to pay to the state for the finished railways 60,000,000 francs, or £2,400,000; this sum is to be paid in six installments within a period of six years, or at the rate of about £400,000 per annum. Should the net profits at the end of this term exceed 7 per cent., the company will have to pay an additional sum to the Austrian government of 16,500,000 francs, or £660,000. The Austrian government guarantees 5 per cent. on the whole capital required, which is estimated at about 250,000,000 francs, or £10,000,000. For the Central Italian Railroad, the company has a guarantee of 6,500,000 francs per annum, or more than 6½ per cent. on the capital.

Of the railways in operation, in progress, and contemplated in Eastern Europe, a brief notice will suffice.

Russia, carried along by the tide of public opinion in Europe, found herself compelled, by a due regard to the interests of her people, to consecrate a part of her exertions and her capital to the construction of the new lines of communication. An attempt was first made to attract private capitalists to these projects, and special advantages were offered to companies who might be disposed to undertake the construction of the lines of railway contemplated in Russia. The emperor, besides guaranteeing to the shareholders a minimum profit of 4 per cent., proposed to give them gratuitously all the lands of the state through which the rail-

ways should pass, and to place at their disposal, also, gratuitously, the timber and raw materials necessary for the way and works which might be found upon the spot. It was further proposed to permit the importation of rails and the rolling stock free of duty. Russian proprietors also spontaneously came forward, and not only agreed to grant such portion of their land as the railways might pass through gratuitously, but further to dispossess themselves temporarily of their serfs, and surrender them to the use of the companies on the sole condition that they should be properly supported while employed.

By a special ukase, dated February 13, 1842, it was decreed that the railway which was to unite the two capitals of St. Petersburg and Moscow should be constructed exclusively at the expense of the state, in order to retain in the hands of the government, and in the general interest of the people, a line of communication so important to the industry and the internal commerce of the empire. The local proprietors equally agreed to surrender to government gratuitously the lands necessary for the works of this line.

The system of railways contemplated in Russia is composed of five principal trunk lines, one of which, connecting Warsaw with Cracow, is completed and in operation: the length of this line is 168 miles. The second will connect Warsaw with St. Petersburg; the extent of this would be, when executed, 683 miles. The third will connect St. Petersburg with Moscow; this line is in active progress: its length will be about 400 miles. Besides these, authorization was given to a company, by a ukase dated July, 1843, to construct a railway for the transport of goods between the Wolga and the Don, the length of which would be 105 miles. In the actual execution of this magnificent system of railway communication, no considerable progress has been yet made, with the exception of the line already mentioned between Warsaw and Cracow.

A short line of railway connecting St. Petersburg with Tsarkoé-soéla, having an analogy to the Greenwich and Richmond lines, which diverge from London, and the Versailles and St. Germain lines from Paris, was completed and opened for traffic in April, 1838. The traffic on this line has hitherto amounted to about seven hundred passengers per day.

The railway connecting the Don and the Wolga was opened for traffic in 1846; but this line is exclusively for merchandise, and is worked by horses.

In southern Russia a line of railway is projected between Kief and Odessa, the surveys of which have been made by Belgian engineers; but no progress in its construction has yet been effected. A railway has been projected also between St. Petersburg and Cronstadt, and another between St. Petersburg and Baltishport, in Esthonia, to be constructed and worked by a company with a guarantee of 4 per cent. by the government.

In Italy a few short lines of railway only have been executed, connecting the chief states with neighboring places. They are as follows:

	Miles.
Naples to Portici, opened October, 1830.....	5
Portici to Castlemare, with branch to Nocera.....	21½
Naples to Capua.....	23½
Milan to Treviglio.....	18
Milan to Monza.....	12
Venice to Vicenza.....	40
Leghorn to Pisa.....	12½
Florence to Empoli, Ponte Dera, Pisa, and Sienna ..	
Pisa to Lucca and San Salvador.....	
Florence to Prato.....	10½

In the kingdom of Sardinia railways exist as yet only in prospect. It is intended to carry two lines from Turin, one directed on Genoa by Alexandria, and the other on Milan by Vercelli and Novara. The political distractions, however, of the last two years have suspended these projects.

Railroads in Spain.—From returns lately made in Spain to the government concerning the railways conceded and at work in that country in 1856, it appears that the whole of the lines open to the public, including that from Madrid to Saragossa, conceded to the Spanish Crédit Mobilier, give a length of 1955 kilometres (1222 miles). In the concession granted to that company, of the two sections of the railroad from Madrid to Valladolid, and from Burgos to the frontier of France, the first section will leave Madrid, pass by Avila, Arevalo and Medina del Campo, and will stop at Valladolid, where it will join the section already traced out from Valladolid to Burgos.

Railroads in Prussia.—The subjoined is an account of the progress of railroads in Prussia since 1849.

Years	Length in Miles.	Outlay in million Dollars.	Over whole Length.		Receipts.		Average Profit per Cent.
			Passengers.	100 lbs. Merchandise.	Passengers.	Merchandise.	
1849	1821	101	129,416	1,067,021	\$3,708,227	\$3,545,427	3.82
1850	1871	106	146,273	1,331,894	4,420,172	4,309,229	4.05
1851	1982	112	148,680	1,604,325	4,632,990	4,953,459	5.09
1852	2186	126	147,817	2,171,619	4,66,734	6,511,396	5.75
1853	2326	135	144,897	2,537,401	5,488,466	7,821,685	5.76
1854	2326	141	137,184	2,939,084	5,712,135	9,977,251	5.79
1855	2384	146	143,784	3,545,960	5,959,814	12,205,523	6.41

The number of passengers has remained stationary since 1849, while the receipts for passenger trade have increased only in proportion to the length of road. The amount of merchandise transported has, on the contrary, increased three-and-a-half fold; and while in 1849 the receipts on merchandise did not equal the receipts from passengers, they amounted in 1855 to more than double the receipts from passenger transport. In 1849, 384,788,585 hundred pounds were transported over every mile of road; in 1855 were transported 1,742,066,452 hundred pounds. While the roads have scarcely increased one-third in aggregate length, the transport of merchandise has increased five-fold.

The lengths above attributed to Prussian roads extend in some cases beyond the Prussian borders. At the end of 1854 there were 2230 miles of railroad in Prussia. At the end of 1855 there were 2313 miles. During the year 1856 about 270 miles of road were opened in Prussia, so that at present in the whole Prussian state there is one mile of railroad to every nine and two thirds square miles. This, however, varies in different provinces—amounting in Rhineland and Westphalia to 5.5; in Silesia to 7.2; in Branden-

burg and Saxony to 7.5; in Pomerania, Prussia, and Poland, to 22.5 square miles for every mile of railroad. There are already commenced, and to be completed in 12 years, 2650 miles, so that in 12 years Prussia will contain at least 5230 miles of railroad, or one mile for every 4.3 square miles. There will then be one mile of railroad to every 2.3 square miles in Rhineland and Westphalia, to every 4 square miles in Silesia, to every 4 square miles in Brandenburg and Saxony, and to every 10 square miles in Pomerania, Posen, and Prussia. The cost of building these new roads is estimated at about \$168,000,000, or \$14,000,000 yearly.

Railroads in France.—We extract the following report on the condition and progress of railroads in France during the year 1856, submitted to the Emperor by M. A. Rouher, chief of the Department of Agriculture, Commerce, and Public Works:

"A résumé of these figures, which indicate the great increase of public confidence, also exhibits the fact that the construction of the net-work of railroads in France has cost, to this period, 3,080,000,000 francs,* of which

* The franc equals 18-6 cents.

2,419,000,000 fell upon the companies, and 661,000,000 was contributed by the state: Of this aggregate amount there appears for the years 1855 and 1856 the enormous sum of 919,000,000 francs.

"The net receipts, which in 1847 were raised to 22,000 francs per kilometre,* suddenly fell in 1848 to 13,600 francs; but since 1852, notwithstanding double tracks were laid, their marked increase is shown by the following figures:

In 1852.....	21,600 francs per kilometre.
" 1853.....	24,600 " "
" 1854.....	26,400 " "

"These returns experienced in 1855 an exceptional augmentation, owing to the Universal Exhibition or World's Fair. They reached 30,300 francs; and if the amount did not reach that figure the present year (1856), the increase over 1854 is not the less progressive; for the returns for the first three quarters show the net amount of 28,000 francs, at the very lowest, per kilometre.

"STATEMENT EXHIBITING THE COST OF RAILROADS IN FRANCE FROM 1823 TO 1853.

	Actual Cost—		
	To the State.	To the Companies.	Total.
	Francs.	Francs.	Francs.
From 1823 to 1829 ..	.....	3,300,000	3,300,000
" 1830 to 1841 ..	3,228,740	172,097,753	175,326,493
" 1842 to 1847 ..	278,553,677	509,411,555	787,965,232
" 1848 to 1851 ..	298,417,147	198,711,038	497,128,235
" 1852 to 1854 ..	51,187,751	646,090,064	697,277,815
In 1855	55,200,000	430,406,485	485,606,485
In 1856	20,286,000	458,569,713	478,855,713
Total	706,873,315	2,419,186,658	3,126,059,973
Less receipts in 1855-'56	45,565,000	....	45,565,000
General total	661,308,315	2,419,186,658	3,080,494,973

"It may be interesting and instructive, to show as well the proportions in which the expenses are distributed between the principal periods into which the past thirty-four years have been divided, as the share contributed by the state during the same periods. The years which elapsed between 1823 and 1830 were, as respects railroads, an epoch of experiments and trials, to which the companies devoted an annual average of 470,000 francs, the state furnishing no contribution.

"During the twelve years which succeeded the revolution of July, the indecision in regard to the system upon which railroads were to be constructed, and the small share of confidence which these new speculations inspired, paralyzed the progress of development. Thus the expenses on the part of the companies did not exceed an annual average of over 14,330,000 francs, while the amount which fell upon the state on a similar average was but 270,000 francs. The law of June 11, 1842, gave the first impetus to railroad enterprises. From 1842 to 1847 the annual average expense was 85,000,000 francs for the companies, and 46,400,000 for the state. From 1848 to the month of December, 1851, owing to the political disturbances, which reached even the sources of credit, the annual average expenses of the company sunk to 30,000,000 francs, while the amount which fell upon the state was raised to 75,000,000 each year. Since 1852, however, when legitimate confidence was again restored, and new institutions had inspired in France security and hope in the future, a new order of things commenced. The annual expenses of the company augmented in a remarkable degree, having risen to the average of 216,000,000 francs. The demands upon the treasury diminished no less rapidly, having been reduced by receipts and reimbursements to the annual sum of 17,000,000 francs.

"Finally, under the healthy influence of the general prosperity and credit, the expenses of the companies reached, in the year 1855, 430,000,000 francs, and in 1856, 458,000,000 francs; while those of the state were

reduced by reimbursements to not more than 30,000,000 for both years. The résumé of these figures, which are themselves the indices of the public confidence, shows that the net-work of railroads in France has cost, up to the present period, 3,080,000,000 francs, of which the state paid 661,000,000 francs, and the companies 2,419,000,000. To this aggregate amount the years 1855 and 1856 alone contributed the enormous amount of 919,000,000 francs.

"The entire length of this net-work of railroads at the commencement of 1857 is 11,250 kilometres; or opened, 6500; in progress of completion, 4750.

"Length to be completed in the next ten years:

1857.....	968 kilometres.
1858.....	518 " "
1859.....	1197 " "
1860.....	234 " "
1861.....	548 " "
1862.....	83 " "
1863.....	300 " "
1864.....	236 " "
1865.....	— " "
1866.....	566 " "
Total length in progress of completion....	4750 " "

The following are the last returns of the gross receipts of the principal French railways from November 11 to November 17, compared with the corresponding week last year:

Railroads.	1855.	1856.
	Francs.	Francs.
Northern	1,074,272	967,627
Western.....	615,900	703,113
Orleans	1,053,070	1,187,942
Strasbourg	734,620	741,800
Montereau.....	.....	42,885
Lyons.....	835,769	932,170
Lyons to Mediterranean.....	519,361	675,007
Grand Central.....	.....	43,291
Southern	76,213	220,452

Progress of Railroad Building in France and Germany.—In Germany the first railroad was opened in the year 1823, and two years later in France. The following table exhibits the number of geographical miles in operation in both countries since 1823:

Years.	France.	Germany.	Years.	France.	Germany.
	Miles.	Miles.		Miles.	Miles.
1823.....	.....	9	1844.....	109	322
1830.....	11	9	1845.....	109	413
1832.....	10	17	1846.....	133	519
1833.....	36	17	1847.....	210	739
1835.....	36	18	1848.....	236	839
1836.....	36	27	1849.....	305	919
1837.....	39	30	1850.....	355	992
1838.....	39	51	1851.....	460	1035
1839.....	45	78	1852.....	501	1009
1840.....	55	108	1853.....	532	1176
1841.....	74	164	1854.....	612	1223
1842.....	74	201	1855.....	733	1274
1843.....	109	251			

No two countries have the same weights and measures, though the same name to designate them may be used in many countries. Take the mile measure, for instance; in England and the United States a mile means 1760 yards; in the Netherlands it is 1093 yards; while in Germany it is 10,120 yards, or nearly six English miles; in France it is 3025 yards; the Scotch mile is 2472 yards, and the Swedish mile 11,700 yards.

Railways of Great Britain.—On the 31st of December, 1856, the 8506 miles of railway in the United Kingdom had actually cost in money 809 millions sterling, and that large sum had been obtained as follows: viz.,

	Millions Sterling.
Ordinary shares.....	174
Preference shares.....	67
	231
Loans raised	78
	309

The average rate of interest paid on the preference share capital was £5 18s. per cent. per annum; on the loans raised, that is on debenture debt, £4 18s. per cent. per annum; and on the ordinary share capital,

* The kilometre equals about five furlongs.

£3 2s. 6d. per cent. per annum. The total gross receipts of the railways of the United Kingdom in 1856 were twenty-three millions sterling, or something approaching the interest of the national debt. The end is now rapidly approaching of the era of railway making. It has been going on for twenty years with amazing vigor, and it has covered Great Britain with a system of public roads which, for extent, perfection, utility, and rapidity of execution, leave far behind the achievements of any other nation except the United States, or any other age in the same space of time.

The following table shows the number of railway acts passed in each session of Parliament since 1846, together with the length of new lines and amount of capital authorized by those acts:

Years.	Number of Railway Acts.	Length of Line authorized.	Amount of Money authorized to be raised.
		Miles.	
1846	270	4533	£132,617,368
1847	190	1350	39,460,123
1848	85	371	15,274,237
1849	34	16	3,911,331
1850	64	8	4,115,632
1851	51	135	9,553,275
1852	61	244	4,333,334
1853	106	940	15,517,601
1854	71	492	9,211,602
1855	73	363	9,192,033

Of the 73 acts passed in 1855, 53 had reference to the construction of works; the length of new lines authorized by these 53 acts was as follows: viz., 196 miles in England and Wales, 76 miles in Scotland, and 91 miles in Ireland.

The lines authorized in England and Wales were chiefly extensions or branches connected with railways already authorized. The most important were the following:

The extension of the East Kent Railway, from Can-

terbury to Dover. By this line direct railway communication will be afforded between Dover and the naval and military arsenals in North Kent, as also a shorter line between Dover and the metropolis, than is afforded by the Southeastern Railway. The Newtown and Oswestry Railway deserves notice, as forming a link in a line of railway communication which will probably eventually connect the manufacturing districts with Milford Haven. The Carlisle and Silloth Bay Railway is an extension of the Port Carlisle Railway to a new harbor on the Solway Frith.

Among the lines authorized in Scotland may be noticed the Glasgow, Dumbarton, and Helensburg Railway, proposed to be constructed along the north bank of the Clyde from Glasgow to Helensburg, and the Bauff, Macduff, and Turiff Railway. The remaining lines were merely short branch lines in connection with existing railways.

In Ireland were authorized an extension of the Dundalk and Enniskillen Railway to Cavan, and of the Ulster Railway to Monaghan. The Belfast and County Down Railway Company was authorized to make a line to connect Downpatrick with Belfast. A few other short branch lines were also authorized.

Development of Railway Communication.—The total length of line authorized by Parliament down to the end of 1855 amounted to 14,346 miles; but of this 1495 miles have been abandoned by subsequent acts or by warrant under the authority of the commissioners of railways, and consequently there remain 15,851 miles for which the parliamentary powers which were obtained have not been repealed. Of these 8280 miles were open at the end of 1855; 4571 miles, having received the authority of Parliament, remain unopened.

The following table exhibits for each year since 1843 the proportions of railways authorized, opened, and abandoned under the authority of Parliament:

TABLE SHOWING THE LENGTH OF RAILWAY AUTHORIZED PREVIOUS TO THE END OF 1843, AND IN EACH SUCCEEDING YEAR, OPENED FOR TRAFFIC DURING EACH YEAR, AND THE PROPORTION REMAINING TO BE COMPLETED AT THE END OF 1855; ALSO, SHOWING THE TOTAL LENGTH OF RAILWAY OPENED FOR TRAFFIC IN EACH YEAR SINCE 1843.

LENGTH OF LINE OPENED.																	Total length of Line opened to Dec., 1855.	Length of Line authorized at the end of 1843, and during each subsequent year.	Decrease by abandonment, extinction, etc., under authority of subsequent Acts.	Length of Line after re-decision, made in consequence of abandonment, authority of Acts passed subsequently to 1843.	Length of Line remaining to be made.
Years.	Previously to December, 1843.	During 1844.	During 1845.	During 1846.	During 1847.	During 1848.	During 1849.	During 1850.	During 1851.	During 1852.	During 1853.	During 1854.	During 1855.	Miles.	Miles.	Miles.						Miles.
Of lines authorized prev. to Dec. 1843.	2036	204	131	16	2	1	..	..	..	..	..	..	..	2390	2,370	..	..	2,370	..	
Of lines authorized in	1844	..	..	159	366	142	118	3	4	..	..	..	..	792	805	..	..	805	13	
	1845	..	..	6	224	573	604	311	213	65	106	122	50	26	2300	2,700	56	..	2,644	344
	1846	..	..	..	..	84	403	501	379	122	238	179	121	22	2009	4,538	989	..	3,549	1450
	1847	..	..	..	..	2	66	45	26	71	10	15	29	22	276	1,354	438	..	916	640
	1848	..	..	..	..	..	..	7	..	7	16	..	11	..	41	371	7	..	364	323
	1849	..	..	..	..	..	..	2	1	..	..	..	..	..	8	16	..	..	16	13
	1850	..	..	..	..	..	..	..	2	..	..	..	..	..	7	8	..	..	8	1
	1851	..	..	..	..	..	..	..	..	..	15	23	15	24	77	135	..	..	135	58
	1852	..	..	..	..	..	..	..	..	..	11	11	106	21	149	244	..	2	242	33
	1853	..	..	..	..	..	..	..	..	..	..	..	35	88	123	940	1	..	939	816
1854	..	..	..	..	..	..	..	..	..	..	..	..	23	23	482	..	2	480	457	
1855	..	..	..	..	..	..	..	..	..	..	..	..	..	..	363	..	..	363	363	
Total.....	2036	204	216	606	803	1182	869	65	269	446	350	363	226	8280	14,346	1,495	..	12,851	4571		
Railways opened to passenger traffic belonging to private individuals, but which have not received Parliamentary sanction														17	17						
Total.....														243	8297						

From the foregoing table we see that there was a general increase in the number of miles opened from the year 1844 to the year 1848, when the number reached the maximum. From the year 1848 there was a decrease, which, though not regular, is sufficiently so to show that Great Britain was approximating toward a completed system. The average number of miles opened in the twelve years from 1844 to 1855 inclusive, was 690, which is much less than the average number built in the United States during the same period.

This length of line is distributed throughout the United Kingdom as follows:

Countries.	Length of Line open December 31, 1854.	Length of Line opened during 1855.	Length of Line open December 31, 1855.	Length of Line author- ized, but not open, on December 31, 1855.	Total length of Line authorized by Parlia- ment to Dec. 31, 1855.
	Miles.	Miles.	Miles.	Miles.	Miles.
England and Wales..	6114	96	6210	376	9,436
Scotland	1043	40	1083	453	1,541
Ireland.....	897	90	987	837	1,824
Total	8054	226	8280	4571	12,851

With respect to 2284 miles out of the 4571 miles for which parliamentary powers have been obtained, and which have not yet been opened, the powers for the compulsory purchase of the land and the completion of the works have expired. The proportion in which this is distributed through the several years is shown in the following table:

TABLE SHOWING THE PROPORTION OF RAILWAY NOT OPEN FOR TRAFFIC, AUTHORIZED PREVIOUS TO THE END OF 1843 AND IN EACH SUBSEQUENT YEAR, AND WHICH HAVE NOT BEEN ABANDONED BY SUBSEQUENT ACTS; AND THE PROPORTION AS TO WHICH THE TIME ALLOWED FOR THE COMPULSORY PURCHASE OF LAND AND FOR THE COMPLETION OF WORKS HAS EXPIRED WITHOUT THE RAILWAYS BEING COMPLETED, DOWN TO THE END OF 1855.

Years.	Length of Line authorized by subsequent Acts, which was not open for Traffic on December 31, 1845.	Length of Line upon which the powers for compulsory purchase of Land had expired without the Railway being opened on December 31, 1855.	Railways for the construction of which Parliamentary powers exist.
	Miles.	Miles.	Miles.
Of lines authorized previous to December... 1843	....	....	....
1844	13	13	....
1845	344	253	91
1846	1430	1134	316
1847	640	567	73
1848	323	257	66
1849	13	13	....
Of lines authorized in			
1850	1	....	1
1851	58	3	55
1852	93	44	49
1853	816	....	816
1854	457	....	457
1855	363	....	363
Total.....	4571	2284	2287

Upon 213 miles out of the 2287 miles for the construction of which parliamentary powers exist, the powers for the compulsory purchase of the land have been allowed to expire without having been exercised; and this increases, therefore, the number of miles which it is not probable will ever be made to 2497 miles.

The total amount of money authorized to be raised by railway companies, by shares and on loan, to the end of 1855, amounted to £374,971,966, of which £297,583,284 had been raised, leaving £77,388,682 to be raised. There are no means of ascertaining how much of this sum is apportioned to the miles of railway for which parliamentary powers have expired, but it may be assumed approximately that from £30,000,000 to £40,000,000 of this amount would have

been applied to those portions of railway, and that it will not, therefore, be now raised.

Of the 8297 miles open for traffic on the 31st of December, 1855, the proportion constructed on the narrow gauge, broad gauge, mixed gauge, and Irish gauge, is as follows:

	Narrow Gauge.	Broad Gauge.	Mixed Gauge.	Irish Gauge.	Total.
	Miles.	Miles.	Miles.	Miles.	Miles.
In England...	5345	667	206	...	6218
In Scotland...	1092	...	...	...	1092
In Ireland....	8	...	...	979	987
Total.....	6445	667	206	179	8297

And by the following table is shown the length of lines open for traffic at the same dates:

	Number of Companies having single Lines.	Narrow Gauge.	Broad Gauge.	Mixed Gauge.	Irish Gauge.	Total.
		Miles.	Miles.	Miles.	Miles.	Miles.
In England	85	1064	209	72*	...	1345
In Scotland	20	151	...	...	...	154
In Ireland..	21	2	...	...	568	570
Total..	126	1320	209	72	568	2160

* Thirty-nine miles of this length is laid with a second line on a narrow gauge.

From the above details it appears that the length of new lines opened for traffic during the year 1855, including 17 miles of line belonging to private individuals, amounted to 243 miles; of these, 235 miles were laid with only one line of rails.

Of the lines opened in 1855, the following are those which appear to be the most important, viz.:

The Hereford, Ross, and Gloucester Railway, a broad-gauge line, which affords to Hereford a more direct communication with the metropolis than it previously possessed.

The Wimbledon and Croydon Railway, which affords a communication to the south of London, between the London and Southwestern and the Southeastern Railways, and provides another link in the line of railway communication which encircles the metropolis.

The length of new line reported to be in course of construction on the 30th of June, 1855, was 880 miles; of these about 170 miles were opened before the 31st of December, 1855.

With the view of affording some measure of the comparative progress of railway enterprise, the following table has been prepared, showing the number of miles of railway in course of construction in each year since 1848, and the number of persons employed thereon, together with the amount of money received, and the number of miles of railway opened during the year:

Years.	Lines in course of Construction.			During the Year.	Money raised by Shares and Loans.	Miles of Railway opened during the Year.
	Miles.	Number of Persons employed.	Average Number employed per Mile.			
May 1, 1849	2958	188,177	63.6	....	....	....
June 30, 1849	1504	103,816	69.0	1849	£29,574,719	869
June 29, 1850	864	58,854	68.15	1850	10,522,467	62.5
June 30, 1851	734	42,938	58.49	1851	7,970,151	269
June 30, 1852	738	35,935	48.69	1852	15,924,783	446
June 30, 1853	682	37,764	55.36	1853	9,158,885	360
June 30, 1854	880	45,401	51.07	1854	12,492,374	368
June 30, 1855	880	38,546	43.80	1855	11,514,490	143

The number of persons employed on the 30th of June, 1855, upon the railways in course of construction amounted to 38,546, being on the average 43.8 per mile. It will be seen from this table that the average number of persons employed per mile has gradually decreased since 1849. This may be ascribed to improvements and the employment of steam-power in railway construction.

The length of line open for traffic in the United Kingdom on the 30th of June, 1855, was 8116 miles, and the number of persons employed thereon amounted to 97,952 persons, or 12.07 per mile. This, as appears from the following table, is a larger number per mile than has been employed in any year since 1848.

The increase in the number of miles for the whole period of eight years, is 98 per cent.

Years.	Lines open for Traffic.				
	Miles.	Number of Persons employed.	Average Number employed per Mile.	Stations.	
During 1848	4252	52,688	12.3	1321	31
" 1849	5447	55,968	10.2	1850	36
" 1850	6308	60,225	9.53	2030	32
" 1851	6693	63,566	9.49	2107	31
" 1852	776	67,601	9.55	2253	31
" 1853	7512	80,409	10.7	2463	32
" 1854	7803	90,409	11.59	2410	30
" 1855	8116	97,952	12.07	2798	34

—Report of the Board of Trade.

ENGLISH RAILWAY TRAFFIC.

	1855.	1856.	Increase.
Total receipts for goods, passengers, mails, etc.	£21,123,815	£22,965,500	£1,872,185
Length of railways open for traffic, miles.	8,240	8,700	520
Average receipt per mile open during the year.	£2,668	£2,750	£91

There is thus seen to be an increase, not only in the amount received, but also in the length of railway, and this has been to such an extent that the receipts per mile are likewise greater; and although the later weekly returns for 1856 did not show so large an increase over those of 1855 as those of the earlier portion of the year exhibited, there is still reason to hope that railway property has now overcome many of the difficulties by which it was beset, and that it will henceforth yield a return more commensurate with the advantages it has conferred upon the public than has hitherto been the case.

Among the benefits derived from railways London may reckon the increased importation and diminished price of fuel, which have been the consequence of the better development, as shown by the following return of railway coal traffic:

COALS BROUGHT TO LONDON BY RAIL.

1855.	1856.	Increase.
Tons.	Tons.	Tons.
1,137,835	1,246,290	108,464

But the value of railways in this respect will be better appreciated if the quantities brought in that way are contrasted with those brought by other means of conveyance, for during the same period we find that the canal coal traffic only amounted to

1855.	1856.	Increase.
Tons.	Tons.	Tons.
24,651	25,401	750

And that the whole amount of sea-borne coals brought into London in those years did not exceed

1855.	1856.	Increase.
Tons.	Tons.	Tons.
3,016,868	3,100,322	83,454

From which it appears that the railway coal traffic now bears a very large proportion to the importation by sea, and that during 1856 the increase by rail was greater than in 1855, although there was not then the competition, for purposes of war, in freights which had previously existed; while the canal traffic is so small as scarcely to deserve notice.

The result, as shown by the following table, is that passengers and goods have changed places as the chief elements in the gross earnings. The early railway managers expected—and with reason—that with the railways, as with the coaches, the passengers would be the main resource, and so they were for a few years.

FIVE YEARS, 1852-'56.—DETAILS OF THE AVERAGE RECEIPTS FOR PASSENGER TRAFFIC.

Years.	First Class.		Second Class.		Third Class.		Total.	
	Average Payment.	Average per Mile.	Average Payment.	Average per Mile.	Average Payment.	Average per Mile.	Average Payment.	Average per Mile.
1852.....	54-96	2-11	22-32	1-43	12-43	0-87	21-36	1-35
1853.....	51-80	2-13	20-40	1-44	12-43	0-86	20-40	1-32
1854.....	47-28	2-10	20-83	1-42	12-48	0-85	19-92	1-29
1855.....	43-88	2-09	20-16	1-43	12-00	0-86	19-20	1-23
1856.....	43-30	2-07	20-45	1-44	11-66	0-83	18-74	1-22

NOTE.—In the above table the columns of "Average Payment per Passenger" represent the total average sums paid in each year by each of the passengers conveyed. The columns of "Average Fare per Mile per Passenger" reduce the larger columns to a more convenient mileagement.

We find here that the first-class fares have fallen from 2-11d. per mile in 1852 to 2-07d. per mile in 1856, and average payments of each passenger conveyed from 54-96d. in 1852 to 43-30d. in 1856; but in connection with these reduced fares and smaller individual payments, we have already seen that the earnings per mile open have somewhat risen, comparing 1856 with 1852.

But for the last four years, and the more rapidly as the lines open have extended, the goods traffic has shot ahead, and year by year has left the passenger traffic behind.

ENGLAND AND WALES.

EIGHT YEARS, 1849-'56.—GROSS RECEIPTS, PER MILE OPEN, FROM EACH CLASS OF PASSENGERS, AND ALSO THE RECEIPTS PER MILE FOR GOODS.

Miles open.	Years.	Passengers.				Goods.	Total per Mile.
		1st.	2d.	3d.	Total.*		
Number.		£	£	£	£	£	£
4355	1849	4-06	5-13	3-31	12-55	10-00	2-45
4908	1850	3-80	4-8	3-21	11-10	11-17	2-316
5217	1851	4-24	5-21	3-73	13-30	11-58	2-483
5477	1852	3-79	4-71	3-50	12-00	10-37	2-457
5730	1853	4-03	4-74	3-78	12-70	14-15	2-634
5962	1854	4-06	4-98	4-07	13-24	1-84	2-908
6165	1855	4-00	4-72	4-23	13-15	1-653	2-978
6332	1856	4-11	4-76	4-48	13-64	1-766	3-120

* These tables include also a fourth-class return, except in the years 1849 and 1850.

But this is not all; for when we come to look closely into the passenger traffic itself, we find the same continuous and confirmed tendency in the common to supersede in importance the dear kinds of service. The receipts from first-class fares have barely maintained the level at which they stood eight years ago. The receipts from second-class fares have seriously fallen off; namely, from £518 per mile in 1849 in the 4355 miles open, to £476 per mile in 1856, with 6332 miles open. But with the third-class fares a precisely opposite class of changes has taken place. With scarcely a single exception of consequence during the eight years, the receipt per mile from third-class fares has gone on increasing, until, in 1856, the receipt of £448 per mile is quite 33 per cent. above receipt of £331 per mile in 1849. The percentage proportions to the total passenger traffic in 1849 and 1856 of the receipts per mile of the three classes of fares, were as follows, viz.:

Years.	First Class.	Second Class.	Third Class.
	Per Cent.	Per Cent.	Per Cent.
1849.....	32	41	27
1856.....	32	35	33

While, therefore, in 1849 the common kinds of passenger service contributed a little more than a fourth part of the total passenger receipts, that proportion had been raised to quite a third part in 1856; the first-class proportion remaining the same, but the second-class proportion falling from 41 to 35 per cent.

But there is more evidence to be adduced.

We have seen in the foregoing table the gross results per mile of railway open. Let us now examine somewhat more in detail the relation between those larger results and the rate of fares and average payment by each person conveyed, and these further details will be found in the following table, but extending to the five years 1852-'56:

We may venture, then, to infer that, so far as the evidence before us applies, three general conclusions seem to be justified at this stage of the inquiry, and these conclusions are:

1st. That the revenue of railways during the last eight years—that is, during the period since the railway system had arrived at maturity in England and Wales—has been derived year by year in a larger proportion from common as distinguished from dearer kinds of service, and especially in the rapid relative growth of goods traffic.

2d. That during the same period a precisely similar result has taken place in the passenger traffic by increase of receipts from third-class passengers, and the decline or non-increase of receipts from first and second class passengers.

3d. That as regards nearly all classes of passengers, the increase of passenger traffic per mile of railway has been accompanied by a reduction in the rates of fares, and also by a reduction in the average payments of each person conveyed; in other words, a larger revenue has been obtained by means of smaller individual contributions.

Railroads in Canada.—The gigantic railway enterprises now in progress in Canada are intended to embrace a railway system traversing nearly the entire length of the province from east to west, with branch feeders running into the main-trunk line, and carrying off traffic to the leading American cities and Atlantic sea-board.

Besides the government aid to this complete railway system through Canada, these undertakings are understood to receive substantial support from United States interests, the great Western country, as well as the northeastern States of the Union, being directly interested in the success of these Canadian lines; more expeditious routes between the agricultural districts of the West and their centres of trade being opened up by them. One of the most valuable features of these railways to Canada will be their affording the province increased facilities of trade during winter, and uninterrupted communication with ocean traffic when inland navigation is closed.

The most important line of this comprehensive railway system is the Grand Trunk railway. The entire length of this line, when completed, will be 1112 miles. Its eastern terminus is at Trois Pistoles, in Lower Canada. Thence upward it proceeds along the south shore of the St. Lawrence, passing opposite to Quebec, and, continuing thus westward, reaches Montreal. Before reaching Montreal, the line effects a junction at Richmond, in the eastern townships, with a line of railway to Portland, on the Atlantic, in the State of Maine. The part of the line between Montreal and Portland, a distance of 292 miles, is now open. The communication between Portland and Quebec was opened in 1854.

At Montreal, one of the most stupendous structures of modern times will carry the railway across the River St. Lawrence, which is here two miles in width. This gigantic undertaking is now in course of construction, under the superintendence of Mr. Robert Stephenson, whose name is associated with the well-known Britannia tubular bridge. The Victoria tubular bridge of Canada will, however, far surpass Mr. Stephenson's earlier work. The total span of the arches will be 6168 feet, besides piers on either side, running into the river, each about half a mile long. The span of the centre arch is 360 feet. The number of arches is 25, and, with the exception of the centre one, each has a span of 242 feet. The tube, which is of iron, is 25 feet high and 18 feet wide. The other parts of the work, including the half mile of piers on either side, are wholly of solid masonry. The height from the water level of the river to the floor of the iron tube will be 60 feet. In order to impart some idea of the strength of this stupendous work, it may be mentioned that

each buttress is calculated to resist the pressure of 70,000 tons of ice. The estimated cost of the Victoria tubular bridge is stated to be \$7,000,000.

From Montreal the Grand Trunk line follows the north bank of the St. Lawrence, touching the towns of Cornwall, Prescott, and Brockville, to the city of Kingston, on Lake Ontario. This distance from Montreal to Kingston is about 180 miles, about 120 of which, from Montreal to Prescott, was opened in October, 1855.

A branch line of 55 miles, connected with this part of the main trunk, was fully completed during 1854, from Bytown to Prescott, opposite to the American port of Ogdensburg, where an important connection has been formed with United States lines of railway. Another line of about 80 miles was also constructed in connection with this section of the Grand Trunk from Montreal to Kingston. This is one from Bytown to Montreal, following the course of the Ottawa, and joining the Grand Trunk at Vaudreuil, close to the Ottawa, and to the junction of that river with the St. Lawrence.

The Grand Trunk line, proceeding westward from Kingston, skirts the shores of Lake Ontario, passing the Bay of Quinte, through the towns of Belleville, Cobourg, and Port Hope to Toronto, the capital of Upper Canada. The length of this section of the line, from Kingston to Toronto, is about 200 miles; the length of the line from Montreal to Toronto being 380 miles.

A branch of this section of the Grand Trunk from Kingston to Toronto, extending to 80 miles from Cobourg to the town of Peterborough, on the River Otanabee, was opened during the year 1856. Another line is also in construction from Belleville to Peterborough. The most important line branching from this main section of the Grand Trunk, 45 miles of which are already open, is that from Toronto northward, passing Lake Simcoe, and thence continuing to the great Georgian Bay, on Lake Huron. From Toronto the Grand Trunk railway proceeds directly westward through the fertile peninsula of Upper Canada, passing the towns of Guelph and Stratford, and terminating at the flourishing town of Sarnia, at the head of the River St. Clair and southeastern extremity of Lake Huron. The entire length of the Grand Trunk line, which is now being pushed toward completion, namely, that from St. Thomas, 40 miles below Quebec, to Guelph, in Upper Canada, was completed in September, 1856. The remaining portions of the system will not be so actively proceeded with. The direct distance from Trois Pistoles to Sarnia is 850 miles.

At Toronto another important railway system commences, known as the Great Western. This railway commences from a joint station at Toronto in connection with the Grand Trunk railway, and skirts the head of Lake Ontario to Hamilton, a distance of 45 miles. It thence proceeds westward through the heart of the settled parts of the great peninsula, situated between the lakes Ontario, Erie, and Huron, passing through Brantford, London, and Chatham, and terminates at Windsor, on the River Detroit, directly opposite to the American city of Detroit, in the State of Michigan. At this point an important connection takes place with United States railways.

The Great Western line, besides its terminus at Hamilton, diverges to the Falls of Niagara. The Great Western railway is now open from Windsor to Hamilton and Niagara Falls, a distance of 220 miles. That portion of it from Hamilton to Toronto, 45 miles in length, was opened in the year 1854.

We have now (returning to Lower Canada) to mention the St. Lawrence and Champlain railway, which connects the south bank of the St. Lawrence, opposite to Montreal, with the head of Lake Champlain, at Rouse's Point, a distance of 45 miles. At Rouse's Point this railway connects with the system of railways

to Albany, Boston, New York, and other parts of the United States. The Plattsburg railway commences at Caughnawaga, on the south shore of the St. Lawrence, opposite to Lachine, and runs to the town of Plattsburg, on Lake Champlain, a distance of 28 miles. The Montreal and Lachine railway, a short line of 9 miles, connects the city of Montreal with the upper part of the island at the village of Lachine. This railway, as also a portion of the St. Lawrence and Champlain line, have been in active operation for several years.

The average cost of the construction of railways in Canada will be about \$47,500 per mile. The average fares are from two to three cents per mile, according to distance of journey. The electric telegraphs in Canada convey messages at much more moderate charges than in England.

The control of the Post-office of Canada was transferred from imperial to colonial authorities in 1851.

RAILROADS IN CANADA.—1857.

Name of Road.	Length. Miles.
Buffalo and Lake Huron (Buffalo to Paris).....	84
Champlain and St. Lawrence (Rouse's Pt. to Montreal).....	44
Cobourg and Peterborough.....	28
Erie and Ontario (Niagara Falls to Chippewa).....	16
Grand Trunk. For Portland District, see Maine.	
Montreal District.....	148
Quebec District (Richmond to Quebec).....	96
Brockville and Toronto Districts.....	333
Toronto and Sarnia District.....	91
St. Thomas Branch.....	49
Great Western (Niagara Falls to Detroit).....	280
Guelph Branch.....	17
Toronto Branch (Hamilton to Toronto).....	38
Montreal and New York (Montreal to Moer's Junc.).....	42
Plattsburg and Montreal (Moer's Junction to Platts).....	20
Ontario, Simcoe, and Huron (Toronto to Collingwood).....	95
Ottawa and Prescott (Prescott to Bytown).....	54
Other roads.....	32
Total.....	1412

United States.—To give a complete history of the railroad system of the United States would exceed our limits of space. We therefore confine ourselves to a brief summary of the history, with the statistics necessary to show the present condition of the railroads in the United States.

The first railroad constructed in the United States was the Quincy road, built in 1827. The first passenger railroad was the Baltimore and Ohio, which was opened with horse power for fifteen miles in 1830. The Mohawk and Hudson river road was opened for public travel with horse power in the summer of 1831. Locomotives were first used in this country in 1831, on the Mohawk and Hudson railroad, and in 1832 upon the Baltimore and Ohio, and on the South Carolina railroad. In 1828 there were but three miles of railroad in the United States; now there are twenty-five thousand miles!

The superstructure of some of our first railroads was made by placing a thin flat bar of iron on longitudinal timbers, which rested on stone blocks, protected from displacement by frost by filling the trenches below them with small broken stone. In some cases the iron bar was placed on continuous stone sills.

The first change made in the rails used was the substitution of bars of greater thickness; then succeeded the T rail, of nearly the present form, weighing fifty pounds per lineal yard, resting on longitudinal sills; subsequently the weight of iron rail was successively increased to sixty, seventy, and seventy-five pounds; cross-ties were used, which were placed on longitudinal sills, and finally these sills were removed and gravel ballasting substituted. The first cars used were coach bodies of the ordinary form, placed on four-wheeled frames; afterward the bodies were enlarged and the form changed, and finally the bodies were adapted to contain sixty passengers, placed on two separate trucks attached loosely to the bodies, so as to permit them separately to adapt themselves to the curves and inequalities of the track. The motive power at first was horses, and on steep inclinations stationary steam pow-

er. The first locomotive engine used weighed but six tons, and these have been successively increased to ten, sixteen, twenty, and twenty-six tons, while on some of the freighting roads engines of forty tons weight (including the tenders) have been introduced. The foregoing list of changes shows how imperfect a machine the railroad was when many of them in this country were first commenced, and how many radical changes have been necessary in the construction of their ways and works. The present state of perfection in the machine renders it probable that new substitutions of its important and expensive parts will annually become more rare, but yet it may be safely assumed that some expenses of this character will continue to accrue and must be provided for in estimating the cost of our railroads or their value as an investment.—*Report of the New York State Engineer, 1855.*

In the conception and construction of our system of railroads there was no well-digested plan in regard to the position of the principal termini, or the route for the trunk lines, or the mutual relation of the main lines to each other. The result is that the system is imperfect as a whole, though admirable in many of its parts. We have many roads built only in rivalry to others; some parallel, others having the same termini. The same expenditure properly directed would have given us a complete system, with fewer miles constructed, but of a more durable character. The want of plan is in consequence of our system having been built by States not separated by topographical divisions, and by private companies having a view more to immediate profit than to the future success of and connection with the system. One of the greatest resulting evils is the constant break of gauge, which makes necessary the frequent transhipment of both passengers and freight; thereby increasing cost and delay. The gauges in common use comprise from 4 feet 8½ inches, the *chance* width of the first "tram wagon," which the first "tram-roads" were made to fit; to 4 feet 10, 5 and 6 feet, all empirical gauges; and each having respective merits which were advocated by their introducers. Whatever may have been these claims, it is unfortunate that one was not universally agreed upon; and there is no risk in asserting that even at this late date the saving in time to passengers and in injury to freight during five years would be more than an equivalent for the cost of all necessary changes in the rolling stock, and superstructure consequent on the adoption of a common gauge. Our railroads have been so much indebted to fortuitous circumstances for their position and relation to each other, that the principal claim to a *system* that we can advance is based on topographical divisions. And having this division in view, we will proceed to describe briefly our railroads as a system.

The objects to be gained by our first railroads were to open an outlet from the fertile regions of the West, and to get access to the interior as a market for the manufactures of the sea-board. The principal results are the four great trunk lines, which are the boast of the country, and which have done more to develop the West and enrich the East than was dreamed by the "enthusiasts" who were followers of De Witt Clinton. Two of the four trunk lines, the New York and Erie, and the New York Central railroads, directed their first slow course to the great American chain of lakes, expecting to be content to end there, and not to enter into a contest with an inland sea. But with the aid of the frosts of winter, they found themselves fit rivals, and have extended their lines with such vigor, that the branches of these trunk lines have tapped the Mississippi, and are hastening on to the Pacific. Their connection with every town and hamlet in the Mississippi valley is the best foundation for a continuation of the progressive prosperity of New York. The other two lines, the Pennsylvania Central and the Baltimore and Ohio railroads, had no further aim than to pass the barrier of the Alleghanies, and then receive their pros-

perity from the Ohio River. But a river that, according to John Randolph, "was dry half the year, and frozen the other half," was not a dependence; and now even the Mississippi River is not a satisfying end. We can briefly say that these four trunk lines, with their direct connections, constitute the Northern half of the system. The other single roads, not connections, north of a line of the Ohio valley, however important in themselves, are only local roads. South of the line of the Ohio valley, the Virginia Central and the Charleston and Memphis railroads, with their direct connections, constitute a similar portion of the Southern half of the railroad system. The remaining East and West trunk line to be described is the one from New York city, in a direct line west. This railroad, now nearly completed, is almost a necessity to the passenger traffic, being the shortest route west from New York city. These roads, in conveying the produce of the interior to the sea-board, and in opening the West for settlement, form a much more important part of the system than the roads running north and south, and having as their principal business the interchange of the products of the North and South. The roads, running north and south, are divided by the Alleghany Mountains. The eastern half is made up of a trunk road and its branches, running parallel to the sea-coast from Bangor to Mobile, having at present but one short break in Alabama. The freight business of these roads is necessarily limited, and confined principally to costly freight, as the coasting trade is the natural carrier of heavy freight. The passenger business is the principal source of profit; and as these roads run through the most populous sections of the country, they have ample employment. The trunk road west of the Alleghany Mountains is made up of the Illinois Central and other roads in the Mississippi valley, converging to the mouth of the Ohio River, added to the yet unfinished trunk road from the mouth of the Ohio to Mobile and New Orleans. These roads until lately have not been necessary, as the Mississippi and branches have generally afforded all the internal communication necessary. The interchange of the productions of the South and West, and giving rapid communication over the West, make these roads now a necessity. We can see then, that, notwithstanding the want of unity of action from the first, the system is gradually becoming more perfect, and that the completion of the trunk lines running west to the Pacific will not let us lose the proud boast that we can now truly make of having the noblest system of internal improvement in the world.

New York State.—The following exhibit of the condition of the railroads in New York State is in part a synopsis of the report made to the New York Legislature in 1855 by the state engineer, and contains many important suggestions in regard to the future management of our railroads, coupled with much valuable information as to the condition of the state system.

The returns of the railroad corporations of New York State do not comply with the law in stating the amount of depreciation of the works and rolling stock. The returns of the railroads of Massachusetts, in most cases, show a small allowance made for the depreciation of the iron rails, engines, and cars. It is contended by many skillful managers that if the works and rolling stock are kept in thorough repair, they are in as good condition at the end of each year as they were at the end of the preceding year, and therefore that there can be no depreciation. The difficulty lies in determining the *fact* whether the repairs have been kept up in this thorough manner. The expense for repairs of iron rails, after allowing for the value of the old material, is equal to the cost of an entire renewal once in fourteen years; that for cross-ties to a renewal once in eight years; for wooden bridges once in ten years; and for wooden stations once in thirty years. This deterioration may be represented in another form, by stating it as equal to from 2 to 4 per cent. annually on the whole cost of the road.

Railroads are also subject to one item of expense which is rarely directly stated: viz., the necessary substitution of improvements in the way and works before the original ones have been worn out by use. The railroad, considered as a machine, is of recent invention. Its power, capacity, and endurance have not even yet been fully ascertained. As the two former are developed, the substitution of improved forms for increasing its efficiency, either in capacity, speed, or economy, becomes necessary, and these substitutions are more extensive than they are in other machines of older date or use.

The returns of the railroad corporations show continued large additions every year to the construction account of even our oldest and best built roads. The reported increase of cost during the year 1855 was chiefly in consequence of an extension of the double track, a larger equipment, and station facilities for the accommodation of the increased freight traffic. The increase of the cost of the road on the New York and Erie was 20 per cent. during the years 1854, 1855, and on the Central it was greater than 25 per cent. during the same period. The reported earnings and net earnings of these roads have increased by a much larger percentage than the cost of the roads as above stated, while the reported expenses of operating have increased by about the same percentage as the earnings. The freight earnings have increased more than the passenger earnings; but the average receipts per ton per mile were less in the year 1855 than the preceding one, especially on the Central road, although the rates of charges have been increased on both roads. The average receipts per ton per mile for the year 1855, were two and a half cents on the Erie, and a little more than three cents on the Central, while the average the preceding year on the latter was nearly three and a half cents. The freight tariff has been nearly alike on each of these roads for the last two years; it is, therefore, evident that the business of the Erie road embraces a larger portion than that of the Central of those articles which pay the least rates, and that the latter road has been performing a much larger proportion of its business at low rates this year than formerly. On comparing the reported receipts, expenses, and business of our three principal freighting roads, it will be seen that the passenger business on the Erie is reported as giving a net profit of 47 per cent., with an average charge of one and seven-tenths cents per passenger per mile; on the Central, a net profit of 44 per cent., and a charge of one and nine-tenths cents, and on the Northern Railroad a net profit of two per cent., with an average charge of two and seven-eighths cents per passenger per mile; and that the freight business on the first is reported as giving a net profit of 51 per cent., with an average charge of two and six-tenths cents per ton per mile; on the second a net profit of 48 per cent., with an average charge of three and seven-tenths cents; and on the third a net profit of 34 per cent., with an average charge of two and one-fourth cents per ton per mile. The character of the business, the grades, and other circumstances of these several roads, do not furnish any sufficient reason for these discrepancies. The actual cost of transportation upon railroads will probably never be accurately determined from their reports, until they have been run a few years with the construction account closed, and no money borrowed. The expenses of operating the road, as stated in the reports, are about one and a quarter cents per ton per mile on the Erie, and one and six-tenths cents on the Central; but, as before stated, these reports do not show accurately the cost of this service. More reliable testimony on this subject is afforded by the recent action of the railroad conventions. At the one held at New York, embracing the officers of the four great lines between the Atlantic and the West, a joint report was submitted by the superintendents of the several roads, in which they state

that "experience has proved that the *lowest rates* at which ordinary freight can be carried to pay interest and expenses will average about two cents per ton per mile for heavy agricultural products, three cents for groceries, and four cents for dry goods." At a subsequent convention of the railroad companies of Ohio and Indiana, similar rates were adopted. The above charges applied to the business of our two great lines would yield an average of a little less than three cents per ton per mile, and would serve to show that some of the business done on each of these roads does not even pay "interest and expenses." Sufficient information has been elicited from the railroads of this and other States, from the actions of the conventions, and from other sources of information, to warrant the belief that a considerable portion of the freighting business now done by our railroads yields no profit at the present rates, when due allowance is made for the increase of capital which it requires for the increased wear and depreciation of the works, and for the occupation of the track to the injury of the other business.

The reports of the year 1855 show an increased expense in operating the roads, over that of the preceding year. An examination of the reports of a number of railroads in New England and elsewhere, shows, for the last five years, an annual increase in their cost of from 2 to 5 per cent. per annum; an increase in their receipts of from 12 to 20 per cent.; and an increase in their expenses of from 20 to 40 per cent. per annum.

Deductions from the reports of the railroads in the State of New York, 1855, have been made, showing the comparative cost of construction, of maintenance, and of operating each of the roads of the State, and have been arranged as follows:

The total length of road known to be in operation in New York in 1855 was.....	2723½ miles.
In addition to which there is of second track in operation.....	803 "
Making a total length of track in operation....	3526½ "
The whole length of completed and projected roads.....	4436 "

The capital stock, as by charters, of 64 roads (4436 miles), is.....	\$114,102,200 00
The amount of the above subscribed.....	84,972,597 00
The amount of capital stock paid in on 63 roads (4406 miles).....	69,473,458 52
The amount of funded debt of 63 roads.....	63,230,997 42
The amount of floating debt..... do.....	8,504,818 43

The expenditures on the roads which are completed are as follows:

For grading and masonry, 16 roads, 1623½ miles.....	\$20,742,690 21
For bridging 16 roads, 1623½ miles.....	1,902,424 87
For superstructure, 21 roads, 2106½ miles.....	26,737,876 67
For grading, bridging, and superstructure, 21 roads, 2106½ miles.....	68,822,911 21
For station buildings, engine houses and shops, 22 roads, 2127½ miles.....	5,042,750 87
For land damages and fences, 22 roads, 2127½ miles.....	9,127,330 92
For locomotives, 17 roads, 2058½ miles.....	5,748,722 83
For cars (of all kinds), 19 roads, 2110½ miles.....	6,726,243 12
For engineering and agencies, 23 roads, 2188½ miles.....	3,395,962 56
Total expenditure for construction and equipment, 2340½ miles.....	115,537,193 73
The expenditure for the construction and equipment of 23 roads (1600 miles), which are in progress and partly completed, including those which reported in 1855, but not in 1856.....	13,112,451 29

The number of locomotives in use is.....	668
do..... passenger and emigrant cars.....	1008
do..... freight and baggage cars.....	7808

	Miles run.	Miles of road.
The miles run by the passenger trains for the year was.....	7,024,190	on 2437
Miles run by freight trains for the year.....	4,868,677	on 2411
Total miles run by trains.....	11,392,867	on 2437
Number of passengers carried in the cars.....	12,369,449	on 2437
Number of miles traveled by all the passengers.....	479,025,821	on 2437
Number of tons of freight carried in the cars.....	2,959,362	on 2437
Number of miles, or total movement of freight one mile.....	301,707,951	on 2376

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Expense of maintaining the roads on 21 roads, 2229 miles.....	\$2,504,041 96
Viz.: chargeable to passenger business, 1923 miles.....	1,144,260 96
chargeable to freight business, 1915 miles.....	953,991 08
Expense of repairs of machinery on 19 roads, 2139 miles.....	\$1,901,412 74
Viz.: chargeable to passenger business, 2056 miles.....	893,277 53
chargeable to freight business, 2043 miles.....	901,451 48
Cost of operating the road on 20 roads, 2191 miles.....	\$5,802,563 88
Viz.: chargeable to passenger business, 16 roads, 2074 miles.....	2,685,179 74
chargeable to freight business on 15 roads, 2066 miles.....	2,515,205 45
Receipts from passengers on 19 roads, 2189 miles.....	\$8,922,419 53
Receipts from freight on 19 roads, 2189 miles.....	8,271,013 85
Receipts from other sources, 18 roads, 2171 miles.....	935,765 10
Total receipts on 19 roads, 2189 miles....	\$18,129,197 43
Payments for transportation expenses, 18 roads, 2171 miles.....	\$10,314,414 44
Payments for interest on debts on 21 roads, 2205 miles.....	8,940,360 23
Payments for dividends on 6 roads, 1588 miles.....	2,237,416 06
Total payments.....	\$16,492,990 73

The average cost of construction and equipment per mile of road on those railroads which have reported these items has been as follows:

Grading and masonry on 19 roads, 1623½ miles..	\$12,773 49
Bridging..... 19 " 1623½ "	1,171 93
Superstructure..... 21 " 2106½ "	12,699 00
Grading, bridging, and superstructure on 21 roads, 2106½ miles.....	30,453 49
Station buildings, engine houses, and shops on 22 roads, 2127½ miles.....	2,370 27
Land damages and fences on 22 roads, 2127½ miles.....	4,200 17
Locomotives..... 17 " 2058½ "	2,792 33
Cars of all kinds..... 19 " 2110½ "	3,186 66
Engineering and agencies..... 23 " 2188½ "	1,094 79
The total average expenditure for construction and equipment on 25 roads, 2340½ miles long, was..	49,359 05

The average cost per mile of a single track is as follows:

Grading, masonry, and bridges on 19 roads, 2340½ miles.....	\$9,676 37
Superstructures on 21 roads, 2223 miles.....	9,469 43
Grading, bridges, and superstructure on 21 roads, 2223½ miles.....	22,604 18
Station, engine houses, and shops on 22 roads, 2344½ miles.....	1,772 30
Land and fencing on 22 roads, 2344½ miles.....	3,208 41
Engineering and agencies on 23 roads, 2363½ miles.....	1,145 94
The total average expenditure for construction and equipment on 25 roads, with 3142½ miles of track, was.....	36,769 45

There is one locomotive for every 3½ miles of road in use. There is one passenger or emigrant car for every 2½ miles. There is one freight or baggage car for every 32-100th mile. The average mileage of the passengers for each mile run by the train is 69. The distance traveled by each passenger is 39½ miles; or, if we exclude the Harlem road, the travel on which is principally in the city of New York, 51 miles. The speed of the express trains, when in motion, per hour, is 36 miles. The number of tons of freight for each mile run by the trains is 71. The distance each ton of freight was moved, 107 miles. The speed of the freight trains when in motion, per hour, is 16 miles. The weight of the freight trains, exclusive of the freight, is 175 tons.

The proportions of the tonnage of each description of freight carried on nineteen roads, 2228 miles, are as follows:

Of the product of the forest. 14 per ct. of the whole tonnage.	
" " animals.. 15½ "	" "
Vegetable food..... 22 "	" "
Other agricultural products. 4 "	" "
Manufactures..... 12 "	" "
Merchandise..... 12½ "	" "
Unclassified articles..... 20 "	" "

AVERAGE COST OF THE MAINTENANCE OF WAY PER MILE OF ROAD.*

	Total.	Charged to the Business of	
		Passengers.	Freight.
Repairs of road-bed	\$316 43	\$454 43	\$351 64
Iron used for do.	277 54	83 22	140 00
Repairs of buildings	55 62	27 43	22 15
" fences and gates	19 01	11 72	7 72
Taxes	114 36	64 51	54 37
Total	\$1123 40	\$555 04	\$436 09

AVERAGE COST OF REPAIRS OF MACHINERY PER MILE OF ROAD.

	Total.	Charged to the Business of	
		Passengers.	Freight.
Repairs of engines	\$427 53	\$237 84	\$191 07
" cars	350 53	145 20	206 66
Tools	36 42	18 59	16 43
Oil and waste	65 55	37 72	28 38
Total	\$923 41	\$434 52	\$438 01

AVERAGE COST OF OPERATING PER MILE OF ROAD.

	Total.	Charged to the Business of	
		Passengers.	Freight.
Office expenses and stationery ..	\$50 28	\$25 93	\$25 08
Agents and clerks	248 40	116 31	122 07
Labor, loading, and unloading ..	213 49	.....	187 45
Porters, watchmen, and switchmen	165 71	100 49	61 88
Wood and water station attendance	41 59	25 51	16 34
Conductors, baggage and brakemen	271 72	146 39	122 34
Enginemen and firemen	263 09	140 73	122 61
Fuel, cost and labor of preparing ..	732 60	395 23	202 12
Oil and waste for engines	89 27	49 53	30 63
" cars	65 02	33 65	31 40
Loss and damage to goods and baggage	46 40	5 74	40 33
Damages for injuries to person ..	36 06	30 94	13 65
" to property and cattle ..	12 36	5 71	8 22
General superintendence	65 35	28 97	30 64
Contingencies	408 15	242 18	199 01
Total	\$2648 66	\$1294 84	\$1212 90

AVERAGE COST OF MAINTENANCE OF WAY PER MILE RUN BY THE TRAINS.

	Total.	Charged to the Business of	
		Passengers.	Freight.
Repairs of road-bed	Cents. 16-75	Cents. 15-86	Cents. 18-23
Iron for "	4-87	3-50	6-40
Repairs of buildings ..	1-15	0-96	1-15
Fences	0-39	0-41	0-40
Taxes	2-31	2-25	2-31
Total	22-63	20-82	25-70

AVERAGE COST OF REPAIRS OF MACHINERY PER MILE RUN BY THE TRAINS.

	Total.	Charged to the Business of	
		Passengers.	Freight.
Repairs of engines	Cents. 8-71	Cents. 7-84	Cents. 9-92
" cars	7-10	4-89	10-92
" tools	0-65	0-54	0-75
Oil and waste	1-13	0-97	1-31
Total	17-52	13-44	22-25

AVERAGE COST OF MAINTENANCE OF WAY PER PASSENGER AND PER TON FREIGHT CARRIED ONE MILE.

	Total.	Charged to the Business of	
		Passengers.	Freight.
Repairs of road-bed	Mills. 2-40	Mills. 2-14	Mills. 2-41
Iron for "	0-82	0-59	0-71
Repairs of buildings ..	0-16	0-13	0-15
" fences	0-05	0-05	0-05
Taxes	0-34	0-31	0-37
Total	3-37	2-88	3-41

* Many of the roads do not give complete returns of the various items of cost of maintenance of way, repairs of machinery, and operating. The average cost of each item is made up from those roads only which have reported that item, which will account for the apparent discrepancies between the averages of the total cost and the sum of averages of the cost of each item.

AVERAGE COST OF OPERATING PER MILE RUN BY THE TRAINS.

	Total.	Charged to the Business of	
		Passengers.	Freight.
Office expenses and stationery ...	Cents. 1-02	Cents. 0-85	Cents. 1-30
Agents and clerks	4-32	3-82	6-29
Labor, loading and unloading	3-72	2-52	9-48
Wood and water station attendance	1-27	1-39	1-06
Porters, watchmen, and switchmen	3-37	3-04	2-94
Conductors, baggage and brakemen	5-44	4-82	6-32
Enginemen and firemen	5-45	4-64	6-33
Fuel, cost and labor of preparing ..	14-44	13-02	18-65
Oil and waste for engines	1-84	1-65	1-86
" cars	1-37	1-16	1-65
Loss and damages to goods and baggage	0-92	0-18	2-08
Damages for injuries to persons ..	0-69	0-78	0-38
" to property and cattle ..	0-25	0-13	0-43
General superintendence	1-30	0-60	1-48
Contingencies	8-17	7-47	6-64
Total	53-48	43-06	63-46

AVERAGE COST OF REPAIRS OF MACHINERY PER PASSENGER AND PER TON OF FREIGHT CARRIED ONE MILE.

	Total.	Charged to the Business of	
		Passengers.	Freight.
Repairs of engines	Mills. 1-27	Mills. 1-17	Mills. 1-23
" cars	1-02	0-73	1-46
" tools	0-09	0-08	0-10
Oil and waste	0-16	0-14	0-18
Total	2-54	2-12	3-07

AVERAGE COST OF OPERATING PER PASSENGER AND PER TON OF FREIGHT CARRIED ONE MILE.

	Total.	Charged to the Business of	
		Passengers.	Freight.
Office expenses and stationery ...	Mills. 0-15	Mills. 0-12	Mills. 0-17
Agents and clerks	0-71	0-56	0-36
Labor, loading and unloading	0-57	0-02	1-29
Porters, watchmen, and switchmen	0-45	0-45	0-59
Wood and water station attendance	0-18	0-25	0-14
Conductors, baggage and brakemen	0-61	0-71	0-37
Enginemen and firemen	0-78	0-68	0-88
Fuel, cost and labor of preparing ..	2-08	1-42	2-13
Oil and waste of engines	0-26	0-24	0-25
" cars	0-20	0-17	0-72
Loss and damage to goods and baggage	0-13	0-03	0-28
Damages for injuries to persons ..	0-09	0-11	0-05
" to property and cattle ..	0-04	0-02	0-16
General superintendence	0-18	0-13	0-20
Contingencies	0-96	0-01	0-85
Total	7-64	6-36	8-64

The average receipts per mile of road were:

Passengers	\$4,074 16
Freight	3,776 72
Other sources	427 28
	\$8,278 17
And the expenses	\$4,710 14

From this we see that the expenses were 56 per cent. of the gross receipts, which is below the average throughout the country.

The expenses of operating the road were 57 per cent. of the whole receipts.

The average receipts per mile run by the trains were as follows:

From passengers	\$1 32
freight	2 02
other sources	1 67
And of the expenses	\$0 97

The average receipts per passenger per mile were 1-95 cents. Per ton of freight .. 2-79 " Per passenger or per ton .. 2-38 " Expenses .. 1-38 "

On 16 roads, 2252½ miles long, the number of passengers carried, as reported, was 12,256,714 The actual number of travelers was probably 10,000,009 The number of miles traveled on same roads was 477,611,422

Comparison of the Returns of several Railroads.—From the statistics of the net income and general economy of the principal railroads in New York and Massachusetts, we can elucidate many facts of the greatest importance in railroad management. Among these may be noticed the following: The average number of passengers and the number of tons of freight carried each mile run is the same; that is, on an average there are daily carried an equal number of passengers and freight an equal distance on the road. The largest number of passengers carried each mile run is by the Hudson River Railroad, which has as a rival the best navigable river in the world. The largest number of tons carried per mile run is by the New York and Erie Railroad, which is the principal through freight road for the products of the West; and this road also shows the largest net income per mile. The ratio between the total receipts per mile and the net income per mile is far from being constant, or the last from being dependent on the first. There is, however, a relation between the net income per mile of a road and the expenses per mile; that is, the net income per mile of a railroad bears a very nearly constant ratio to an inverse of the

expenses per mile run; thereby making it evident that, *ceteribus paribus*, the interests of the stockholder are advanced more by reducing the expenses per mile run, than by increasing the business of the road. The receipts for passengers or freight carried per mile is given by adding the expenses and the net income carried per mile. It is shown from this comparison that on an average the net income from passengers carried per mile is 50 per cent. of the receipts, or equal to the expenses; while the net income from freight is only 34 per cent. of the expenses. From this we see that the tariff of freight should be increased 16 per cent., that it shall be in a just proportion to the passenger tariff.

The tables also show that the net income from passengers and mails per mile run is generally greater on the Massachusetts railroads than on the New York railroads, and that the net income from freight per ton per mile is greater on the New York railroads. The general tariffs are not materially different in the two States, but the expenses of freight are fully 50 per cent. greater in Massachusetts than in New York. The net income per mile is the greatest on the New York and Erie Railroad, which is a freight road.

STATISTICS OF THE INCOME AND ECONOMY OF THE PRINCIPAL RAILROADS IN NEW YORK AND MASSACHUSETTS.

Companies.	Length in Miles.	Receipts from Passengers, Mails, etc.	Receipts from Freight.	Total Receipts.	Passengers carried each Mile run.	Tons of Freight carried each Mile run.	Net Income from Passengers, Mails, etc.
New York Central	582	\$3,488,514	\$2,479,821	\$5,918,335	77	68	\$1,050,652
New York and Erie	464	1,930,869	3,369,890	5,359,759	65	89	1,039,839
Hudson River	144	1,287,841	464,145	1,753,986	127	55	465,298
Harlem	133	605,084	337,311	942,395	29	39	191,420
Ogdensburg	119	147,880	440,144	590,124	29	74	29,084
Buffalo, Corning, and New York.	100	67,581	55,176	123,157	21	33	29,645
Watertown and Rome	97	168,181	222,796	390,977	37	85	79,934
Buffalo and New York City	92	137,917	116,853	254,770	25	62	35,630
Boston and Worcester	60	547,397	405,479	952,796	79	56	309,571
Western	155	838,971	924,573	1,763,544	87	49	573,742
Boston and Providence	55	329,156	214,594	543,750	55	47	194,723
Boston and Lowell	28	175,249	267,252	442,492	57	65	39,548
Old Colony and Fall River	87	427,137	222,519	649,656	63	57	139,814
Fitchburg	68	318,754	390,885	704,639	61	53	145,679
Boston and Maine	83	560,535	297,446	858,381	69	58	538,083
Eastern	93	473,753	105,445	579,198	52	35	234,826
Totals and averages	2379	\$11,514,200	\$10,314,449	\$21,828,649	67	67	\$5,643,422

Companies.	Net Income from Freight	Total net Income.	Total Receipts per Mile.	Net Income per Mile.	Ratio of net Income to Receipts from Passengers, Mails, etc.	Ratio of net Income to Receipts from Freight.	Net Income from Passengers, Mails, etc., per Mile run.
					Per Cent.	Per Cent.	Cents.
New York Central	\$1,179,642	\$2,830,294	\$10,170	\$4863	48	48	67
New York and Erie	1,682,432	2,722,851	11,573	5867	52	50	79
Hudson River	127,987	533,235	12,180	4119	36	28	77
Harlem	133,248	324,668	7,086	2441	32	29	25
Ogdensburg	144,766	170,859	4,550	1436	19	33	19
Buffalo, Corning, and New York.	21,107	50,752	1,231	507	44	38	24
Watertown and Rome	91,885	171,219	4,080	1765	48	41	52
Buffalo and New York City	16,400	52,030	2,856	466	26	14	13
Boston and Worcester	54,796	358,367	13,809	5154	55	14	90
Western	144,957	720,703	11,393	4650	63	16	79
Boston and Providence	17,562	210,285	9,879	3823	59	08	85
Boston and Lowell	79,917	119,465	15,803	4266	23	30	24
Old Colony and Fall River .....	...	...	7,467	...	44	...	67
Fitchburg .....	...	...	10,333	...	46	...	52
Boston and Maine .....	...	...	10,342	...	69	...	94
Eastern .....	...	...	6,218	...	62	...	96
Totals and averages	\$3,555,153	\$9,203,575	\$9,176	\$8868	49	34	70

Companies.	Net Income from Freight per Mile run.	Expenses of Passengers, Mails, etc., carried one Mile.	Net Income from Passengers, Mails, etc., carried one Mile.	Expenses of Freight per Ton carried one Mile.	Net Income from Freight per Ton carried one Mile.	Net Income from Passengers, Mails, etc., per Mile run.	Net Income from Freight per each Mile run.
	\$ Cts.	Cents.	Cents.	Cents.	Cents.	Cents.	\$ Cts.
New York Central	99	1-091	1-007	1-602	1-453	77	99
New York and Erie	1 15	-983	1-076	1-290	1-286	69	1 15
Hudson River	46	1-085	-606	1-853	-705	77	46
Harlem	52	1-904	-881	2-042	1-334	25	52
Ogdensburg	54	2-311	-676	1-501	-735	19	54
Buffalo, Corning, and New York.	38	1-487	1-151	1-566	1-156	24	38
Watertown and Rome	94	1-574	1-423	1-603	1-114	52	94
Buffalo and New York City	26	1-586	-553	2-432	-339	13	26
Boston and Worcester	25	-923	1-150	2-909	-454	90	25
Western	22	-924	2-000	2-416	-440	75	22
Boston and Providence	16	1-121	1-623	3-807	-339	28	16
Boston and Lowell	63	1-471	-429	2-278	-972	24	63
Old Colony and Fall River .....	..	1-322	1-058	6-510	...	67	..
Fitchburg .....	..	-971	-841	3-979	...	52	..
Boston and Maine .....	..	-618	1-352	3-362	...	94	..
Eastern .....	..	1-116	1-839	4-165	...	96	..
Totals and averages	66	1-098	1.068	1-880	-990	70	66

OPERATIONS OF THE RAILROADS OF MASSACHUSETTS FROM 1846 TO 1855.

Years.	Number of Railways in operation.	Number of Miles in operation.	Cost.	Number of Miles run.				Total Receipts per Mile run.	Total Expenses per Mile run.	Net Income per Mile run.
				By Passenger Trains.	By Freight Trains.	By other Trains.	Total.			
1846	16	692	\$27,084,927	1,495,737	746,547	145,703	2,389,484	\$ 68.	\$ 68.	Cents.
1847	18	715	32,796,363	1,753,088	1,181,432	206,673	3,177,143	1 50	75	83
1848	21	787	41,302,632	2,112,496	1,220,319	261,772	3,598,080	1 50	75	81
1849	27	945	45,125,768	2,330,891	1,243,789	232,122	3,806,752	1 51	76	74
1850	32	1092	50,559,452	2,607,611	1,527,046	281,168	4,215,825	1 52	76	75
1851	36	1142	52,595,888	2,760,888	1,434,200	293,067	4,398,370	1 50	76	78
1852	36	1150	53,076,013	2,907,022	1,589,590	199,171	4,785,783	1 44	77	74
1853	33	1164	54,914,506	3,156,957	1,792,544	241,338	5,130,840	1 52	82	67
1854	37	1194	57,005,498	3,314,459	1,962,108	254,447	5,531,064	1 57	85	70
1855	37	1273	60,339,391	3,115,401	2,041,834	228,181	5,385,416	1 69	1 08	59
										64

Years.	Receipts.				Expenses.				Net Income.
	From Passengers.	From Merchandise and Gravel.	From Mails, Rents, etc.	Total.	Of Road-bed.	Of Motive Power.	Miscellaneous.	Total.	
1846	\$2,018,163	\$1,467,969	\$119,217	\$3,604,171	\$313,798	\$331,562	\$1,059,604	\$1,696,576	\$1,945,575
1847	2,519,784	2,205,840	196,721	4,922,345	4,000,000	438,088	1,434,790	2,272,432	2,649,913
1848	2,549,722	2,335,407	220,725	5,105,854	434,000	498,556	1,754,419	2,741,604	2,666,411
1849	3,033,701	2,411,807	252,991	5,741,799	499,430	530,949	1,679,613	2,890,818	2,850,981
1850	3,404,948	2,608,766	296,537	6,419,533	578,673	485,762	1,995,619	3,112,795	3,306,738
1851	3,525,128	2,650,465	280,248	6,595,766	652,666	531,360	2,083,411	3,388,905	3,259,671
1852	3,641,790	2,819,409	273,801	6,835,517	751,701	594,144	2,288,296	3,673,410	3,212,107
1853	4,171,964	3,330,869	317,627	7,977,577	912,856	728,301	2,674,578	4,324,013	3,653,514
1854	4,465,836	3,725,186	346,441	8,696,551	1,233,076	1,008,041	3,171,117	5,451,047	3,245,504
1855	4,600,877	3,904,075	451,504	9,077,529	1,367,102	886,356	3,395,647	5,650,600	3,426,929

Years.	Net Increase per Cent. on Cost.	Number of Passengers carried in the Cars.	Number of Passengers hauled one Mile.	Number of Tons of Merchandise and Gravel carried in the Cars.	Number of Tons of Merchandise and Gravel hauled one Mile.	Weight, in Tons, of Passenger Trains, not including Passenger-Gravel, hauled one Mile.	Weight, in Tons, of Freight Trains, not including Merchandise and Gravel, hauled one Mile.	Total Number of Tons, not including Passenger-Gravel, hauled one Mile.
1846	\$7 20	4,752,818	82,024,265	1,140,265	80,295,049	61,440,637	71,030,160	171,845,837
1847	7 95	5,341,341	90,370,187	1,665,213	66,818,743	79,208,113	108,345,834	254,452,640
1848	6 51	6,738,427	118,005,742	1,894,132	64,577,165	107,236,614	119,604,791	291,419,570
1849	6 32	8,336,854	136,000,569	2,025,727	66,734,812	108,141,392	124,045,927	298,921,131
1850	6 49	8,751,372	147,605,638	2,188,833	72,111,062	99,922,192	130,835,802	307,769,995
1851	6 20	9,510,858	152,918,153	2,280,346	70,265,310	98,766,749	113,695,509	327,067,608
1852	6 05	10,801,066	161,694,655	2,533,287	77,638,247	101,746,153	131,077,450	310,461,850
1853	6 64	11,479,232	185,865,727	3,041,732	105,985,832	105,148,699	148,804,441	350,058,972
1854	5 63	12,392,703	194,158,602	3,757,631	104,538,048	122,063,281	171,677,154	373,823,575
1855	5 68	11,359,850	185,160,127	3,062,251	109,676,163	116,689,219	165,260,746	385,026,127

STATEMENT SHOWING THE NUMBER OF MILES, EQUIPMENT, COST, AND REVENUE OF THE PRINCIPAL RAILROADS IN THE UNITED STATES FOR 1856.

Railroads.	Miles.		Equipment.		Cost.				Revenue.	
	Length.	Finished.	Loco-motives.	Cars.	Capital paid in.	Funded Debt.	Floating Debt.	Total.	Gross Earnings.	Net Earnings.
Baltimore and Ohio, Main Stem	330	330	204	3333	\$10,118,902	\$12,754,940	\$194,043	\$23,067,885	\$4,385,952	\$2,001,172
Baltimore and Ohio, Washington Branch	30	30	4	198	1,650,000	....	25,000	1,675,000	444,220	235,944
Bellefontaine and Indiana	118	118	16	219	1,831,635	1,214,500	29,820	3,125,964	298,293	140,826
Chicago, Burlington, and Quincy	210	210	27	372	1,475,300	1,240,000	232,579	2,997,879	722,631	379,822
Chicago and Rock Island	228	228	41	732	4,020,000	1,971,000	114,085	6,114,085	1,416,304	709,365
Cincinnati, Hamilton, and Dayton	60	60	24	382	2,153,900	1,011,000	265,441	3,430,341	508,271	264,215
Cleveland, Columbus, and Cincinnati	141	141	33	445	4,547,020	93,400	124,453	4,769,873	1,290,296	732,056
Cleveland and Pittsburgh	194	155	24	532	2,890,784	2,750,313	293,679	5,924,776	681,878	309,519
Cleveland and Toledo	221	206	26	275	3,323,712	3,370,273	335,473	7,029,468	970,471	518,831
Covington and Lexington	98	98	....	....	1,302,804	1,611,000	469,939	3,383,743	264,974	138,694
Delaware, Lackawanna, and Western	111	111	30	2057	3,051,622	2,400,000	1,063,756	6,515,378	1,269,108	450,540
Galena and Chicago	259	259	52	1050	5,441,500	2,334,380	438,288	8,714,068	2,315,797	1,252,042
Green Bay, Milwaukee, and Chicago	40	40	5	93	1,000,000	600,000	109,062	1,709,062	239,926	142,702
Hartford and New Haven	72	72	....	....	2,350,000	944,000	....	3,294,000	730,794	291,405
Hudson River	144	144	57	658	3,758,892	8,842,000	408,363	13,009,255	1,812,088	603,347
Illinois Central	704	627	83	1452	2,571,050	19,247,000	2,558,703	24,376,753	1,632,119	627,953
Indianapolis and Bellefontaine	84	84	10	189	834,157	852,000	174,259	1,860,416	191,633	65,670
Indianapolis and Cincinnati	110	110	19	342	1,303,675	1,896,800	259,479	2,959,954	418,654	221,749
La Crosse and Milwaukee	198	61	12	277	1,037,832	1,634,000	82,131	2,683,963	....	....
Little Miami	84	84	38	556	2,981,327	828,000	193,537	4,002,864	678,120	340,422
Macon and Western	103	103	14	185	1,353,755	129,000	....	1,482,755	349,940	195,242
Marietta and Cincinnati	253	155	23	274	4,330,550	7,150,000	....	11,480,550	196,089	64,219
Michigan Central	330	330	81	1522	6,033,432	5,408,062	785,180	12,226,675	2,878,321	1,306,503
Michigan Southern and Northern Indiana	463	333	74	1011	4,082,800	8,646,300	406,498	13,135,338	2,595,630	984,810
Milwaukee and Mississippi	225	125	25	358	1,826,439	2,347,500	67,889	4,241,828	691,241	417,444
New Albany and Salem	288	288	31	324	2,511,824	4,774,722	300,794	7,587,340	730,407	389,458
New Jersey Central	75	34	....	....	2,000,000	3,000,000	59,748	5,059,748	398,490	181,065
New York Central	555	556	200	2663	24,136,661	14,763,897	....	38,900,558	7,773,069	3,675,202
New York and Erie	497	407	203	2938	10,000,000	24,891,000	1,104,960	35,995,960	6,349,050	3,005,670
New York and Harlem	133	135	35	517	4,217,100	5,353,305	558,361	10,128,766	1,049,393	324,892
New York and New Haven	62	62	23	381	3,000,000	2,215,000	73,010	5,288,010	684,316	338,577
Panama	471	471	....	....	4,532,000	2,463,000	....	7,000,000	1,177,476	est. 877,476
Pennsylvania Central	353	353	118	1754	12,355,525	6,376,041	1,143,055	19,874,621	3,538,333	1,829,278
Philadelphia and Reading	98	98	141	5778	9,054,267	8,890,600	1,480,827	19,525,694	4,321,794	2,444,433
Terre Haute, Alton, and St. Louis [not official]	208	208	....	....	3,250,000	4,500,000	50,000	7,800,000	471,000	....

Railroad to the Pacific.—The proposed railroad to the Pacific involves so many questions as to feasibility and cost, requiring to determine much more accurate data than we now possess, that it is better to give only the statistics that have up to this time been obtained, and abstain from arguments in favor of any route.

SURVEYED ROUTES FOR A RAILROAD FROM THE MISSISSIPPI OR ITS TRIBUTARIES TO THE PACIFIC OCEAN.—FROM THE REPORT OF THE SECRETARY OF WAR.

Description of Route.	Distance in straight Line.	Distance by proposed Route.	Sum of Ascent and Descent.	Estimated Cost.	Through arable Lands.	Through sterile Land.
	Miles.	Miles.	Feet.		Miles.	Miles.
1. Route near 47th and 49th parallels, from St. Paul to Vancouver	1455	1864	18,100	\$130,781,000	374	1430
a. Extension thence to Seattle	45	161	1,000	10,000,000	161	....
2. Near the 41st and 42d parallels, <i>via</i> South Pass from Council Bluffs to Benicia	1410	2032	29,120	116,095,000	632	1400
3. Near the 35th and 39th parallels, from Westport to San Francisco, by the Coo-che-to-pa and Tah-e-chay-pah Passes	1740	2080	49,956	So great that road is impracticable.	620	1460
b. Same, from Westport to San Francisco by the Coo-che-to-pah and Madelin Passes	1740	2290	56,514			
4. Near the 35th parallel, from Fort Smith to San Pedro.	1360	1892	48,812	169,210,265	416	1476
c. Near the 35th parallel, from Fort Smith to San Francisco .....	....	2174	50,670	169,210,265	644	1530
5. Near the 32d parallel, from Fulton to San Pedro.	1400	1618	52,784	68,970,000	498	1210
d. Fulton to San Francisco	1620	2039	42,008	93,120,000	759	1280

Route.	Miles of Route elevated										Length of level Route of equal Working Expenses.	Summit of highest Pass.
	Less than 1000 Feet.	Between 1 and 2000 Feet.	Between 2 and 3000 Feet.	Between 3 and 4000 Feet.	Between 4 and 5000 Feet.	Between 5 and 6000 Feet.	Between 6 and 7000 Feet.	Between 7 and 8000 Feet.	Between 8 and 9000 Feet.	Between 9 and 10,000 Feet.		
1	470	550	720	130	97	28	...	...	..	..	Miles. 2207	Feet. 6,044*
a	161	...	...	...	...	...	...	...	..	..	180	....
2	180	170	210	160	580	285	270	107	20	..	2583	8,373
3	340	276	165	348	466	170	60	155	80	20	3125	10,032†
b	275	308	190	143	725	284	110	155	80	20	3360	10,032†
4	305	347	260	185	160	305	285	95	..	..	2816	7,472
c	...	...	...	...	...	...	...	...	..	..	3137	....
d	485	300	100	170	503	60	...	...	..	..	2239	5,717
5	700	410	160	205	504	60	...	...	..	..	2834	5,717

* Tunnel at elevation of 5219 feet.

† Tunnel at elevation of 9540 feet.

RAILROADS IN THE UNITED STATES IN JANUARY, 1858.

States.	Number of Companies.	Length of Lines.		Cost of Construction and Equipment.	Completed Road actually in each State.	Mileage opened in 1857.
		Total.	Open.			
		Miles.	Miles.		Miles.	
Maine	14	586	541	\$17,968,677	474	39
New Hampshire	15	534	559	17,597,703	654	..
Vermont	8	585	521	20,523,918	556	29
Massachusetts	47	1,417	1,286	63,384,310	1,215	5
Rhode Island	2	63	63	2,583,612	101	..
Connecticut	11	659	647	24,348,963	505	..
Total six New England States	97	3,904	3,617	\$146,805,163	3,595	73
New York	42	2,893	2,700	\$108,407,268	2,731	47
New Jersey	16	621	529	24,825,970	529	..
Pennsylvania	63	3,455	2,775	135,166,609	2,605	242
Delaware	3	91	91	1,619,310	114	8
Maryland	10	844	798	44,557,831	429	31
Total five Middle Atlantic States	139	7,904	6,893	\$309,376,488	6,403	328
Virginia	19	1,465	1,321	\$37,705,049	1,553	138
North Carolina	5	706	675	11,126,486	606	..
South Carolina	9	974	748	17,601,944	842	69
Georgia	14	1,362	1,186	24,952,153	1,187	118
Florida	4	521	128	3,500,000	128	87
Total five Southern Atlantic States	51	5,028	4,058	\$94,885,632	4,316	412
Alabama	7	1,160	558	\$15,253,771	540	68
Mississippi	5	404	177	5,515,000	483	84
Louisiana	8	996	835	11,032,362	285	27
Texas	5	1,565	147	5,000,000	147	96
Arkansas	1	146	38	775,000	38	38
Tennessee	9	1,116	887	19,350,390	654	244
Kentucky	9	666	306	10,197,414	319	88
Total seven Southwestern States	44	6,053	1,438	\$67,123,946	2,446	645
Ohio	29	3,293	2,798	\$106,043,328	2,792	53
Indiana	16	1,451	1,231	28,801,276	1,862	119
Michigan	5	1,025	999	30,390,853	664	127
Illinois	18	2,616	2,616	86,446,291	2,593	82
Wisconsin	10	1,962	718	19,258,842	683	157
Iowa	7	1,076	256	9,087,529	256	82
Missouri	4	798	817	19,140,247	317	127
Total seven Northwestern States	89	12,226	8,935	\$299,205,371	9,177	747
California	1	22	22	750,000	22	..
Grand total	421	35,137	25,965	\$918,146,000	25,965	2205

Progress of Railroads in the United States.—The following table exhibits the aggregate number of miles of railroads in the United States for every year from 1838 to 1856 inclusive, and also shows the whole number of miles of railroads in each State for the same period:

PROGRESS OF RAILROADS IN THE UNITED STATES.

[illegible]

From an examination of the above table it will be found that the construction of railroads has made greater progress in 1856 than in any previous year. The number of miles in operation on the 31st of December, 1856, is 24,476, against 21,069 at the close of

the year 1855, being an increase of 3407 miles for the year.

We add to the last two columns of the following table the population and wealth of the several States, as estimated by the Secretary of the Treasury.

MILES OF RAILROAD IN OPERATION ON THE 31ST DECEMBER, 1856.

States.	1855.	1856.	Increase.	Population, 1856.	Wealth, 1860.
Maine.....	422	442	20	623,862	\$131,128,186
New Hampshire.....	646	646	..	324,701	103,804,326
Vermont.....	516	516	..	325,206	91,165,680
Massachusetts.....	1,207	1,285	78	1,133,123	597,936,495
Rhode Island.....	78	85	7	166,992	91,699,850
Connecticut.....	696	601	5	401,292	203,759,831
New York.....	2,668	2,701	33	3,470,059	1,364,154,625
New Jersey.....	448	472	24	569,499	179,750,000
Pennsylvania.....	2,038	2,407	369	2,642,960	1,031,731,304
Delaware.....	84	120	36	97,295	30,466,924
Maryland.....	372	373	1	639,580	261,243,660
Virginia.....	1,252	1,480	228	1,512,593	530,994,897
North Carolina.....	483	612	129	921,852	239,603,372
South Carolina.....	677	706	29	705,661	303,434,240
Georgia.....	1,002	1,062	60	935,090	500,000,000
Florida.....	26	26	26	110,725	49,461,461
Alabama.....	317	434	167	835,192	279,213,037
Mississippi.....	255	410	155	671,649	250,525,000
Louisiana.....	222	264	42	600,387	270,425,000
Texas.....	36	57	51	500,000	240,000,000
Tennessee.....	366	509	143	1,092,470	321,776,810
Kentucky.....	198	307	109	1,086,537	411,000,198
Ohio.....	2,641	2,869	228	2,215,750	860,877,354
Indiana.....	1,438	1,807	369	1,149,606	307,855,464
Michigan.....	474	601	130	509,374	116,533,580
Illinois.....	2,135	2,534	399	1,242,917	333,237,474
Wisconsin.....	276	650	354	552,109	87,500,000
Iowa.....	88	253	165	325,014	110,000,000
Missouri.....	144	189	45	831,215	223,948,731
California.....	23	23	..	335,000	165,000,000
Arkansas.....	0	0	..	253,117	64,240,726
Territories and District of Columbia.....	0	0	..	303,500	70,079,347
Total.....	21,128	24,476	3407	26,064,312	\$9,817,611,072
Estimated increase of property since 1850.....					1,500,000,000
					\$11,317,611,072

The above table, condensed, presents the following points:

Miles opened in five years ending 1882.....	181
“ “ “ “ 1837.....	1,281
“ “ “ “ 1842.....	2,465
“ “ “ “ 1847.....	1,439
“ “ “ “ 1852.....	6,295
“ “ “ “ 1857.....	13,869

The greatest progress has been made by the eight Western States; next by the Southern States; while the Northeastern States have made but trifling additions to their public works.

	1855.	1856.	Increase.
	Miles.	Miles.	Miles.
6 Eastern States	3,465	3,675	110
4 Middle "	5,238	5,700	462
13 Southern "	5,206	6,304	1,098
8 Western "	7,219	8,897	1,681
Total	21,128	24,476	3,347

The Secretary of the Treasury has prepared a statement showing the cost of railroads in the United States in 1855, from which we make the following summary. Returns not having been received from a number of companies, these figures are only approximative.

Capital paid in.....	\$433,283,946
Funded debt.....	303,131,973
Floating debt.....	40,126,953
Expended in 1855.....	\$770,551,877
Required to finish the roads.....	313,829,237
Total estimated cost.....	\$1,090,381,114
Miles finished.....	19,036
Miles unfinished.....	16,060
Total length.....	36,000
Receipts for the year.....	\$31,182,633

According to these figures, the average cost per mile would only amount to \$30,000, whereas experience proves that \$35,000 is nearer the truth. Assuming this estimate, the total cost of the 36,000 miles, when finished, would amount to \$1,260,000,000.

The average cost of a portion of our railroad system has been as follows:

	Costing.	Per Mile.
30 roads in New York.....	\$30,000,000	\$46,344
23 " " Massachusetts.....	60,000,000	44,482
12 " " the South and West.....	50,000,000	45,653

It is estimated that at least three-fourths of the money which has been expended upon railroads in this country has been furnished by our own citizens, and the remainder (chiefly for bonds) has been obtained from foreign investments.

In conclusion, we may add, that, in reviewing the progress of railroads in the United States, their effect upon the prosperity of the country, and their future prospects, are much beyond the wildest dreams of the originators of the system. The number of miles built in the first ten years of our railroad history, beginning in the year 1828, was 1843, of which New York State built 18 per cent. The number of miles built in the second ten years, or from 1838 to 1848, was 3839, of which New York built 15 per cent. From 1848 to 1856 the number built was 18,794, of which New York built 9 per cent. At the present time New York has over 11 per cent of the total length of railroads, and ranks next to Illinois in number of miles. Our railroad history has had two eras—the first from 1828 to 1848, when there was in the number of miles built an average increase of 268 miles per year; and the second from 1848 to 1856, having an average increase of 2350 miles per year. In many of the States the development of the railroad system is quite equal to the wants of the people; but in many others, Kentucky being the most notable instance, it is much less.

The cost of these 26,000 miles of railroad built at the end of the year 1857 is estimated at \$920,000,000, or an average of \$35,000 @ \$36,000 per mile; and, if the rails had been laid with American iron, produced by domestic labor, it would have been the most productive investment the country ever made.

The Railroad Systems of Europe and the United States.—Among the greatest achievements are the opening up of new fields of supply, and the deepening of old channels of consumption. They have brought into profitable use mines, forests, quarries, arable and grazing districts, fisheries, harbors, and rivers, previously inaccessible.

But still greater even than these achievements are the advantages arising from the cheap and rapid conveyance of passengers over long distances. Every enterprise is now carried on with perhaps ten times as much dispatch, and with ten times less trouble than forty years ago; and the facility of personal superintendence is certainly twenty times greater than it was then. It is not difficult, therefore, to comprehend that to accelerate even by a few years the completion in a country of an extensive system of railways, is to confer upon it advantages the real value of which it is impossible to represent in terms of money; and we shall find, in the considerations connected with this mode of viewing the facts, a correction of many prevalent errors relative to the cost of English railways.

Let us see what was the comparative progress which,

at the end of 1854, had been made by the countries of Central and Western Europe, and by the United States, in providing themselves with railways.

Railways.—General summary of the comparative extent of railway open at the close of 1854, in different countries:

Countries.	Area in English Square Miles.	No. of Miles of Railway open in 1854.	Miles of Rail open to each 100 Square Miles of Area.
England and Wales.....	57,800	6,100	15.2
Scotland.....	30,240	1,040	3.5
Ireland.....	31,870	900	2.8
France.....	119,910	8,040	6.7
Germany.....	205,000	2,010	1.4
Belgium.....	208,000	5,400	2.0
	11,000	530	4.8
Massachusetts.....	484,000	8,840	1.8
New York.....	7,800	1,300	16.6
Pennsylvania.....	47,000	2,700	5.8
	46,000	2,000	4.3
Ohio.....	100,800	6,000	5.4
Indiana.....	30,000	3,000	7.7
Illinois.....	43,800	1,500	4.4
	56,400	2,800	5.0
Twenty-two other States of the Union.....	129,200	7,300	5.6
	1,351,000	8,200	0.6
Totals.....	2,180,040	32,380	1.5

It appears by these figures that the only country or State possessing a greater extent of railway (compared with territorial area) than England and Wales was the State of Massachusetts; but the area of Massachusetts is only an eighth part the area of England and Wales.

In France and Germany the progress has been less than a seventh of our own. Even in Belgium, and New York, and Pennsylvania, the progress has been barely a third of ours. In Scotland the progress has been twice as rapid as in Germany; and if fair allowance be made for the lake and mountain surface of Scotland, the progress in it will exceed the progress of Belgium, and of those Western States of the Union where railways are made with a cheapness and facility unknown any where else.

We may now recapitulate the conclusions which seem to be established by the facts and statements before us, viz.:

1. That of the three hundred millions sterling actually expended in railways to the close of 1855, in the United Kingdom, fully one half, or one hundred and fifty millions sterling, were expended during the five years, 1846, '47, '48, '49, and '50, and that of the 8900 miles of railway open and at work at the close of 1855, fully one half, or 4150 miles, were completed and brought into operation for the first time during the five years now enumerated.

2. That the consequence of so prodigious an outlay in so small a space of time has been to place the United Kingdom, but especially England, so far in advance of other countries in the possession of an extensive railway system, that, adopting the fair test of comparing territorial area with railway mileage, England has a comparative mileage three times greater than Belgium, New York, and Pennsylvania, and seven times greater than France and Germany.

3. That the introduction on the largest scale into this country, and in degrees more limited into other countries, of a change so extensive, absolute, and fundamental in the means of transit, has already led, and in a short time will lead still further, to important modifications in the conditions affecting the supply of and the demand for large classes of commodities—these modifications tending generally to reductions of price, as a consequence of diminished cost of production or reduced expenses in conveyance to market.

4. That as regards the 160 millions sterling expended in this country in the five years, 1846-'50, its operation was to give employment, during periods,

first, of dear food (1846-'47), and second, of extreme commercial difficulty (1847-'48-'49), to a body of artisans and others, varying from upward of a million to half a million of persons.

5. That on the other hand, the calls by the process of which the 150 millions were gradually raised from the middle and wealthier classes, who were the holders of railway shares, operated like an income tax, nearly the whole amount of which was provided by the resort to severe economy, or by additional exertions to produce augmented resources.

6. That the retrenchments and increased exertions of the contributors of calls, taken in the aggregate, more than counterbalanced the consumption of the army of laborers employed in railway works, and also the expenditure for the purpose of those works on imported materials; and hence that even during the five years, 1846-'50, of an average annual expenditure of thirty millions sterling, the balance of trade was, as a general result, constantly in our favor.

7. That during the five years in question the average annual return yielded by the (say) 200 millions actually expended in railway undertakings was less than 2 per cent. per annum; that beyond the failure of annual return there was a depreciation of market price equal to about 50 per cent. below par value; and that while the ultimate recovery of the country, with comparative ease, from the effects of so severe a strain, abundantly indicates its resources; still the depression and losses experienced by so large a portion of the middle class during 1846-'50, and even later, may be considered to have been, to some extent, a cause of the dullness of trade and the low range of prices which prevailed during the two or three last years of the period.

8. That, on the other hand, the cessation after 1850 of an annual heavy demand for calls, the rapid increase of dividends on the capital previously expended, the still more rapid advance of the market price of railway stock, and, more powerful still, the effect upon production and consumption of several thousand miles of railway communication, may be regarded as explaining in some important degree the comparative prosperity and ease which have prevailed since 1851.

9. That finally, while it is quite true that the railway excitement of 1841-'45 was in many respects irrational and disgraceful, and in numerous individual cases the source of crime and ruin, still it enabled this country to pass, almost at one step, and by a single sharp and effectual effort of self-denial on the part of the middle classes, into the possession of the most complete system of railways possessed by any country; that while these railways have cost more to their projectors than would have been expended by less precipitate adventurers, there is no sufficient reason to believe that the inordinate cost falls as a perpetual burden upon the frequenters of the lines; in other words, that the cost of the line and the rates of toll, which can alone attract customers, have no necessary or close dependence on each other. And hence, that, eccentric and exceptional as may have been, in many cases, the efforts of private enterprise, as displayed in the formation of railways in this country, no denial can be given to the broad and beneficial result. That to private enterprise we are indebted for being a generation in advance of the rest of Europe as regards the new means of internal transit.—*Tooke's History of Prices.*

We give a summary showing the number of miles and cost of the railroads of the world. This summary is of later date than the separate statements given before, and of course shows an increase. There is a discrepancy between the number of miles in operation in Germany, according to the authority of Tooke, and the following. This is explained by the fact that many of the railroads stated by Tooke as belonging to Germany should be placed in the column of French and Belgic railroads.

The following table also exhibits the low cost of American railroads compared to those of Europe.

COMPARATIVE TABLE OF RAILROADS IN OPERATION.

Countries.	English Miles.	Cost in Dollars.	Cost per Mile.
United States (1857)	26,000	920,000,000	\$35,000
Great Britain (1855)	8,297	1,47,916,420	179,000
France (1856)	4,018	616,118,995	152,000
Germany (1855)	3,213	228,000,000	71,000
Prussia (1855)	1,290	145,000,000	63,000
Belgium (1855)	1,065	98,500,000	90,000
British Provinces	823	41,600,000	50,000
Cuba	359	16,100,000	45,000
Panama	47	7,000,000	150,000
South America	60	4,500,000	75,000
Russia	422	42,000,000	100,000
Sweden	75	7,500,000	100,000
Italy	170	17,000,000	100,000
Spain	60	6,000,000	100,000
Africa	25	3,100,000	125,000
India	100	15,000,000	150,000
Total	46,074	\$3,655,335,415	\$79,000

Raisins (Fr. *Raisins secs, ou passés*; Ger. *Rosinen*; It. *Uve passe*; Port. *Passas*; Russ. *Isium*; Sp. *Passas*), the dried fruit of the vine. They are produced from various species of vines; deriving their names partly from the place where they grow, as Smyrnas, Valencias, etc.; and partly from the species of grape of which they are made, as muscatels, blooms, sultanas, etc. Their quality appears, however, to depend more on the method of their cure than on any thing else. The finest raisins are cured in two methods; either by cutting the stalk of the bunches half through, when the grapes are nearly ripe, and leaving them suspended on the vine till the watery part be evaporated, and the sun dries and candies them; or by gathering the grapes when they are fully ripe, and dipping them in a ley made of the ashes of the burned tendrils; after which they are exposed to the sun to dry. Those cured in the first way are most esteemed, and are denominated raisins of the sun. The inferior sorts are very often dried in ovens.—*Thomson's Disp.*

Raisins are imported in casks, barrels, boxes, and jars. The finest come in jars and quarter boxes weighing about 25 lbs. Some of the inferior sorts are brought to us in mats. Malaga raisins are in the highest estimation. The muscatels from Malaga fetch fully a third more than any other description of raisins.

The value of raisins imported into the United States for the fiscal year 1856-'57 was \$937,460, viz:

Whence imported.	Pounds.	Value.
France on the Mediterranean	564,159	\$29,551
Spain on the Mediterranean	14,489,800	\$76,770
Turkey in Asia	154,846	14,638
Chili	331,200	6,715
All others	159,615	9,706
Total in 1856-'57	15,609,624	\$937,460
Total in 1855-'56	14,306,407	\$64,219
Increase	1,398,207	\$73,241

Rake, to. The sea term for *incline*, and applies to the masts, stem, and stern-post, etc.; the bowsprit, instead of raking, is said to *steer*. Masts generally rake aft, and in peculiar rigs only forward. The rake of the mast has an influence on the sailing of the vessel, and the masts of some schooners rake excessively. The principal effect seems to be to diminish the effect common to all the sails, of depressing the ship's head. To *rake a ship*, is to fire into her head or stern in the direction of her length, or along her decks. It is similar to what engineers term *enfilading*.

Rake of a Ship, is all that part of her hull which hangs over both ends of her keel. That which is before is called the *fore-rake* or *rake forward*, and that part which is at the setting on of the stern-post is called the *rake-aft* or *afterward*.

Rangoon, a commercial port and town of the Burmese dominions, about 26 miles from the sea, on the left bank of the eastern branch of the River Irrawaddy, in lat. 16° 42' N., long. 96° 20' E. The town and suburbs extend lengthwise about one mile along the

bank of the river, being about three-fourths of a mile in depth; but the houses are very unequally scattered over this area. The fort, or rather wooden stockade, which contains the town, properly so called, is a regular square about 14 feet high, composed of heavy beams of teak timber. It appears, from a census taken a short time previously to the commencement of the war in 1824, that the population was 18,000, which probably is not far from its present amount, though it has been stated considerably higher. The foreign trade is principally regulated by the treaty between Great Britain and the Court of Ava, 1826.

Rangoon is the chief, and indeed almost the only port of foreign trade in the Burmese dominions, which extend from between the 15th and 16th, up to the 26th and 27th degrees of N. lat., and from the 93d to the 98th degree of E. long., containing an area of about 184,000 square miles, with a population of about 4,000,000. Its situation is extremely convenient for commercial purposes, being situated so near the sea, and commanding the navigation of the Irrawaddy, which extends to Ava, the capital, a distance of nearly 500 miles. Rangoon is accessible to ships of even 1200 tons burden; the navigation, although somewhat intricate, being safe and practicable with the assistance of the ordinary native pilots.

The town has many advantages for ship-building. At neaps the tide rises and falls about 18 feet; and at springs from 25 to 30 feet. The principal teak forests are, at the same time, at a comparatively short distance, and there is a water conveyance for the timber nearly the whole way. Ship-building has, in fact, been carried on at Rangoon since 1786, and in the 88 years before the British captured it there had been built 111 square-rigged vessels of European construction, the total burden of which amounted to above 35,000 tons. Several of these were of from 800 to 1000 tons. Under the direction of European masters, the Burmese were found to make dexterous and laborious artisans; in this respect greatly surpassing the natives of British Indian provinces. There are two considerable markets, where the ordinary necessities of life, according to Burmese usage, are cheap and abundant: these are rice, excellent fish, and poultry.

Money.—The Burmese currency consists, for small payments, of lead; for larger ones, of gold and silver, but chiefly of the latter. There are no coins. At every payment the metal must be weighed, and very generally assayed—a rude and very inconvenient state of things. The weights used in the weighing of money are the same as those used on ordinary occasions; the k yat or tical, and the paiktha or vis, being by far the most frequent. Silver may be considered as the standard. Gold is generally held to be about 17 times more valuable than silver. The weighing and assaying of the metals used as currency gives employment to a class of persons as brokers, money-changers, and assayers. Every new assay costs the owner, if the metal be silver, 2½ per cent.—1½ per cent. being the established commission of the assayers, while 1 per cent. is lost, or supposed to be lost, in the operation. If it be repeated 40 times, it follows that the original amount is wholly absorbed—a fact which shows the enormous waste of metal arising out of this rude substitute for coin.

All grains, pulses, certain fruits, natron, salt, and lime, are bought and sold by measure: other commodities by weight.—For an account of the weights and measures, see article BURMAH.

Commerce.—A considerable intercourse is carried on between the Burmese and Chinese dominions by an annual caravan, of which the merchants are all Chinese. The imports from China consist of manufactured articles, the chief export from Burma being cotton wool. The trade with foreign countries seaward is carried on with the ports of Chittagong, Dacca, and Calcutta, in Bengal; Madras and Masulipatam, on the Coromandel

coast; the Nicobar Islands, in the Bay of Bengal; Penang, in the Straits of Malacca; and occasionally with the Persian and Arabian Gulfs. The largest trade is with Calcutta, owing to the great consumption of teak timber in the latter, and the facility with which she supplies the demand of the Burmese for Indian and British cotton goods. The articles exported to foreign countries from Rangoon are the following: Teak wood, terra Japonica, or catechu, stick-lac, beeswax, elephants' teeth, raw cotton, orpiment, commonly called in India hortal, gold, silver, rubies, sapphires, and horses, or rather the small, hardy pony of the country, which is much esteemed, particularly at Madras. By far the most important of these commodities is teak timber; the quantity of this wood annually exported is said to be equal to 7500 full-sized trees, which for the most part consist of what India ship-builders call *shinbin*, which are planks hewn out of the log with the adze at an immense waste. The teak forests of Pegu are by far the most abundant in India. The teak is nowhere to be found in the low alluvial lands to which the tide reaches, but abounds in the high lands beyond its influence. It seems to be very generally disseminated throughout the Burmese dominions. In the territory ceded to the British in Martaban, there are some fine forests, the timber of which is cut down for exportation, and where it is believed that saw-mills have very recently been established by some European settlers. The most accessible and extensive forests of teak in the Burmese dominions are in the province of Sarawadi, about 150 miles to the north of Rangoon, with which there is a water communication. The principal imports into Burma are cotton piece goods from India and Britain, British woollens, iron, steel, quicksilver, copper, cordage, borax, sulphur, gunpowder, saltpetre, fire-arms, coarse porcelain, English glass-ware, opium, tobacco, cocon and areca nuts, sugar, and spirits. Of these by far the most important is cotton piece goods. The Burmese have few cotton manufactures of their own, and appear, from very early times, to have been furnished with the principal part of their supply from the Coromandel coast. To these were afterward added the cheaper fabrics of Bengal; and both are now, in a great measure, superseded by British manufactures, the use of which has spread very rapidly since the opening of the trade in 1814.

Rape, a biennial plant of the turnip kind (*Brassica napus*, Linn.), but with a woody fusiform root scarcely fit to be eaten. It is indigenous, flowers in May, and ripens its seeds in July. It is cultivated in many parts of England, partly on account of its seed, which is crushed for oil, and partly for its leaves as food for sheep. The culture of rape for seed has been much objected to by some, on account of its supposed great exhaustion of the land; but Mr. Loudon says that, where the soil and preparation are suitable, the after-culture properly attended to, and the straw and offal, instead of being burned, as is the common practice, converted to the purposes of feeding and littering cattle, it may, in many instances, be the most proper and advantageous crop that can be employed by the farmer. The produce, when the plant succeeds well, and the season is favorable for securing the seed, amounts to from 40 to 50 bushels an acre. The seed is crushed in mills constructed for that purpose.—LOUDON'S *Encyc. of Agriculture*. See OIL and LINSÉED.

The value of rape-seed and hemp-seed oil imported into the United States for the fiscal year 1856-'57 was \$11,601, viz.:

Countries.	Bushels.	Value.
England.....	6,768	\$5,278
France.....	9,441	\$5,713
Others.....	976	610
Total.....	17,215	\$11,601

Ratans, or **Canes**, the long slender shoots of a prickly bush (*Calamus rotang*, Linn.), one of the most

useful plants of the Malay peninsula and the Eastern islands. They are exported to Bengal, to Europe, and, above all, to China, where they are consumed in immense quantities. For cane work they should be chosen long, of a bright pale-yellow color, well glazed, and of a small size, not brittle, or subject to break. They are purchased by the bundle, which ought to contain 100 ratans, having their ends bent together, and tied in the middle. In China they are sold by the picul, which contains from 9 to 12 bundles. Such as are black or dark colored, snap short, or from which the glazing flies off on their being bent, should be rejected. When stowed as dunnage, they are generally allowed to pass free of freight.—MILLBURN'S *Oriental Commerce*, etc. "The ratan," says Mr. Crawford, "is the spontaneous product of all the forests of the Archipelago; but exists in great perfection in those of the islands of Borneo, Sumatra, and of the Malayan peninsula. The finest are produced in the country of the *Bataks* of Sumatra. The wood-cutter who is inclined to deal in this article proceeds into the forest without any other instrument than his *parang* or cleaver, and cuts as much as he is able to carry away. The mode of performing the operation is this: he makes a notch in the tree at the root of which the ratan is growing, and cutting the latter, strips off a small portion of the outer bark, and inserts the part that is peeled into the notch. The ratan now being pulled through as long as it continues of an equal size, is by this operation neatly and readily freed from its *epidermis*. When the wood-cutter has obtained by this means from 300 to 400 ratans—being as many as an individual can conveniently carry in their moist and undried state—he sits down, and ties them up in bundles of 100, each ratan being doubled before being thus tied up. After drying, they are fit for the market without further preparation. From this account of the small labor expended in bringing them to market, they can be sold at a very cheap rate. The Chinese junks obtain them in Borneo at the low rate of 5 Spanish dollars per 100 bundles, or 5 cents for each 100 ratans, or 27 for 1*d*. The natives always vend them by tale; but the European residents and the Chinese sell them by weight, counting by piculs. According to their quantity, and the relative state of supply and demand, the European merchants dispose of them at from 1½ to 2½ dollars the picul. In China the price is usually about 3½ dollars per picul, or 75 per cent. above the average prime cost. In Bengal they are sold by tale, each bundle of about 100 ratans bringing about 20½*d*."—*Indian Archipelago*, vol. iii. p. 423.

Ratlines, small lines which traverse the shrouds of a ship horizontally, at regular distances, from the deck upward, forming a variety of ladders whereby to climb or to descend from any of the mast-heads.

Razee, a ship of war cut down to a smaller size.

Real, in the Spanish monetary system, is of two sorts; viz., a *real of plate*, and a *real vellon*. The former is a silver coin, varying in value from 10 to 12½ cents.—*See COINS*. A *real vellon* is a money of account, worth about 5 cents. Formerly, by authority of Congress, the value of a *real of plate* was put at 10 cents, and a *real vellon* of Spain at 5 cents.

Realejo. The port of Realejo, on the Pacific, lat. 12° 34' N., long. 87° 4' W., to which it is proposed to bring the canal from Lake Leon, is said to be one of the best that is any where to be met with. The port of Realejo consists chiefly of a salt-water creek, into which several small streams of water empty themselves. The entrance is protected by an island about two miles long, which leaves at each end a channel where ships can enter the harbor, but extending opposite the main land, forming the port in such a manner as to protect it entirely from any wind that could possibly blow, and also entirely breaking the swell which enters the outer bay of Couchagua from the ocean. The north entrance is about a quarter of a mile wide, and that at the south

of the island rather narrower, both being entirely free from rocks or hidden dangers, and having in no part less than five fathoms depth of water. At one of these openings vessels can at all times enter with a leading wind, from whatever quarter it may blow. The inside consists of a noble basin of water, nowhere less than four fathoms deep, with a bottom of mud, where two hundred ships of the line might lie at all times in the most perfect security. One of the branches of the creek extends inland to within three leagues of the Lake of Leon or Managua. The intermediate country is a gentle slope, where undoubtedly should enter one of the ends of the canal to connect the Pacific and Atlantic oceans. The difficulties to be encountered in crossing the chain of hills between the Lake of Nicaragua and San Juan del Sud would be entirely avoided by bringing the canal through the Lake of Leon (connected as it is with that of Nicaragua by a river that might be rendered navigable at a moderate cost) into the above-named branch of the Realejo harbor, thus securing the great advantage of an excellent harbor at each end of the canal, besides many others which are certainly not to be met with either at Pauama, Tehuantepec, or any other place. The town of Realejo is about two leagues distant from the part of the creek where vessels lie; but there is sufficient depth for small vessels to come within a mile of the town, and a very little labor would make it accessible to large ships; but an enlightened government would probably prefer moving the town to the opposite side of the reach, where vessels lie, where there is a site extremely suitable for the purpose, and where a quay might easily be erected capable of accommodating any number of ships. In the time of the Spanish government several vessels, some of 300 to 400 tons, were built at Realejo, where the wood is very superior and durable. The port of San Juan del Sud, to which place it was proposed to bring the canal, seems inferior to Realejo in most respects. The Gulf of Papagayo, where the port is situated, is very difficult to enter for a sailing vessel for five months in the year.—*See NICARAGUA* and PANAMA.

Ream, a quantity of paper. The ream of writing-paper consists of twenty quires, each of twenty-four sheets; usually consisting of eighteen quires of twenty-four sheets each, and the two outside (or broken) quires of sixteen to twenty sheets each; but the ream of printing-paper, or, as it is sometimes called, the *printer's ream*, extends to twenty-one and a half quires, or 61½ sheets. Two reams of paper make a *bundle*.

Receipt is an acknowledgment in writing of having received a sum of money, or other valuable consideration. It is a voucher either of an obligation or debt discharged, or of one incurred.

Reckoning, in *Navigation*, the estimated place of a ship, calculated from the rate as determined by the log, and the course as determined by the compass, the place from which the vessel started being known. *Dead reckoning* means the same as *reckoning*, due allowance being made for drift, lee-way, currents, etc.

Red River is the first large river which enters the Mississippi, 341 miles above its mouth, and rises at about lat. 34° N. in the *Llana Estacada*, or Great Staked Plain. It is formed by several head branches, and receives several tributaries, the largest of which are Blue River and False Washita. A greater part of its course is through rich prairies of a red soil, which colors the water of the river, and hence the origin of its name. Its shores are covered with grass, and abound with grape-vines, which produce an excellent fruit. About one hundred miles above Natchitoches commences what is denominated the *Raft*, which consists of a swampy expansion of the river to the width of twenty or thirty miles, and has a length of sixty or seventy miles. The river divides into a great number of channels, many of which are shallow, and these channels have been obstructed by fallen trees, brought

down by floods from its upper parts. At a great expense, this raft has been so far removed by the United States government that steamboats pass through it. Boats sometimes pass the raft by leaving the river above it, in a channel which flows out of it into some neighboring lake, and following the outlet of this lake until it joins the river below the raft. This raft has been a serious obstruction, as the river would otherwise be navigable for steamboats four hundred miles, and the lands on its borders are highly fertile, and desirable for cultivation for a great distance above the raft. Below the raft, and four miles above Natchitoches, the whole volume of the river is again united, but very soon divides into many channels, and fills an immense number of bayous and lakes that lie parallel to it. In its lower parts the main channel of the river is narrower than above the raft.

Red Sea, or Arabian Gulf, an inland sea between Africa and Asia (Arabia), lat. $12^{\circ} 40'$ to 30° N., long. $32^{\circ} 30'$ to $43^{\circ} 39'$ E. Length, northwest to southeast, upward of 1400 miles; breadth varies to nearly 200 miles. At its southern extremity it communicates with the Indian Ocean by the strait Bab-el-Mandeb. In its northern part it bifurcates into the Gulfs of Suez and Akabah, which inclose the peninsula of Sinai. Depth varies; average about 100 fathoms. It abounds with islands and coral reefs, and is supposed by some to have derived its name from the large quantities of red coral and pink-colored fuci which it yields; while it is more probably derived from the ancient *Idumæ*, "Sea of Edom," or "Red Sea." The country almost every where around it is mountainous. The southeast monsoon blows constantly for eight months of the year, and during the remainder the northwest monsoon. From October to May, when south winds prevail, the water rises in the northern part of the sea, which then attains an elevation much higher than the Mediterranean. The navigation is difficult, owing to sudden changes of wind and heavy gales. Principal ports are Mocha, Hodeida, Lobeia, Jiddah, and Yembo on the Arabian side, and Suez, Kosseir, Suakin, and Massowah on the Egyptian, Nubian, and Danakil coasts.

Reef, a term in navigation. When there is a heavy gale of wind the seamen commonly roll up part of the sail below, that by this means it may become the narrower, and not draw so much wind; and this contracting or taking up the sail they call a *reef*, or *reefing a sail*; so also when a *top-mast* is sprung, as they call it, that is, when it is cracked, or almost broken in the cap, they cut off the lower piece that was nearly broken off, and setting the other part, now much shorter, in the step again, they call it a *reefed top-mast*.

Regatta, a word used originally by the Venetians to signify a grand fête in which the gondoliers contested for superiority in rowing their gondolas; but the term has been adopted into all the modern languages, in which it signifies a brilliant species of boat-race.

Registry, in *Commercial navigation*, the registration or enrollment of ships at the custom-house, so as to entitle them to be classed among, and to enjoy the privileges of national ships.—See SHIPS.

The United States have imitated the policy of other commercial nations in conferring peculiar privileges upon American-built ships, and owned by citizens. The object of the Registry Act is to encourage our own trade, navigation, and ship-building, by granting unusual and exclusive privileges of trade to the flag of the United States, and by prohibiting the communication of those immunities to the shipping and mariners of other countries. The provisions are well calculated to prevent the commission of fraud upon individuals, as well as to advance the national policy. The registry of vessels at the custom-house, and the memorandums of the transfers, add great security to title, and bring the existing state of our navigation and marine

under the view of the general government. By these regulations the title can be correctly traced back to its origin. The acts of Congress of 31st of December, 1792, and 18th February, 1793, constitute the basis of the regulations in this country for the foreign and coasting trade, and for the fisheries of the United States; and they correspond very nearly to the provisions of the British statutes in the reign of George III.

These acts relate to all ships employed at sea, which may be divided into five classes: 1. Ships of the United States employed in foreign trade, which are entitled to be *registered*. 2. Ships of the United States employed in the coasting trade or fisheries, which are entitled to be *enrolled and licensed*. 3. Ships built out of the United States, but owned by citizens, which are entitled to a *certificate of ownership*; but if wrecked in the United States and repaired to the extent of three-quarters of their value, they may be registered. 4. Ships built in the United States, but owned wholly or partly by foreigners, which are entitled to be *recorded*. 5. Ships built out of the United States, and owned by foreigners, which are considered alien vessels to all intents and purposes.—See KENT'S *Comm.*, vol. iii.

Vessels actually registered, and vessels duly qualified for carrying on the coasting trade and fisheries, or one of them, are alone denominated and deemed *ships* or *vessels of the United States*, entitled to the benefits and privileges appertaining to such vessels; and they continue to enjoy the same no longer than they continue to be wholly owned and commanded by a citizen or citizens of the United States. Vessels built within the United States, and vessels captured by citizens in war, and condemned as prizes, or seized and condemned for a breach of revenue laws, and wholly belonging to citizens, may be registered. No citizen who usually resides in a foreign country can, during such residence, entitle himself to have registered a ship owned in whole or in part by him, unless he be a consul, or an agent or partner in some house of trade or partnership, consisting of citizens actually carrying on trade with the United States. An American vessel, transferred by parol while at sea to an American citizen, and resold to her original owners on her return to port, does not lose her privileges as an American vessel.

If one of two partners obtain a registry of a vessel by swearing that he and his partner, of the city of New York, are the owners, when in fact his partner is domiciliated abroad, the vessel is liable to forfeiture.

No ships can be registered, or if registered, can be entitled to the benefit thereof, if owned, in whole or in part, by a naturalized citizen, residing for more than one year in the country from which he originated, or for more than two years in any foreign country, unless he is a consul or public agent. But such ships may be registered anew on a *bona fide* sale to any citizen resident within the United States.

No registered ship, which has been seized or captured and condemned by a foreign power, can be registered anew, except regained by the original owner at the time of capture or seizure, or by his executors or administrators; but such a ship is deemed a *foreign vessel*, though purchased or owned by any other citizen. Ships entitled to be *recorded* and entitled to the benefits of *recorded ships* in the United States are ships built in the United States, and belonging wholly or in part to foreigners. Vessels entitled to be enrolled are vessels of twenty tons or upward, possessing the same qualifications and requisites as are made necessary for registering ships, *i. e.*, they must be built within the United States, and be owned wholly by citizens. If under twenty tons, they are entitled to a *license*. No ships, unless enrolled and licensed, are deemed entitled to the privileges of American vessels employed in the coasting trade or fisheries; and if any not enrolled or licensed be found engaged in the coasting trade or fisheries, having on board any foreign articles or distilled spirits other than sea stores, they are subject to forfeit-

ure, unless the vessel be at sea at the expiration of the time for which the license was granted; in which case the forfeiture is not incurred, provided the master prove the fact, and deliver his license to the collector of the district in which he shall first arrive, within forty-eight hours after his arrival.

In the United States no vessels are required to be registered. But to entitle them to the privileges of the United States they must be registered; otherwise they are deemed alien ships. As is before stated, vessels engaged in the coasting trade or fisheries are liable to forfeiture if they have foreign goods on board, unless they are enrolled or licensed.—BLUNT'S *Shipmasters' Assistant*.

It is further provided by the act of March 2, 1797, that whenever any vessel is transferred by process of law, and the register, or certificate of enrollment or license, is retained by the former owner, a new one may be obtained upon the usual terms, without the return of the outstanding paper. Vessels captured and condemned by a foreign power, or by sale to a foreigner, whereby there becomes an actual divesture of the title of the American citizen, are to be considered as foreign vessels, and not entitled to a new register, even though they should afterward become American property, unless the former owner regain his title, by purchase or otherwise, and then the law allows of the restoration of her American character by a sort of *jus postliminii*. Every registered or unregistered vessel owned by a citizen of the United States, and going to a foreign country, and an unregistered vessel, sailing with a sea-letter, is entitled to a passport, to be furnished by the collector of the district. But no sea-letter, certifying any vessel to be the property of a citizen of the United States, can be issued, except to ships duly registered, or enrolled and licensed, or to vessels wholly owned by citizens of the United States, and furnished with or entitled to sea-letters, or other custom-house documents.

The English registry acts of 26 Geo. III. and 34 Geo. III. c. 68, required the certificate of registry to be truly recited at length in every bill of sale of a British ship to a British subject; otherwise such bill of sale was declared to be utterly null and void, to all intents and purposes; and this was held to be necessary, even though the ship was at sea at the time, and the vendee took the grand bill of sale and possession of the ship immediately on her arrival in port. The laws of the United States do not go to that rigorous extent; and the only consequence of a transfer without a writing containing a recital at length of the certificate of registry is, that the vessel can not be registered anew, and she loses her privilege as an American vessel, and becomes subject to the disabilities incident to vessels not registered, enrolled, or licensed as the statute prescribes. But where an American registered vessel was in part sold, by parol, while at sea, to an American citizen, and again resold, by parol, to her original owner on her return into port and before entry, that transaction was held not to deprive the vessel of her American privileges, or subject her to foreign duties, for in that case no new register was requisite. It would have been, except in date, a duplicate of the old one, and perfectly useless.

If a ship be owned by American citizens, and be not documented according to the provisions of the registry acts, it is not liable to any forfeitures or disabilities which are not specially prescribed. The want of a register is not a ground of forfeiture, but the cause only of loss of American privileges. Every vessel, wherever built, and owned by an American citizen, is entitled to a custom-house document for protection, termed a passport, under the act of June 1, 1796; for it applies to "every ship or vessel of the United States going to any foreign country." As our registry acts do not declare void the sale or transfer, and every contract or agreement for transfer of property in any ship, without an instrument in writing, reciting at large the certifi-

cate of registry; and as they have not prescribed any precise form of indorsement on the certificate of registry, and rendered it indispensable in every sale, as was the case under the British statutes of 26 Geo. III. c. 60, and 34 Geo. III. c. 68, we are happily relieved from many embarrassing questions which have arisen in the English courts relative to the sale and mortgage of ships.

There have been great difficulty and some alternation of opinion in the English courts in the endeavor to reconcile the strict and positive provisions of the statute with the principles of equity, and the good faith and intention of the contracting parties. It has even been a question of much discussion whether the statutes of 26 and 34 Geo. III. had not destroyed the common-law right of conveying a ship by way of mortgage, like other personal property; and whether the mortgagee had not a complete title beyond the power of redemption after the transfer of the legal title according to the prescribed form of the indorsement on the certificate of registry. The language, in many of the cases, was in favor of the conclusion that there could be no equitable ownership of a ship distinct from the legal title, and that upon a transfer under the forms of the registry acts the ship becomes the absolute property of the intended mortgagee, and that the terms and the policy of the registry acts were incompatible with the existence of any equity of redemption. But these opinions or dicta have been met by a series of adjudications which assume the laws to be otherwise, and that the registry acts related only to transactions between vendor and vendee, and to cases of real ownership; and that an equitable interest in a ship might exist by operation of law, and by the contract of the parties, distinct from the legal estate; and that, notwithstanding the positive and absolute terms of the indorsement upon the certificate of register, a mortgage of a ship is good and valid, according to the law as it existed before the registry acts, provided the requisites of the statutes be complied with. The opinion of Sir Thomas Plumer, in *Thompson vs. Smith*, contained a very clear and masterly vindication of the validity of the mortgage of a ship consistently with the preservation of the forms of the registry acts. He effectually put to flight the alarming proposition that, since the registry acts, there could be no valid mortgage of a ship; and he insisted that the defeasance annexed to the bill of sale ought to be fully indorsed as part of the instrument on the certificate of registry, if the ship be mortgaged in port; or, if mortgaged while at sea, a copy of the whole transmitted to the custom-house; and that though the defeasance should not be noticed in any of the forms adhered to at the office of the customs, and the instrument should be registered as an absolute bill of sale, the mortgager's right of redemption would not suffer by the omission. But as no such questions can possibly arise under the registry acts of Congress, these discussions in the English courts are noticed only as a curious branch of the English jurisprudence on this subject.

The registry is not a document required by the law of nations as expressive of a ship's national character. The registry acts are to be considered as forms of local or municipal institutions for purposes of public policy. They are imperative only upon the voluntary transfer of parties, and do not apply to transfers by act or operation of law. They are said to be peculiar to England and to the United States, whose maritime and navigation system is formed upon the model of that of Great Britain. But by various French ordinances, between 1681 and the era of the new code, it was requisite that all vessels, in order to be entitled to the privileges of French vessels, should be built in France, under some necessary exceptions, and should be owned exclusively by Frenchmen, and foreigners were prohibited from navigating under the French flag; and a Frenchman forfeited his privileges as such owner by marrying a foreign wife,

or residing abroad, unless in connection with a French house. The register is not of itself evidence of property, unless it be confirmed by some auxiliary circumstance to show that it was made by the authority or assent of the person named in it, and who is sought to be charged as owner. Without proof to connect the party with the register as being his direct or adopted act, the register has been held not to be even *prima facie* evidence to charge a person as owner; and even then it is not conclusive evidence of ownership. The cases of the *Mohawk Insurance Company vs. Eckford*, decided in the New York Court of Common Pleas in 1828, and *Ring vs. Franklin*, in the Superior Court of that city in 1829, went upon the same ground that the register, standing in the name of a person, did not determine the ownership of a vessel, though it might, perhaps, be presumptive evidence in the first instance. An equitable title in one person might legally exist consistently with the documentary title at the custom-house in another.—*KENT'S Comm.*, vol. iii. p. 196. See *articles TONNAGE, SHIPPING, etc.*

Relieving Tackles. Temporary tackles attached to the end of the tiller in bad weather to assist the helmsman, and in case of accident happening to the tiller ropes. They are also strong tackles from the wharf to which the ship is hove down, passed under her bottom and attached to the opposite side, to assist in righting her afterward, as well as to prevent her from oversetting entirely.

Report. In *Commercial navigation*, a paper delivered by the masters of all ships arriving from parts beyond seas to the custom-house, containing an account of the cargo on board, etc.

Repousse, or Chasing. The *repoussé* work of French silver-smiths, which is equivalent to *chasing*, is a very remarkable mode of decorating gold and silver plate. It is effected entirely by the hammer. The workman has a plain flat sheet of silver to work upon, and before him is a carefully executed wax model of the article to be produced; the silver plate rests upon a soft bed of pitch or other composition, and with a small hammer the workman produces indentations over the surface corresponding with the device to be produced. A small steel punch is employed occasionally; and if any of the indentations are carried too far, the plate is reversed, and a little counter-hammering applied. Many of the shields, salvers, dishes, and other articles in the Great Exhibition, displayed fine examples of this kind of work; and there was an equestrian statue of Queen Elizabeth produced almost entirely by this remarkable process.

Reprisals. Where the people of one nation have unlawfully seized and detained property belonging to another state, the subjects of the latter are authorized, by the law of nations, to indemnify themselves by seizing the property of the subjects of the state aggressing. This is termed making reprisals; and commissions to this effect are issued from the Admiralty.—See *PRIVATEERS*.

Resin (Gr. *ῥητινῆ*; from *ῥέω*, *I flow*). A proximate principle common in the vegetable kingdom, the ultimate components of which are carbon, oxygen, and hydrogen. There are many varieties of resin. Their general characters are fusibility and inflammability; solubility in alcohol, insolubility in water. They are generally separable into two distinct portions by the action of cold and of hot alcohol. They are valuable as ingredients in varnishes, and several of them are used in medicine. They are often naturally blended with modifications of gum, in which case they constitute the series of *gum resins*. The specific gravity of the resins varies between 1.0 and 1.4. They become negatively electric by friction. The commonest resin in use, usually called *rosin*, is obtained by distilling turpentine: the volatile oil passes over, and the resin remains in the still.—See *GUMS and OILS*.

Respondentia, in *Commercial law*, signifies the

hypothecation of the cargo of a ship, on conditions similar to those upon which the ship and freight may be pledged—the latter being called a bottomry bond. The security of the cargo may, indeed, be given by the master of the vessel, in addition to that of the ship and freight, should the last two be deemed sufficient security by the lender of the money; but, notwithstanding the cargo may in this case form the principal part of the security, still such loan will be commonly said to be bottomry, but is more strictly on bottomry and respondentia. The right which a master possesses of thus pledging the cargo is undoubted, and is a natural consequence of the power which is invested in him of disposing of part of the cargo in case of extreme necessity, and which is to be exercised by him for the benefit, to the best of his judgment, of all concerned. The master of the ship is not, however, justified in selling the whole of the cargo, for that would defeat the object of the voyage which the repairs are intended to carry into effect; nor is he permitted to hypothecate the cargo without the ship, or without the ship and freight. A bottomry bond may include a respondentia bond, or they may be given separately. Generally all laws applicable to respondentia are equally so upon bottomry, but the reverse is not in all countries the case. By custom, the holder of the bottomry and respondentia bond after judgment first receives the freight and sells the ship, and, if these do not satisfy his claim and the expenses of legal proceedings, then to have recourse upon the cargo; but this course is not always imperative; he may sell the cargo, and leave the ship and freight. In such case the owners of the vessel are responsible for any loss which the owners of the cargo may sustain, over and above the proportion of general average charges on the cargo and the bottomry premium thereon.

A respondentia or bottomry bond is an assignable instrument, and is usually transmitted to an agent in the place named as the termination of the voyage, with legal authority for him to receive the money, or institute legal proceedings for enforcing payment. The general rule is, that the power of the master to give bottomry or respondentia bonds exists only after the voyage has commenced, and is to be exercised in some port where the owner does not reside. But it is not indispensable to the validity of a hypothecation that the ship and cargo be in a *foreign* port. The law looks more to the difficulty of communication between the master and owner. And a hypothecation may be made in another port of the same country, if communication with the owner is subject to great difficulty and delay. The bottomry or respondentia bond is to be paid before any prior insurance, and it supercedes a previous mortgage on the ship. If there is more than one bottomry bond, they take precedence in an inverse order to their dates. The last bond given is entitled to priority of payment over all others.

The position taken by Lord Mansfield, that the lender on bottomry or respondentia is not liable to contribution in case of general average, has been much and justly questioned. It is contrary to the maritime law of France, and of other parts of Europe, and in Louisiana there is a decision against it. It seems conclusive that if the lender on bottomry owes the preservation of the security of his money to any sacrifice of ship or cargo, he should contribute to a general average or jetsam.—See *BOTTOMRY and RESPONDENTIA*, and *MARITIME LOANS*. See also *KENT'S Comm.* vol. iii.; *PARSONS'S Maritime Law*.

Revenue and Expenditure. Though not properly belonging to a work of this sort, we believe we shall do an acceptable service to our readers by laying before them the following comprehensive Table of the revenue and expenditure of the world, which we have compiled from *LEONE LEVI'S Commercial Law*. For an exhibit of the revenue and expenditure of the United States from 1789–1857, see *article UNITED STATES*.

REVENUE AND EXPENDITURE OF THE PRINCIPAL COUNTRIES IN THE WORLD.

Countries.	Revenue in Pounds Sterling.	Expenditure in Pounds Sterling.	Public Debt in Pounds Sterling.
Austrian Empire.....	1851. 20,817,258	1851. 27,702,952	1848-'49. 99,770,665
		Interest on debt.. 6,103,909	Bearing interest..... 83,170,665
		War..... 10,336,260	Add to Jan. 31, 1850.. 10,600,00
		Commerce..... 3,378,675	
		Miscellaneous..... 7,884,108	
British Empire.....	July 5, 1851. 53,045,262	July 5, 1851. 50,012,476	1850. 787,022,162
	Customs..... 20,553,637	Interest on debt.. 23,894,477	
	Excise..... 14,562,116	Term. ann. 3,766,133	
	Stamps..... 6 4 0.0.4	Army and Navy.. 13,051,514	
	Direct tax..... 9,676,105	Justice..... 1,063,073	
	Miscellaneous.. 1,758,390	Miscellaneous.. 8,232,219	
France.....	1851-'52. 55,132,192	1851-'52. 57,578,674	1851. 201,015,027
			Consolidated debt... 130,355,936
			Floating debt..... 20,629,091
Prussia.....	1851. 14,204,244	1851. 14,521,944	1851. 27,392,632
	Direct tax..... 3,054,202	War..... 4,036,808	General debt..... 23,016,448
	Indirect tax.... 4,509,945	Interest on debt.. 1,434,135	Provin. debt, pro- vided for by the } 1,250,032
	Miscellaneous.. 6,640,037	Trade..... 1,152,883	State.....
		Justice..... 1,353,219	Treasury bills with- out interest..... 3,126,332
		Miscellaneous.... 6,544,819	
Russian Empire.....	Customs Establishment, 1848..... 4,943,191		1850..... 53,334,752
			Term. debt, Dutch... 5,616,589
			Do. domestic..... 10,921,565
			Perm. stock, foreign and domestic..... 36,696,308
United States.....	1856. \$73,918,141	1856. \$72,943,792	1855. \$39,969,731
Bavaria.....	1849-'51. 2,929,149	1849-'51. 3,152,006	1850. 12,261,569
	Direct tax..... 637,364	Interest on debt.. 912,883	
	Indirect tax.... 1,223,772	Army..... 711,833	
	Miscellaneous.. 1,068,013	Miscellaneous.... 526,430	
	Budget, 1850. 4,636,432	Budget, 1850. 4,670,206	May 1, 1850. 25,057,346
Belgium.....	Land tax..... 734,390	Interest on debt.. 1,430,485	
	Customs..... 457,400	War..... 1,071,080	
	Excise..... 826,000	Public works.... 633,562	
	Register's tax... 895,000	Miscellaneous.. 1,634,479	
	Miscellaneous.. 1,733,642		
Brazil.....	1847..... 1,968,359	1845-'46.... 2,578,412	12,210,876
			1847.....
			Internal debt..... 6,023,826
			1848.....
			Foreign debt..... 6,187,050
			1850..... 12,000,000
Denmark.....	1850..... 2,728,841	1850..... 2,573,007	None.
Egypt.....	1833..... 2,225,725	1853..... 2,102,525	1850..... 2,484,340
Greece.....	Now about 4,000,000	1850..... 721,279	Bavarian debt..... 127,444
	1850..... 734,290		Rothschild..... 2,358,750
			1849..... 2,456,250
Hamburg.....	1849..... 518,432	1849..... 570,925	1850. 102,563,484
	Budget, 1850. 5,899,540	Budget, 1850. 5,803,628	National debt a 24... 68,042,333
Holland.....	Direct taxes... 1,533,333	Public debt..... 3,035,338	" " a 3... 10,071,405
	Indirect taxes.. 759,000	War..... 879,853	" " a 3... 19,803,375
	Excise..... 1,618,796	Marine..... 443,693	Miscellaneous..... 4,646,371
	Miscellaneous.. 1,688,411	Miscellaneous.... 1,444,324	1849..... 20,000,000
Mexico.....	1849..... 3,300,000	1849..... 1,666,600	1849..... 14,640,000
Papal States.....	1848..... 1,475,000	1843..... 1,650,000	1849..... 16,332,147
	30th June, 1849. 2,314,333	June 30, 1849. 2,602,300	1850..... 15,200,000
Portugal.....	1850..... 3,630,933	1850..... 4,416,000	1850. 155,130,873
Sardinia.....	1850.....		
Spain.....	11,470,232	11,469,075	
	Direct taxes... 3,337,800	War..... 3,134,584	
	Indirect taxes.. 1,805,000	Debt..... 1,001,369	
	Customs..... 1,752,000	Clergy..... 1,547,346	
	Miscellaneous.. 4,576,432	Miscellaneous.... 5,785,776	
	1850.....	1850.....	
Sweden and Norway...	Sweden..... 883,031	Sweden..... 992,960	
	Norway..... 583,401	Norway..... 583,401	
Turkey.....	Estimate... 8,000,000		7,600,000
Two Sicilies.....	1835..... 4,511,222	1855..... 4,513,125	Estimate..... 20,000,000
	Estimate 63,934,173		
China.....	1843-'49. 17,692,610	1843-'49. 20,017,339	1843. 43,085,263
COLONIES.			1843..... 4,281,974
British Possessions.			
Indies.....	1843..... 574,640	1843..... 565,403	
Canada.....	1845..... 224,696	1845..... 218,816	
Cape of Good Hope....	1848. 400,847	1848. 252,638	
Australia.....	1843..... 18,464	1840..... 17,886	
New South Wales.....	1843..... 119,023	1843..... 80,311	
Western.....	1847..... 247,392	1847..... 292,007	
South.....	1848..... 414,765	1843..... 431,325	
Jamaica.....	1847..... 361,293	1847..... 289,194	
Ceylon.....	1848.....	1844.....	
Mauritius.....	2,666,000	1,693,556	
Spanish Possessions.	Dutch East India, 1844. 5,201,802	Dutch East India, 1844. 5,201,802	
Cuba.....			
Dutch Possessions.			
Java.....			

Rhode Island, one of the United States of America, and the smallest State in the Union, being about 49 miles long and 29 broad, containing 1200 square miles, of which 130 is included in Narraganset Bay. Population in 1790 was 58,825; in 1800, 69,122; in 1810, 76,981; in 1820, 83,059; in 1830, 97,212; in 1840, 108,830; and in 1850, 147,545.

Early History.—The country round the Narraganset Bay and to the west of it is in the first old works and maps generally named *Narragansets*, or the *Narragansett Country*. The colonists at Plymouth discovered and entered this country already in the first years of the existence of their town. Roger Williams was the first settler in this territory. He and some other dissenters and refugees from Massachusetts founded here the towns of Providence, Newport, and Portsmouth. They united all in one government in the year 1643, under the name "*Incorporation of Providence Plantations*;" or, as they are styled in King Charles First's patent of that year, "*Incorporations of Providence Plantations in our Naragansett Bay, in New England*." In the year 1655 Cromwell writes to this colony under the following address or title: "*To our well-beloved inhabitants of Rhode Island, together with the rest of the Providence Plantations*;" and this, I believe, is the first time that the name Rhode Island is applied to a greater extent of the territory of a province. As the name of an island it was, however, already for some time in existence.

Origin of the Name.—This island, the largest in Narraganset Bay, was called by the Indians Aquiday, or Aquednet, or Aquetneck, which is said to signify Garden Island. In the first volume of the *Colonial Records*, p. 126, in the proceedings of the General Court of Election, or General Assembly, March, 1644, is the following: "It is ordered by this Court, that the Ysland commonly called Aquethneck, shall be from henceforth called the Isle of Rhodes, or Rhode Island." Some ancient authors write the name "*Island of Rhodes*," and it has been suggested that the name was derived of the old Grecian island of this name. It is in this respect a curious fact that already the old French navigator Verrazano, the first modern explorer who touched this part of the American coast, pronounced the name of Rhodes in connection with this bay. He discovered in these waters an island (supposed by some to be the island now known as Martha's Vineyard), which he compares, in respect to size and appearance, to the island of Rhodes, in the Mediterranean. This was read in Hacklyt, and it is possible that John Clark and his companions (the first settlers on Aquetneck) took occasion from this circumstance to name their island. The name was afterward given to the whole country round Narraganset Bay, which also was sometimes called Rhode Island Bay. In the year 1663 the colonists of that country obtained from Charles I. a charter which incorporated their community under the name of the "*Colony of Rhode Island and Providence Plantations*." The Narraganset country, lying south of Warwick, was also sometimes called *The King's Province*. The present legal and official name is still *Rhode Island and Providence Plantations*, but commonly the name is made shorter, *State of Rhode Island*.—J. G. KOHL.

Physical Features, etc.—This State on the north and west is hilly and broken, but becomes gradually level toward the sea. The islands in Narraganset Bay are distinguished by their pleasing and diversified scenery and fertile soil. The climate is healthy, particularly on the islands, where the sea-breezes have the effect not only of mitigating the heat in summer, but moderating the cold in winter, and rendering the climate truly delightful. The rivers, though not large, furnish many fine mill seats, which are extensively used for manufacturing purposes. The principal are Pawtucket, Providence, Pawtuxet, Pawcatuck, and Wood Rivers. Narraganset Bay is a fine body of water,

and contains a number of beautiful and fertile islands. Among them is Rhode Island, which gives name to the State. Iron ore and anthracite coal are found to some extent; marble, limestone, freestone, and other building stone. There were in this State in 1850, 356,487 acres of land improved, and 197,451 of unimproved land in farms; cash value of farms \$17,070,802, and the value of implements and machinery \$497,201. **Live Stock.**—Horses, 6168; milch cows, 28,698; working oxen, 8189; other cattle, 9375; sheep, 44,296; swine, 19,509; value of live stock, \$1,532,637.

Agricultural Products, etc.—Wheat, 49 bushels; rye, 26,409; Indian corn, 539,201; oats, 215,232; barley, 18,875; buckwheat, 1245; peas and beans, 6846; potatoes, 651,029; value of products of the orchard, \$63,994; produce of market gardens, \$98,298; pounds of butter made, 995,670; of cheese, 316,508; maple sugar, 28 pounds; molasses, 4 gallons; beeswax and honey, 6347 pounds; wool, pounds produced, 129,692; flax, 85; hops, 277; hay, tons of, 74,818; clover seeds, 1328 bushels; other grass seeds, 3708 bushels; and were made 1013 gallons of wine; value of home-made manufactures, \$26,495; of slaughtered animals, \$667,486.

Manufactures, etc.—There were in the State in 1850, 158 cotton factories, with a capital invested of \$6,675,000, employing 4959 males and 5916 females, producing 96,725,612 yards of sheetings, etc., and 1,902,980 pounds of thread and yarn, valued at \$6,447,120; 45 woolen factories, with a capital of \$1,013,000, employing 987 males and 771 females, manufacturing 8,612,400 yards of cloth and 46,000 pounds of yarn, valued at \$2,381,825; 20 establishments, with a capital of \$428,800, employing 800 persons, and making 8558 tons of castings, etc., valued at \$728,705; 1 establishment, with a capital of \$208,000, employing 220 persons, manufacturing 2650 tons of wrought iron, valued at \$222,400; 29 flouring and grist mills, 51 saw-mills, 8 tanneries, 20 printing-offices, 5 daily, 2 semi-weekly, and 12 weekly publications. Capital invested in manufactures, \$12,923,176; value of manufactured articles, \$20,000,000.

The principal places in the State are Providence, city, Newport, each of which is alternately used as the capital, and Bristol. There were in September, 1857, 100 banks in the State, with a paid capital of \$21,000,000. There were built and in operation January, 1856, 145 miles of railroads; tonnage, 1853, 41,166 tons.

Principal Ports.—Newport is situated on the southwest shore of Rhode Island, twenty-eight miles south from Providence, and five miles from the ocean. The harbor is one of the best in the United States, and is well defended. Its site is beautiful, and of late years it has been much resorted to in the summer season. Its shipping is mainly employed in the whale fisheries and coasting trade; its manufactures are various, and of considerable extent. The tonnage of Newport in 1856 was 11,646 tons, and in 1857, 12,308 tons.

Providence, a city, and principal port of entry in Rhode Island, situated in lat. 41° 49' 22" N., long. 71° 24' 28" W. Providence has great commercial facilities, which have been well improved. The harbor is at the head of Narraganset Bay, thirty-three miles from the ocean, is spacious, and has sufficient depth of water for the largest ships. The tonnage of Providence was 19,805 tons in 1856, and in 1857, 22,343 tons.

Bristol, between Mount Hope Bay and Narraganset Bay, has a good harbor, and great facilities for navigation. The tonnage in 1856 was 2902 tons, and in 1857, 15,152 tons.

The public revenue of Rhode Island for the fiscal year ending April 30, 1857, was \$206,400; viz., direct tax, \$52,407; tax on banks, \$83,604; licenses of peddlers and auctioneers, \$5221; insurance companies, \$4320; from courts, \$10,118; interest, \$36,100; miscellaneous, \$14,634.

FOREIGN COMMERCE OF THE STATE OF RHODE ISLAND FROM OCTOBER 1, 1820, TO JULY 1, 1857, SHOWING ALSO THE DISTRICT TONNAGE IN 1821, 1831, 1841, AND 1851.

Years ending	Exports.			Imports.	Tonnage cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821.....	\$481,865	\$515,463	\$996,828	\$1,032,968	21,314	107	28,456	10,383
1822.....	601,238	261,125	862,363	1,884,144	24,480	..	..	..
1823.....	520,614	412,600	933,114	1,412,953	23,800	..	..	..
1824.....	556,582	316,317	872,899	1,388,386	24,680	..	..	..
1825.....	511,589	158,878	670,467	907,106	23,123	..	..	..
1826.....	568,370	216,170	784,540	1,186,984	28,045	..	..	..
1827.....	596,177	208,010	804,187	1,241,823	21,351	..	..	..
1828.....	541,675	180,411	722,166	1,128,226	20,300	..	..	..
1829.....	537,468	52,913	590,381	423,811	15,621	..	..	..
1830.....	206,965	71,985	278,950	488,756	14,094	..	..	..
Total.....	\$4,927,043	\$2,393,852	\$7,320,895	\$11,004,862	212,706	107	....	....
Sept. 30, 1831.....	\$348,250	\$19,215	\$367,465	\$502,161	22,787	..	24,519	0,644
1832.....	377,656	156,803	534,459	657,169	26,672	80	..	..
1833.....	330,869	154,612	485,481	1,042,286	26,032	189	..	..
1834.....	420,385	80,741	501,126	427,024	25,228	401	..	..
1835.....	182,866	113,137	296,003	597,713	20,173	762	..	..
1836.....	212,217	16,123	228,340	555,199	24,124	1,192	..	..
1837.....	411,806	76,452	488,258	523,610	22,584	126	..	..
1838.....	270,065	21,192	291,257	656,613	27,728	295	..	..
1839.....	175,808	9,426	185,234	610,431	22,885	319	..	..
1840.....	205,006	3,983	206,989	274,584	17,436	..	..	..
Total.....	\$2,933,508	\$651,684	\$3,585,192	\$5,107,540	237,249	3,904	....	....
Sept. 30, 1841.....	\$266,276	\$12,189	\$278,465	\$339,592	20,911	787	26,163	15,921
1842.....	323,437	25,259	348,696	323,692	19,264	739	..	..
9 mos., 1843.....	108,212	555	108,767	158,758	7,645	..	..	..
June 30, 1844.....	257,602	3,175	260,777	280,437	17,471	1,782	..	..
1845.....	190,141	801	191,032	274,380	14,598	156	..	..
1846.....	220,019	4,345	224,364	210,493	13,257	785	..	..
1847.....	131,434	935	132,369	305,489	14,595	1,978	..	..
1848.....	215,860	5,771	221,631	351,500	19,316	3,148	..	..
1849.....	173,601	5,461	178,152	237,478	15,568	2,315	..	..
1850.....	206,299	9,066	216,265	253,903	10,770	1,705	..	..
Total.....	\$2,149,051	\$68,547	\$2,217,598	\$2,726,158	164,315	13,425	....	....
June 30, 1851.....	\$223,404	\$14,373	\$237,777	\$310,630	19,888	3,747	24,197	13,853
1852.....	174,115	5,060	179,175	210,680	14,016	2,913	..	..
1853.....	302,454	8,031	310,485	366,116	16,301	7,077	..	..
1854.....	426,046	13,185	439,231	437,172	17,841	7,910	..	..
1855.....	531,287	4,736	536,023	536,387	17,210	6,474	..	..
1856.....	393,224	14,150	407,374	345,803	16,144	6,522	..	..
1857.....	544,178	8,173	552,351	515,492	21,066	9,078	..	..

Nine months to June 30, and the fiscal year from this time begins July 1.

Rhodes, a sea-port of Asiatic Turkey, capital of the island of Rhodes, at its northeast extremity, thirteen miles southeast the nearest promontory of Asia Minor. Lat. of mole $36^{\circ} 26' 9''$ N., long. $28^{\circ} 13'$ E. Population about 15,000, of whom 8000 are Turks, and 8000 Jews. On the northeast side two piers project to inclose a harbor, having in its centre from sixteen to eighteen feet water, and on its north side is another port of nearly equal depth.

Rhubarb (Du. *Rhubarber*; Fr. *Rhubarbe*, *Rubarbe*; It. *Rabarbaro*, *Reo-barbaro*; Sp. *Ruibarbo*; Russ. *Rewen*; Arab. *Rawend*; Chin. *Ta-hwang*), the root of a plant, a native of China and Tartary. Three varieties of rhubarb are known in the shops; viz., Russian, Turkey, and East Indian or Chinese rhubarb. The first two resemble each other in every respect. They are, in fact, the same article, being both derived from Tartary. The portion destined for the Petersburg market being selected and sorted at Kiachta, acquires the name of Russian rhubarb; while the portion that is sent from Tartary to Smyrna and other places in Turkey is called Turkey rhubarb. The best pieces only are sent to Petersburg; and according to the contract with the government, on whose account it is bought, all that is rejected must be burned; and that which is approved undergoes a second cleaning before being finally packed up for Petersburg. The best pieces of Russian and Turkey rhubarb are roundish, and perforated with a large hole, of a reddish or yellow color on the outside, and when cut or broken exhibit a mottled texture, and alternate streaks of red and gray. Its odor is peculiar, and its taste nauseous, bitter, and astringent. It should not be porous, but rather compact and heavy. East Indian or Chinese rhubarb is in oblong flat pieces, seldom perforated; has a stronger odor, and is more nauseous to the taste than the other; it is heavier, more compact, breaks smoother, and affords a powder of a

redder shade.—*THOMSON'S Dispensatory*; *AINSLIE'S Mat. Indica*, etc.

The palmated rhubarb (*Rheum palmatum*) is a perennial, native of Russia and some parts of Asia, whence the dried root is imported into this country for medicinal purposes. Large quantities of the roots are also annually collected for exportation in the Chinese provinces, within the lofty range of the Himalayas. The best is that which comes by the way of Russia, as greater care is taken in the selection; and, on its arrival at Kiachta, within the Russian frontiers, the roots are all carefully examined, and the damaged pieces destroyed. This is the fine article of the shops, improperly called "Turkey" rhubarb. That of the best quality occurs in small pieces, with a hole in the middle of each, made in the fresh root, to facilitate the operation of drying. The color is a lively yellow, streaked with white and red. Its texture is dense, and, when reduced to powder, it is entirely yellow. The Chinese rhubarb, called by the natives *Ta Hroangor Hailoung*, is cultivated chiefly in the province of Cheresse. As imported, it is known by the name of "East Indian" rhubarb, and comes in larger masses, more compact and hard, heavier, less friable, and not so fine in the grain as the other, and having less of an aromatic flavor. This species has been introduced into England, where it has been extensively cultivated; and there is little doubt, therefore, of its proving perfectly hardy in many parts of our own country. Large quantities are annually imported, the cost of which might be saved if its culture were successfully prosecuted here, and we might thus add to our productive resources. In the middle and cooler parts of the United States, the seeds may be sown in March, in a gentle hot-bed, and, when the roots are about an eighth of an inch in diameter, they may be carefully drawn up, preserving the tap-root, and planted in a fine, rich, and

deep soil, but not too much so, lest the roots become too fibrous. The largest specimens of this drug have generally been allowed to grow six or seven years; the roots are then very large, sometimes weighing from thirty to fifty pounds. The Chinese take up their rhubarb in winter. Pallas says that the Tartars take up theirs in April and May; but Forster, in his *History of Voyages in the North*, with more reason, affirms that the roots are dug up in winter, because they then contain the entire juice and virtue of the plant, as those taken up in summer are of a light, spongy texture, and unfit for use. In Tartary, after being thoroughly cleansed, and the small radicles cut off, the roots are cut transversely into pieces of a moderate size; these are then placed on long tables or boards, and turned three or four times a day, in order that the yellow, viscid juice may incorporate with the substance of the root. If this juice be suffered to run out, the roots become light, and of but little value; and if they are not cut within five or six days after they are dug up, they become soft, and rapidly decay. Four or five days after they are cut, holes are made through them, and they are hung up to dry, exposed to the air and wind, but sheltered from the sun. Thus in about two months the roots are completely cured. The loss of weight in drying is very considerable, seven parts in weight of the green root yielding only one part of that which is perfectly dry. The Chinese method is somewhat different. They peel the roots, cut them into slices, and dry them on stone slabs, under which fires are kindled; but as this process is not sufficient to dry them perfectly, they make a hole through each of the pieces, and suspend them on strings—some say exposed to the sun, while others assert that they are hung in the shade.

Rhumb, a circle on the earth's surface, making a given angle with the meridian of the place, marking the direction of any object through which it passes. The divisions on the compass card are called rhumbs. —See MERCATOR'S CHART.

Rhumb Line. In *Naval affairs*, the track of a ship which cuts all the meridians at the same angle; called also the *loxodromic curve*. This being the simplest curve, is the route universally pursued; but a ship sailing on this curve never looks direct for her port until it comes in sight. A great meridian circle would be the shortest distance between any two points; but in order to follow such a circle, the course of the ship would have to be constantly changing, and with such variations as to make it practically impossible.

Ribbons, or Ribands (Fr. *Ruben de Soie*; Ger. *Band*; It. *Nastro di Seta*; Sp. *Cinta de Seda*), a name given to silken bands of various widths and colors, much used by females for head-dresses and other purposes. They are both plain and figured, and are sometimes distinguished into sarcenet, satin, etc., according to the manner in which they are made. They are also frequently ornamented by having what is called a *pearl edge* given to them. Ribbons are woven in pieces, each 85 yards in length. The finest are made entirely of Italian silk; the next in quality, of a mixture of Italian and Bengal silk; and the commoner sorts, altogether of Bengal silk. The great seat of the manufacture of ribbons is Coventry, where they are now made of quality equal to the finest of the productions of the Lyonesse weavers; they are also made at Congleton, Derby, Macclesfield, Leeh, and other places. —See SILK.

Rice (Fr. *Riz*; It. *Riso*; Arab. *Arruz*; Hind. *Chawl*), one of the most valuable of the cereal grasses, the *Oryza sativa* of botanists. It is raised in immense quantities in India, China, and most Eastern countries; in the West Indies, Central America, and the United States; and in some of the southern countries of Europe. It, in fact, occupies the same place in most intertropical regions as wheat in the warmer parts of Europe, and oats and rye in those more to the north.

Forming, as it does, the principal part of the food of the most civilized and populous Eastern nations, it is more extensively consumed than any other species of grain. It is light and wholesome, but is said to contain less of the nutritive principle than wheat. When rough, or in its natural state in the husk, it is called *paddy*. There is an immense variety in the qualities of rice. That which is principally exported from Bengal has received the name of *cargo rice*. It is of a coarse reddish cast, but is sweet and large grained, and is preferred by the natives to every other sort. It is not kiln-dried, but is parboiled in earthen pots or caldrons, partly to destroy the vegetative principle, so that it may keep better, and partly to facilitate the process of husking. Patna rice is more esteemed in Europe than any other sort of rice imported from the East. It is small-grained, rather long and wiry, and remarkably white. But the rice raised on the low marshy grounds of South Carolina is unquestionably very superior to any brought from any part of India. It may, perhaps, be worth mentioning that rice, like wheat, oats, and barley, is not indigenous to America. It was first raised in South Carolina from seeds brought from Madagascar, near the end of the 17th century. Its culture increased so rapidly that in 1724 no fewer than 18,000 tierces, or barrels, were exported. —PRINCE'S *Statistics*, 1835. According to the returns under the census of 1840, the total annual produce of rice in the United States was estimated at 80,841,422 lbs., whereas under the census of 1850 it was estimated at 215,312,000 lbs., or above 96,000 tons, of which 159,930,613 lbs. were raised in South Carolina; and in 1850, 213,540,000 lbs.

The produce of lands naturally or artificially irrigated is, as far as rice is concerned, from five to ten times greater than that of dry land having no command of water; and hence the vast importance of irrigation in all countries where this grain is cultivated. But it is worthy of remark that, owing to the not unfrequent occurrence of severe droughts, there is a greater variation in the crops of rice than in those of any other species of grain. Those who, like the Hindoos, depend almost entirely on it for subsistence, are consequently placed in a very precarious situation. There can be no doubt that famines are at once more frequent and severe in Hindostan than in any other country, Ireland excepted.

Cultivation in the United States.—Rice is the chief food, perhaps, of one-third of the human race; possesses the advantage attending wheat, maize, and other grains, of preserving plenty during the fluctuations of trade; and is also susceptible of cultivation on land too low and moist for the production of most other useful plants. Although cultivated principally within the tropics, it flourishes well beyond, producing even heavier and better filled grain. Like many other plants in common use, it is never found wild (it is to be understood that the wild rice, or water oat, *Zizania aquatica*, which grows along the muddy shores of our tide-waters, is a distinct plant from the common rice, and should not be confounded with it), nor is its native country known. Linnaeus considers it as a native of Ethiopia, while others regard it as Asiatic origin. At the Industrial Exhibition in London there were displayed many curious samples and varieties of rice, grown without irrigation, at elevations of 3000 to 6000 feet on the Himalayas, where the dampness of the summer months compensates for the want of artificial moisture. At the exhibition above alluded to, American rice received not only honorable mention for its very superior quality, but the Carolina rice, exhibited by E. J. Heriot, was pronounced by the jury "magnificent in size, color, and clearness," and to it was awarded a prize medal. The jury were free to admit that the American rice, though originally brought from the Old World, is now much the finest in quality. The common variety is cultivated throughout

the torrid zone, wherever there is a plentiful supply of water, and will mature, under favorable circumstances, in the Eastern Continent, as high as the forty-fifth parallel of north latitude, and as far south as the thirty-eighth. On the Atlantic side of the Western Continent it will flourish as far north as latitude thirty-eight degrees, and to a corresponding parallel south. On the western coast of America it will grow as far north as forty or more degrees. Its culture is principally confined to India, China, Japan, Ceylon, Madagascar, Eastern Africa, the south of Europe, the southern portions of the United States, the Spanish Main, Brazil, and the Valley of Parana and Uruguay.

Rice was first introduced into Virginia by Sir William Berkeley in 1647, who received half a bushel of seed, from which he raised sixteen bushels of excellent rice, most or all of which was sown the following year. It is also stated that a Dutch brig from Madagascar came to Charleston in 1694, and left about a peck of paddy (rice in the husk) with Governor Thomas Smith, who distributed it among his friends for cultivation. Another account of its introduction into Carolina is, that Ashby was encouraged to send a bag of seed rice to that province, from the crops of which sixty tons were shipped to England in 1698. It soon after became the chief staple of the colony. Its culture was introduced into Louisiana in 1718, by the "Company of the West."

The present culture of rice in the United States is chiefly confined to South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas. The yield per acre varies from twenty to sixty bushels, weighing from forty-five to forty-eight pounds when cleaned. Under favorable circumstances, as many as ninety bushels to an acre have been raised. Another variety is cultivated in this country, to a limited extent, called Cochinchina, dry or mountain rice, from its adaptation to a dry soil without irrigation. It will grow several degrees further north or south than the Carolina rice, and has been cultivated with success in the northern provinces of China, Hungary, Westphalia, Virginia, and Maryland; but the yield is much less than that of the preceding, being only fifteen to twenty bushels to an acre. It was first introduced into Charleston from Canton, by John Bradby Blake, in 1772. The amount of rice exported from South Carolina in 1724 was 18,000 barrels; in 1731, 41,957 barrels; in 1740, 90,110 barrels; in 1747-'48, 55,000 barrels; in 1754, 104,682 barrels; in 1760-'61, 100,000 barrels; from Savannah in 1755, 2299 barrels, besides 237 bushels of paddy, or rough rice; in 1760, 283 barrels, besides 208 bushels of paddy; in 1770, 22,120 barrels, besides 7064 bushels of paddy; from Philadelphia in 1771, 258,375 pounds. The amount exported from the United States in 1770 was 150,529 barrels; in 1791, 96,980 tierces; in 1800, 112,056 tierces; in 1810, 181,341 tierces; in 1820-'21, 88,221 tierces; in 1830-'31, 116,517 tierces; in 1840-'41, 101,617 tierces; in 1845-'46, 124,007 tierces; in 1846-'47, 144,427 tierces; in 1850-'51, 105,590 tierces.

PRODUCTION OF RICE IN THE UNITED STATES IN THE YEAR 1850.

States.	Rough Rice, lbs.
Alabama	2,312,252
Arkansas	63,179
Florida	1,075,000
Georgia	88,950,691
Kentucky	5,688
Louisiana	4,425,340
Mississippi	2,719,856
Missouri	700
North Carolina	5,465,868
South Carolina	159,930,613
Tennessee	253,854
Texas	88,203
Virginia	17,154
Total	215,313,097

It will be seen from this table that South Carolina produced in 1850 75 per cent. of the total production, and Georgia 18 per cent.

STATEMENT EXHIBITING THE QUANTITY AND VALUE OF RICE EXPORTED ANNUALLY FROM 1821 TO 1855, INCLUSIVE.

Fiscal Years.	Barrels.	Tierces.	Value.	Aver. cost, per tierce.
1821	88,221		\$1,494,307	\$16 94
1822	87,089		1,556,482	17 84
1823	101,365		1,820,985	17 96
1824	113,229		1,882,982	16 63
1825	97,015		1,925,245	19 84
1826	111,063		1,917,445	17 26
1827	113,518		2,343,908	17 55
1828	175,019		2,620,696	14 97
1829	132,923		2,514,370	15 92
1830	130,697		1,986,924	15 20
1831	116,517		2,016,267	17 30
1832	120,827		2,152,631	17 89
1833	144,163		2,744,418	19 04
1834	121,886		2,122,272	17 41
1835	119,851		2,210,331	19 94
1836	212,988		2,548,750	11 97
1837	106,084		2,309,279	21 76
1838	71,048		1,721,519	24 23
1839	93,320		2,460,198	26 36
1840	101,660		1,942,076	19 10
1841	101,617		2,010,107	19 78
1842	114,617		1,907,387	16 64
1843	106,766		1,625,726	15 23
1844	134,715		2,182,468	16 20
1845	118,621		2,160,456	18 21
1846	124,007		2,564,991	20 68
1847	144,427		3,605,896	24 97
1848	100,403		2,331,224	23 23
1849	128,361		2,569,302	19 94
1850	127,069		2,631,557	20 71
1851	105,590		2,170,927	20 56
1852	119,738		2,470,029	20 63
1853	67,707		1,657,658	24 48
1854	105,121		2,634,127	25 05
1855	19,774	52,520	1,717,953	....
1856	81,038	58,668	2,390,238	....
1857	74,309	64,332	2,290,400	....
Total	175,121	4,137,752	\$81,209,386	....

EXPORTS OF RICE FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither Exported.	Tierces.	Barrels.	Value.
Russia on the Baltic and North Seas	995	25	\$11,354
Prussia	25	....	730
Sweden and Norway	244	....	7,538
Swedish West Indies	13	12	559
Denmark	600	12,619	50,567
Danish West Indies	493	221	12,725
Hamburg	1,472	254	49,325
Bremen	4,453	....	126,345
Holland	1,451	....	30,073
Dutch West Indies	....	834	9,265
Dutch Guiana	61	110	2,362
Belgium	4,771	6,000	156,183
England	11,121	16,337	328,022
Scotland	1,081	....	30,269
Ireland	16	....	374
Canada	654	36	25,190
Other Brit. N. Am. Posses.	543	161	16,542
British West Indies	1,434	120	37,077
British Honduras	268	108	8,860
British Guiana	50	....	500
British Posses. in Africa	....	115	1,826
Other ports in Africa	170	404	11,095
British Australia	70	601	9,710
France on the Atlantic	5,139	....	157,498
France on the Mediterran.	33	....	460
French N. Am. Possessions	1	10	154
French West Indies	2	283	2,839
French Guiana	54	....	1,546
Spain on the Atlantic	30	3,424	12,200
Canary Islands	2	....	57
Cuba	23,831	313	641,266
Porto Rico	2,990	42	81,277
Portugal	30	539	6,750
Madeira	....	40	524
Cape de Verd Islands	7	....	173
Azores	15	61	1,397
Haiti	185	4,737	60,492
San Domingo	....	145	1,742
Mexico	....	350	4,214
Central Republic	....	49	557
New Granada	143	1,561	20,578
Venezuela	798	633	20,862
Brazil	505	2,161	36,861
Uruguay, or Cisplatine Rep.	....	5,406	66,484
Argentine Republic	....	7,409	81,494
Chili	1,119	8,447	135,634
Peru	25	265	6,384
Sandwich Islands	51	234	3,711
China	....	79	991
Whale Fisheries	11	72	1,215
Total	64,332	74,309	\$2,290,400

Of these exports, 1856-'57, there was exported from the following ports,

Boston	\$198,319
New York	795,069
Baltimore	132,053
Charleston	888,708
Savannah	138,137
Other ports	143,174
Total	\$2,290,400

Rice Paper. This substance is said to be a membrane of the *Artocarpus incisa*, or bread-fruit tree. It is brought from China in small pieces, dyed of various colors, and is used as a material for painting upon, and for the manufacture of several fancy and ornamental articles. It is sometimes erroneously stated to be prepared from rice.—See PAPER.

Richmond, city and port of entry, and capital of Henrico county, and of the State of Virginia, is situated on James River, at the falls, at the head of tide-water, and is in $37^{\circ} 30' N.$ lat., and $77^{\circ} 81' W.$ long. from Greenwich, and $0^{\circ} 27' W.$ long. from Washington. It is 23 miles north from Petersburg, and 117 south by west from Washington. The population in 1800 was 5727; in 1810, 9785; in 1820, 12,067; in 1830, 16,060; in 1840, 20,163; in 1850, 27,570; and in 1854, 30,000. It is beautifully located on the west side of the river, between 50 and 60 miles above City Point, and 150 miles above the mouth of the river.

Four lines of railroad here connect, viz., Richmond, Fredericksburg, and Potomac; Richmond and Petersburg; the Central Railroad of Virginia; and the Danville Railroad; and here terminates the James River and Kanawha Canal. Vessels drawing 10 feet of water come to Rockets, about a mile below the centre of the city; and those drawing 15 feet, to Warwick, three miles below the city. The falls in James River are obviated by the canal, and above them it is navigable for boats 220 miles. Regular lines of packets connect the city with New York and other places, and it is connected by steamboats to Norfolk. The principal articles of exportation are wheat, flour, and tobacco. The exports amount to about \$3,000,000 annually. The tonnage of the port in 1853 was 11,460 tons. The manufactures of Richmond are also extensive.

Riding, in *Naval affairs*, is the state of a ship's being retained in a particular station by means of one or more cables with their anchors, which for this purpose are sunk into the bottom of the sea, etc., in order to prevent the vessel from being driven at the mercy of the wind or current. A rope is said to *ride* when one of the turns by which it is wound about the capstan or windlass lies over another, so as to interrupt the operation of wearing.

Riding Athwart, the position of a ship which lies across the direction of wind and tide, when the former is so strong as to prevent her from falling into the current of the latter.

Riding between the Wind and the Tide, the situation of a vessel at anchor when the wind and tide act upon her in direct opposition, in such a manner as to destroy the effort of each other upon her hull; so that she is in a manner balanced between their reciprocal force, and rides without the least strain on her cables. When a ship does not labor heavily, or feel a great strain when anchored in an open road or bay, she is said to ride easy. On the contrary, when she pitches violently into the sea, so as to strain her cables, masts, or hull, it is called *riding hard*, and the vessel is termed a *bad rider*.

Riga, a city of European Russia, the capital of Livonia, on the Duna, about 9 miles from the sea, lat. $56^{\circ} 56' 5'' N.$, long. $24^{\circ} 0' 4'' E.$ Population in 1842, excluding garrison, 60,000. A light-house has been erected on Fort Comet, on the western side of the mouth of the river. It has two lights: the first, elevated about 104 feet (English) above the level of the sea, may be seen, under favorable circumstances, at the distance of 4 leagues; and the second, elevated about $24\frac{1}{2}$ feet, may be seen at the distance of $2\frac{1}{2}$ leagues.

The bar at the mouth of the river has usually from 12 to 13 feet water; and vessels drawing more than this frequently load and unload part of their cargoes by means of lighters at Bolderaa, a small town on the west side of the river, near its mouth. There is a fair-way beacon without the bar, in 5 fathoms water; and within, the channel is buoyed with black and white buoys; the black being left on the right or starboard side when entering, and the white on the larboard. Vessels bound for Riga take pilots at Bolderaa, who carry them to their anchorage. No ballast is allowed to be discharged, except at Poderague. Regulations as to clearing, etc., similar to those at Petersburg.—*Coulier sur les Phares*, 2d edit.; and *Regulations published by the Russian Authorities*.

Trade.—Owing to its advantageous situation near the mouth of a great navigable river, the trade of Riga is very extensive; being, of the Russian towns on the Baltic, in this respect second only to Petersburg. The trade is chiefly carried on by foreign merchants, particularly by the English. The principal exports are flax and hemp, linseed and hemp seed, timber, corn, tobacco, hides, wool, tallow, etc.; the imports are salt, sugar, coffee, and groceries of all sorts, herrings, indigo, dye-woods, cotton and cotton twist, silks, wines, etc. The mast trade is extensive. The burghers of Riga send persons who are called mast brokers into the provinces to mark the trees, which are purchased standing. They grow mostly in the districts which border on the Dnieper, are sent up that river to a landing-place, transported 30 versts to the Duna, when, being formed into rafts of from 50 to 200 pieces, they descend the stream to Riga. The tree which produces the largest masts is the Scotch fir. Those pieces which are from 18 to 25 inches in diameter are called masts; under those dimensions, spars, or, in England, Norway masts, because Norway exports no trees more than 18 inches in diameter. Great skill is required in distinguishing those masts that are sound from those which are in the least internally decayed. They are usually from 70 to 80 feet in length. The best kind of flax shipped from Riga is grown in White Russia, and is called *Druana rakitzer*; its color is very white, and the threads long, fine, and loose, but it has sometimes black spots; the next quality, coming from the province of Trockie, in Lithuania, is called *Lithuanian rakitzer*, and is very little inferior to *Druana*, but its color is a little brown; of this kind the best sort is *Thiesenhausen*. The best kind of Courland flax shipped from Riga is *Marienburg*; that grown in Livonia is inferior. There are two kinds of linseed; that of the last crop, which is used for sowing; and that of former years, for crushing. To prevent deception, the year of its growth is stamped on the barrel by sworn inspectors (*brackers*). Hemp seed is mostly shipped for Holland.

Money.—For the moneys of Riga, see PETERSBURG.

Weights and Measures.—The commercial pound is divided into 2 marks, or 32 loths; and also into halves, quarters, etc. It contains 6452 English grains. Hence 100 lbs. of Riga = 92.17 lbs. avoirdupois = 41.8 kilog. = 86.32 lbs. of Hamburg = 84.64 lbs. of Amsterdam. The lispond = 20 lbs.; the shippound = 20 lisponds. The loof is the measure for grain: 48 loofs = 1 last of wheat, barley, or linseed; 45 loofs = 1 last of rye; and 60 loofs = 1 last of oats, malt, and beans. According to Kelly, the loof = 1.9375 Winchester bushel; and, consequently, the last of wheat = 11.625 quarters. Nelkenbrecher does not value the loof quite so high as Kelly. The fuder, the measure for liquids, is divided into 6 ahms, 24 ankers, 120 quarts, or 720 stoofs. The anker = 10 English wine gallons. The foot of Riga = 10.79 English inches. The ell = 2 feet; the clafer = 6 feet.

Like most of the rivers falling into the Baltic, the Duna has a bar, varying, according to seasons, from 12 to 15 feet of water. Large vessels usually discharge and take in their cargoes either at the roads or in the Bolderaa harbor, near the mouth of the river,

by means of well-covered lighters. The linseed, flax, hemp, and wool of this port have always been held in higher repute than those exported from any other port in Russia. The grain shipped from Riga is the produce of White Russia, the Ukraine, Poland, Courland, Livonia, Esthonia, Smolensk, Minsk, Lithuania, etc. The navigation of Riga may be seen from the following returns for a series of years :

VESSELS ENTERED.	
In 1800	867
1810	400
1819	1300
1849	1524
1850	1864
1853	1977

	Francs.
Value of imports into the port of Riga in 1840..	19,333,000
Value of exports " " " ..	61,426,000

This port, like Odessa, derives its principal wealth from its export trade. In 1850 the total value of exports reached 61,426,000 francs. The imports during the same year were only 19,335,000 francs. The following table exhibits, in francs, the commercial movements of Riga, and the share assigned to each country, in the year 1850:

Countries.	Imports.	Exports.	Total.
England	4,984,000	35,389,000	40,323,000
France	2,757,000	6,963,000	9,720,000
Holland	756,000	6,187,000	6,943,000
Hanse Towns	4,442,000	1,955,000	6,397,000
Belgium	24,000	5,098,000	5,722,000
Sweden and Norway	1,219,000	1,826,000	3,045,000
United States	2,904,000	.....	2,904,000
Portugal	1,373,000	864,000	2,237,000
Denmark	215,000	1,451,000	1,646,000
Spain	198,000	539,000	737,000
Other countries	468,000	625,000	1,093,000
Total France . . . . .	....	....	80,761,000

From the preceding table it will be seen that, of the whole trade of Riga, England has 50 per cent. ; France upward of 12 per cent. ; Holland, and the three Hanse Towns, each 8 per cent. The principal imports in 1850 were—

Sugar.....	Francs, 8,815,000
Salt.....	" 2,495,000
Wines and spirits.....	" 2,386,000
Tobacco.....	" 1,729,000
Herring.....	" 1,256,000
Raw and spun cotton.....	" 1,856,000

The principal exports were—

Flax (of which England took two-thirds) ..	France,	28,439,000
Hemp (to England more than one half) ..	"	7,879,000
Timber (chiefly to England and Holland) ..	"	5,160,000
Grains ..	"	5,147,000
Flax-seed, for seed (one half to England) ..	"	3,791,000

ACCOUNT OF THE QUANTITIES OF THE PRINCIPAL ARTICLES
EXPORTED FROM RIGA IN 1851 AND 1852.

	To all Countries.	
	1851.	1852.
Flax, 1st sort. tons	17,814	21,223
Ditto, 2d sort. "	7,292	9,051
Ditto, 3d sort. "	1,490	2,465
Ditto, codilla. "	924	647
Total of flax. "	27,520	33,387
Ryne hemp. "	9,318	7,645
Outshot ditto. "	3,799	3,460
Pass ditto. "	3,592	4,016
Hemp codilla. "	958	605
Total of hemp. "	17,667	15,727
Tallow. "	2	7
Quills. "	26	13
Rye. qrs.	124,991	191,501
Barley. "	83,816	58,055
Oats. "	92,705	1,509
Sowing linseed. bls.	129,429	164,965
Crushing linseed. qrs.	111,134	97,578
Hemp seed. "	19,108	4,493
Deals. pieces	436,387	364,645
Timber. "	138,873	97,900
Masts. "	4,943	7,123
Wainscot logs and vatwood. "	8,057	1,777
Pipe and hoghead staves. "	296,786	186,312
Total value in S. Ro.	14,587,251 at 77½ cts.	14,898,728 at 77½ cts.
Total value in dollars.	\$11,169,350	\$11,666,750

Total amount of exports from England to this port in 1850, 4,984,000 francs, or \$927,000.

Total amount of exports from Riga to England,
\$6,573,054.

The merchandise imported into England from Russia is such, chiefly, as Russia only can supply—at least in such quantities as to meet the extensive demands of the manufacturers of Great Britain. It consists principally of articles of first necessity in manufactures, such as hemp and flax seed for oil and culture. The merchandise supplied to Russia (at the port of Riga) from other countries consists chiefly of sugar, coffee, salt, wines, spirituous liquors, tobacco, and cotton tissues. In reference to the latter article, such is the extraordinary activity of Russian manufacturing industry, supported as it is by a high tariff on manufactured articles, that, had not the war intervened, she would probably be now independent of other nations as respects cotton yarns.

The total tonnage which entered and cleared at the port of Riga in 1850, as already shown, was 397,395 tons. Of this total, 180,904 tons were under the English flag, or within a figure of 50 per cent. on the whole; while the Russian flag covered only 61,394 tons, or 15 per cent. on the whole. The value of flax-seed for culture, exported from this port from 1840 to 1850, was \$7,000,000; of which England received, in the aggregate, one-third. The remaining two-thirds were sent to Belgium, Prussia, Hanse Towns, Sweden and Norway, France, and the United States. The navigation movements at this port for 1853 were as follows:

PORT OF RIGA.—NAVIGATION IN 1853.

Nationality.	No. of Vessels entered.	No. of Vessels cleared.
English	370	370
Russian	206	206
Belgian	10	10
Hanoverian	170	170
Dutch	244	244
French	55	55
Spanish	1	1
Danish	181	181
Swedish	291	291
Prussian	169	169
Mecklenburg	186	186
Oldenburg	37	37
Portuguese	6	6
Hamburgian	7	7
American	2	2

The official paper, from which the preceding table is extracted, furnishes also interesting facts relative to the hemp trade of this port. The following extract is translated from this document :

“Hemp is usually sold by the producers in the interior to merchants who visit their estates for the purpose of speculation. They make their contracts generally between April and October. The time of delivery is stipulated for, and from 5 to 10 per cent. on the purchase-money is paid down in cash. The annual average quantity of hemp thus brought to the market of Riga amounts to about seven millions of franes. At Riga there are surveyors' offices established, where the hemp brought for sale is subjected to the strictest examination, and is ranked, according to quality, Nos. 1, 2, or 3. Should the producers be dissatisfied with the action of the surveyors at Riga, they have the right of appeal to St. Petersburg.”—See articles HEMP and RUSSIA for particular information.

Rigging of a Ship, a general name given to all the ropes employed to support the masts, and to extend or reduce the sails, or arrange them to the disposition of the wind. The former, which are used to sustain the masts, remain usually in a fixed position, and are called *standing rigging*; such are the shrouds, stays, and backstays. The latter, whose office is to manage the sails, by communicating with various blocks or pulleys, situated in different parts of the masts, yards, shrouds, etc., are comprehended in the general term *running rigging*; such are the braces, sheets, halliards, clew-lines, and brails.

Ring, an ornament of gold and silver, of a circular figure, and usually worn on the finger. The antiquity of rings is known from Scripture and profane authors. Judah left his ring or signet with Tamar. When Pharaoh committed the government of all Egypt to Joseph, he took his ring from his finger and gave it to Joseph. After the victory which the Israelites obtained over the Midianites, they offered to the Lord the rings, the bracelets, and the golden necklaces, and the golden ear-rings, that they had taken from the enemy. The Israelitish women wore rings, not only on their fingers, but also in their nostrils and their ears. St. James distinguishes a man of dignity by the ring of gold which he wore on his finger. At the return of the prodigal son, his father orders him to be dressed in a new suit of clothes, and to have a ring put upon his finger. The ring chiefly was used to seal with. The

patents and orders of princes were sealed with their rings or signets; and it was this that secured to them their authority and respect. The episcopal ring, which makes a part of the pontifical apparatus, and is esteemed a pledge of the spiritual marriage between the bishop and his Church, was used at a remote period. The fourth council of Toledo, held in 633, appoints that a bishop condemned by one council, and found afterward innocent by a second, shall be restored by giving him the ring, staff, etc.

Rio de Janeiro, the capital of Brazil, on the Atlantic, in lat. $22^{\circ} 54' 15''$ S., long. $43^{\circ} 15' 50''$ W. Population, 200,000. The harbor of Rio is one of the finest in the world, both as respects capaciousness and security for all sorts of vessels. In coming from the northeast it is usual to make Cape Frio, in lat. $23^{\circ} 1' 18''$ S., long. $42^{\circ} 8' 19''$ W., being about 4 leagues



References to Plan.—A. Ilha do Catunduba. B. Fort de St. Joao. C. Morro do Flamengo. D. Ponta do Calhabouco. E. Fort da Ilha das Cobras. F. Ilha dos Rattos. G. Fort da Boa Viagem.

nearly east of Rio. The entrance to the harbor is marked by a remarkable hill in the form of a sugar-loaf, 900 feet high, close to its west side; while on the east, or opposite side of the bay, at the distance of about $1\frac{1}{2}$ mile, is the fort of Santa Cruz. But the wood-cut in the preceding page, taken from a chart published by order of the Brazilian authorities, gives a much better idea of this noble harbor than could be obtained from any description.

Harbor.—Vessels bound for Rio, coming from the north, should, after rounding Cape Frio, steer due west, keeping about 3 leagues from the coast, until they come within 5 or 6 miles of the *Ilha Raza*, or Flat Island, lying almost due south from the mouth of the harbor, at the distance of about 3 leagues. A light-house, the lantern of which is said to be elevated nearly 300 feet above the level of the sea, was erected on this island in 1829. The light is a revolving one, finishing its revolution in 3 minutes, and exhibiting alternately a white and a red light. There is also a light-house in the fort of Santa Cruz, the light of which is fixed, and elevated about 50 feet above the level of the sea.—*Coulier sur les Phares*, 3d ed. Having got within 5 or 6 miles of the *Ilha Raza*, ships may enter by day or by night, the dotted line in the cut marking the fair-way into the harbor. There are no pilots to be met with; and as there are no hidden dangers of any kind, their services are not wanted. On entering, vessels must pass within hail of Fort Santa Cruz, to be ready to answer any questions that may be put to them. They then proceed to Fort Vilganhon, below or opposite to which they must bring to, or come to anchor, allowing no boats to come along side but those of the government until they have received *pratique*, when they will be permitted to proceed to the usual place of anchorage for the merchant shipping. The sea-breeze generally sets in about 11 A.M., and lasts till about sunset. It is strong enough to enable ships to overcome the ebb. High water at full, and change at 2 in the afternoon.

Anchorage Dues.—1. From and after 1st July, 1852, the anchorage duty upon vessels trading between foreign ports and the ports of Brazil will be reduced to 300 reis the ton; and the same class of duty now levied upon coasting vessels shall be abolished. 2. That part of the provisions of April 26, July 20, and November 16, 1844, which has not been altered by this decree will continue in force.

Money, Weights, and Measures.—All payments are made in paper money, which has been over-issued, and is excessively depreciated. But in ordinary cases the par of exchange may now be assumed at about 31d. sterling per patriotic dollar, of 1620 reis paper. Weights and long measures are the same as those of Lisbon, the arroba being $32\frac{1}{2}$ lbs. avoirdupois; but measures of capacity are different, a medida being equal to .5954 imperial gallon, and an alqueire to 1.11 ditto.

Trade.—The trade of Rio is extensive, and has increased rapidly of late years. It is now by far the greatest mart for the export of coffee. The shipments of this important article, which in 1830 amounted to 396,785 bags, have increased with such unexampled rapidity, that in 1848 they amounted to 1,710,707 bags, that is (taking the bag at 160 lbs.), to 273,713,120 lbs., or 122,193 tons; being about equal to all the exports of coffee from all the other ports in the world. It has not, however, been so large since. Sugar was formerly an important article of export from Rio, but latterly it has rapidly decreased, and only amounted to 5979 cases (13 cwt. each) in 1849. It is probable, however, that here, as in Cuba and other places, the late low prices of coffee may have produced a reaction in favor of sugar, the exports of the latter having risen in 1850 to 13,047 cases. The other great articles of export from Rio are hides, rice, tobacco, rum, tapioca, ipeacuanha, manioc or manihot, flour, and other inferior articles. The export of cotton has entirely ceased; and that of gold, diamonds, etc., is mostly clandestine. Diamonds are principally exported from Bahia. We subjoin an

ACCOUNT OF THE EXPORTS OF NATIVE PRODUCE FROM RIO DE JANEIRO DURING EACH OF THE SIX YEARS ENDING WITH 1852.

Years	Coffee.	Sugar.	Hides.	Horns.	Rosewood.	Leather.	Rice.	Rum.	Tobacco.	Ipeacuanha.	Tapioca.
	Bags.	Cases.	No.	No.	Logs and Planks.	Sides.	Bags.	Pipes.	Rolls.	Serouns.	Barrels.
1847	1,639,234	8,426	267,288	450,783	9,437	5,562	19,741	3,933	24,403	476	1,914
1848	1,710,579	5,713	331,583	269,191	16,364	10,254	9,712	2,363	23,144	333	1,832
1849	1,460,410	5,865	301,982	373,707	22,257	10,746	20,707	4,380	25,427	130	9,566
1850	1,359,058	13,047	200,083	268,550	26,332	17,617	24,242	3,216	23,440	127	16,053
1851	1,846,213	7,824	147,296	256,949	36,547	12,774	8,229	3,892	28,755	641	17,737
1852	1,907,130	12,516	123,739	176,098	25,369	3,955	8,449	1,952	32,246	291	10,940

The principal article of import consists of cotton goods, the value of which amounts to full one-third of the total value of the imports. Next to cottons are woolen, linen, and silk manufactures; wines, jewelry, and iron-mongery; flour, meat, fish, butter, and other articles of provision; spirits, salt, earthen-ware, paper, and a host of articles. The importation of ready-made furniture from the United States is also extensive.

About 56 per cent. of the entire commerce of Brazil passes through the port of Rio de Janeiro. Hither is conveyed, from all the ports on the coast, from Bahia almost to the frontiers of the Argentine Republic, all the produce intended for exportation or home consumption. Farina, beans, bacon, dried and salt meat, hides, horns, tallow, rice, tobacco, sugar, coffee, cotton—in a word, all the produce and manufactures of the different provinces are made tributary, either by land or water conveyance, to the wealth and commercial greatness of the Brazilian metropolis. A numerous fleet of vessels is employed in the coasting trade, in supplying the different ports along the coast with the various productions of the soil and industry of America and Europe. The chief foreign exports from Rio de Janeiro are—coffee (more than half of the whole going to the United States), sugar, cotton, hides, tobacco, otter skins, etc.

Tonnage employed in the trade of 1841: Total vessels, 1705, of 416,000 tons—of which, from and to the

United States, there were 289 vessels, of 77,000 tons. Tonnage, etc., of 1841, compared with that of 1840:

1841.....	1705 vessels :	416,000 tonnage.
1840.....	1640 “	399,200 “
Excess over 1840..	65 “	16,800 “

The increase of the foreign commerce of Rio de Janeiro is better illustrated by the following returns:

COMMERCIAL MOVEMENT OF RIO DE JANEIRO IN 1846.

Countries.	Imports of Rio.	Exports from Rio.	Total Francs.
England and Possessions..	52,960,000	24,220,000	77,180,000
United States.....	20,440,000	85,750,000	106,190,000
France.....	20,720,000	9,800,000	30,520,000
Hanse Towns.....	6,020,000	13,330,000	19,350,000
Portugal.....	8,920,000	6,950,000	15,870,000
Spain.....	4,710,000	1,630,000	6,340,000
Switzerland.....	4,590,000	.....	4,590,000
Belgium.....	2,670,000	4,390,000	6,990,000
Uruguay and La Plata....	2,180,000	1,580,000	3,760,000
Sardinia.....	2,050,000	2,000,000	4,050,000
Sweden and Norway.....	1,740,000	2,710,000	4,450,000

Africa, Austria, Denmark, Turkey, Russia, the Two Sicilies, Prussia, Netherlands, Chili, and other countries, participate in this foreign trade to an extent ranging in value from 6,000,000 francs to 4,000,000 each, making the total trade for

1846.....	256,640,000 francs=	47,735,040 dollars.
1845.....	236,800,000 “	=44,044,300 “
Increase over 1845..	19,840,000 “	=3,690,740 “

DEPARTURES.

Clearances to foreign Ports.	Vessels.	Tons.
With products of country.....	805	285,288
With foreign products.....	171	87,427
For California.....	6	2,488
In ballast for foreign countries.....	76	33,490
In ballast for home ports.....	89	26,053
Total in 1851.....	1198	434,696
Total in 1850.....	1080	390,671

All foreign nations shared equally in the large augmentation which the returns of 1846 exhibit over those of 1845. Some of the causes that contributed to this increase have been already adverted to. The true cause, however, to which all others are but auxiliary, is the admitted capacity of Brazil to multiply her staple productions, particularly coffee, to the fullest extent of the foreign demand, if she will only avail herself of the abundant resources with which nature has so bountifully supplied her.

The quantity of coffee exported increased 23,764,000 kilogrammes (of 2·20 lbs. avoirdupois). Sugar, on the other hand, diminished 8,096,000 kilogrammes. The exports of coffee during the year 1846 were:

To England.....	kilogrammes	39,000,000
United States.....	"	38,000,000
Hanse Towns.....	"	10,000,000
Austria.....	"	5,000,000
France.....	"	4,000,000
Belgium.....	"	3,000,000
Sweden and Norway.....	"	2,500,000
Denmark.....	"	2,400,000
Portugal.....	"	1,500,000
Russia.....	"	1,000,000
Other countries.....	"	1,600,000
Total value.....	81,000,000 francs	108,000,000

The course of exchange, which varied from 213 to 374 reas per franc, ruled in 1846 at 335 reas per franc, or 18·6 cents—equal to 55 cents per 1000 reas. The following table gives the number of vessels, and their tonnage, engaged in the trade of 1846, with the countries whence they came:

Countries whence.	No. of Vessels.	Tonnage.
Brazilian ports.....	72	15,600
United States.....	366	95,600
England and Possessions.....	415	89,700
La Plata and Uruguay.....	197	45,500
Portugal.....	218	44,500
Africa.....	146	28,800
Hanse Towns.....	97	23,800
Spain.....	102	20,400
France.....	95	19,080
Austria.....	46	9,300
Belgium.....	39	8,000
Sardinia.....	33	6,700
Chili.....	28	5,850
Denmark.....	22	5,550
Sweden and Norway.....	21	4,200
Other countries.....	80	17,400
Total in 1846.....	1977	440,040
Do. in 1845.....	1762	389,070

Tonnage to and from the United States in 1846: vessels 366, of 95,600 tons. Tonnage in 1843: vessels 328, of 76,900 tons. Increase in 1846 over 1843, vessels 38, tonnage 18,700.

SUMMARY OF THE TRADE OF RIO DE JANEIRO IN 1848.

Total imports.....	184,500,000 francs.
Total exports.....	184,080,000 "
Total imports and exports.....	268,580,000 "

Tonnage, etc. — Entered, 213,900 tons; cleared, 191,200 tons; total, 405,100 tons, of which from and to the

United States.....	89,000 tons.
Great Britain.....	65,000 "
Portugal.....	47,000 "
France.....	18,400 "
Other countries.....	185,700 "
Total.....	405,100 "

Course of exchange at Rio de Janeiro in 1848: 359 reas per franc, or 56 cents (nearly) per milrea.

The navigation of the port of Rio de Janeiro in 1851 is exhibited in the following table:

ARRIVALS.

Arrivals from foreign Ports.	Vessels.	Tons.
With cargo for port.....	947	237,567
Other destinations.....	51	16,158
On way to California.....	23	10,428
In ballast for foreign countries.....	167	49,715
In ballast for home ports.....	17	3,479
Total in 1851.....	1210	317,947
Total in 1850.....	1020	264,616

The leading articles imported in 1851 were as follows: Cottons, 42,560, woolens, 5488, linens, 5695, silks, 1088, and mixed goods, 1263 packages; codfish, 54,602 quintals; coals, 42,007 tons; ale and porter, 23,704 barrels; flour, 283,893 barrels; candles, sperm, 90, composition, 6052, and tallow, 25,561 boxes; wines, Portugal, 14,033, Mediterranean, 7644, and Bordeaux, 4421 pipes; butter, 25,561 firkins; cordage 5480 coils, etc. The produce of the country exported in the same year consisted of: Coffee, 2,033,743 bags; hides, 147,296; sugar, 7824 cases; rum, 3892 pipes; rice, 8229 bags; horns, 256,949; tobacco, 28,755 rolls (of 96 lbs. each); rosewood, 36,547 pieces; half-tanned hides, 12,744; tapioca, 17,737 barrels, etc. The arrivals coastwise in 1851 were 1935 sail vessels, and 359 steamers, with an aggregate of 221,647 tons; and the departures were 1863 sail vessels, and 380 steamers, with an aggregate of 225,002 tons. The total imports and exports of the empire in 1851 exhibit an increase of 33 per cent. over the average of the four preceding years. Could Brazil be induced to abolish the heavy export duties which she levies on her staple productions, the increase would largely exceed this figure. The article of coffee alone would in a short period fully make up for any deficiency in her revenue caused by the abolition of these duties, in the increased demand for that article for foreign markets. Besides, the stimulus which would in consequence be imparted to that branch of agricultural labor would present an incidental benefit which could hardly escape the observation of a sagacious legislator.

The subjoined figures show the amount of export duties levied at Rio de Janeiro from 1846 to 1851. [Milrea = 55 to 56 cents United States currency.]

1846-'47.....	3,966,000 milreas.
1847-'48.....	4,118,000 "
1848-'49.....	3,834,000 "
1849-'50.....	3,780,453 "
1850-'51.....	4,706,696 "

STATEMENTS ILLUSTRATIVE OF THE TRADE OF RIO IN 1850.

Leading Articles imported.	Quantities.
Cotton manufactures.....	pks. 26,124
Woolen do.....	" 2,958
Linen do.....	" 1,170
Silks.....	" 770
Mixed.....	" 1,141
Codfish.....	quintals 55,050
Coals.....	tons 83,404
Ale and porter.....	bbbl. 15,961
Flour.....	" 208,578
Candles, sperm.....	boxes 1,872
" composition.....	" 5,269
" tallow.....	" 2,232
Wines, Portugal.....	pipes 14,525
" Mediterranean.....	" 6,761
" Bordeaux.....	" 2,432
Butter.....	firkins 23,980
Cordage.....	coils 10,670
Exports of Produce of the Country.....	Quantities.
Coffee.....	bags 1,359,058
Hides.....	No. 200,033
Sugar.....	cases 13,047
Rum.....	pipes 3,216
Rice.....	bags 24,242
Horns.....	No. 268,550
Tobacco.....	rolls 28,440
Ipecacuanha.....	seroons 127
Rosewood.....	pieces 26,332
Other woods.....	deals 15,186
Half-tanned hides.....	No. 17,617
Tapioca.....	lbs. 16,053
Tea.....	boxes 34
Cigars.....	" 656
Hair (horse).....	bales 857
Flour (manihot).....	bags 10,672
Soap.....	boxes 3,535
Candles, tallow.....	" 304

TABULAR STATEMENT EXHIBITING IN DETAIL COMMERCIAL MOVEMENTS AT THE PORT OF RIO DE JANEIRO IN 1851, AND THE RELATIVE SHARE THEREOF ASSIGNED TO EACH FOREIGN NATION.

Countries.	Vessels entered.		Imports.	Exports.	Total.
	Vessels.	Tons.	Francs.	Francs.	Francs.
United States.....	524	154,000	27,680,000	67,640,000	95,320,000
Great Britain and Possessions.....	370	124,000	60,610,000	22,690,000	83,300,000
Portugal.....	151	39,600	10,800,000	5,590,000	16,390,000
France.....	134	39,000	29,330,000	10,540,000	39,870,000
Uruguay.....	122	31,200	2,620,000	2,690,000	4,710,000
Argentine Republic.....	98	26,150	3,240,000	3,520,000	6,760,000
Denmark.....	91	25,590	1,620,000	4,320,000	5,340,000
Austria.....	77	20,740	2,900,000	5,500,000	8,400,000
Hanse Towns.....	74	20,200	7,440,000	12,100,000	19,540,000
Spain.....	68	19,400	3,950,000	200,000	4,150,000
Prussia.....	69	19,100	970,000	1,160,000	2,130,000
Belgium.....	60	16,466	5,910,000	7,180,000	13,090,000
Other countries.....	510	157,180	9,600,000	23,930,000	33,530,000
Total.....	2348	692,420	165,500,000	166,950,000	332,450,000

ACCOUNT OF THE COFFEE EXPORTED FROM RIO DE JANEIRO IN EACH YEAR FROM 1821 TO 1850, BOTH INCLUSIVE, IN BAGS OF 160 LBS.

Years.	Bags.	Years.	Bags.	Years.	Bags.
1821	105,386	1831	448,249	1841	1,013,915
1822	152,048	1832	478,950	1842	1,179,731
1823	184,994	1833	565,195	1843	1,189,523
1824	224,000	1834	539,117	1844	1,260,431
1825	182,510	1835	627,165	1845	1,208,062
1826	260,000	1836	704,385	1846	1,511,096
1827	350,900	1837	629,734	1847	1,639,234
1828	369,147	1838	781,651	1848	1,710,579
1829	375,107	1839	871,785	1849	1,460,410
1830	391,785	1840	1,063,801	1850	1,359,058

COMPARATIVE STATEMENT SHOWING THE INWARD NAVIGATION OF RIO DE JANEIRO IN THE YEARS 1851 AND 1852.

Foreign Flags.	Vessels.	
	1851.	1852.
United States.....	300	255
Great Britain.....	217	228
Portugal.....	104	90
Hanse Towns.....	90	72
Sweden and Norway.....	114	72
France.....	78	68
Denmark.....	72	67
Spain.....	30	14
Sardinia.....	43	44
Belgium.....	30	30
Austria.....	34	25
Holland.....	11	17
Prussia.....	16	16
Russia.....	20	11
Other countries.....	46	90
Total.....	1210	1099

Brazilian Flag.—On foreign voyages... 449 vessels.
 " On coasting trade... 1612 "
 Total..... 2061 "

The total value of the commercial movements at the port of Rio de Janeiro in 1852 was 353,000,000 francs—equal to \$67,070,000; showing a large increase over the trade of the preceding year. Of the above total there was for imports 180,000,000 francs, and for exports 173,000,000 francs. The following condensed summary shows the trade of the principal commercial countries with Rio during this year: Great Britain and possessions, 74,000,000 francs; imports consisted chiefly of cottons, woollens, provisions, hardware, coal, etc. France, 34,000,000 francs; imports—liquors, tis-sues, cutlery, articles of fashion, etc. United States, 23,000,000 francs; imports—provisions, stores, etc. Portugal, 14,500,000 francs; imports—wines, provisions, etc. Hanse Towns, 11,000,000 francs; imports—general cargoes. Buenos Ayres and Montevideo, 5,000,000 francs; imports—provisions, skins, etc. The exports of Rio de Janeiro this year were in value:

Coffee, about.....	140,000,000 francs.
Diamonds and pearls.....	15,000,000 "
Sugar.....	5,000,000 "
Tobacco and cigars.....	3,500,000 "
Hides and skins.....	2,500,000 "
Cabinet woods.....	1,800,000 "

According to the official report of the custom-house of Rio de Janeiro, there was exported from that port to the United States, up to 30th June of this year (1852), 952,489 bags of coffee, of 160 lbs. each—making in all 152,398,240 lbs. The total quantity of coffee exported the same year is stated to have been 1,896,609 bags,

or 803,457,440 lbs. The quantity sent to the United States was thus distributed:

New Orleans.....	346,262 bags.
New York.....	260,179 "
Baltimore.....	207,792 "
Philadelphia.....	81,125 "
Charleston.....	25,732 "
Boston.....	11,758 "
Mobile.....	11,261 "
Savannah.....	4,369 "
San Francisco.....	4,011 "
Total.....	952,489 "

The following table exhibits the exports of coffee, in bags, from Brazil to New Orleans, from 1842 to 1852, both inclusive:

1842.....	126,210
1843.....	85,488
1844.....	161,082
1845.....	167,669
1846.....	215,031
1847.....	205,111
1848.....	239,371
1849.....	299,129
1850.....	229,013
1851.....	274,690
1852.....	346,262

It is stated that the first importation of coffee into New Orleans direct from Brazil took place in 1835; and that from that year to 1840, or during a period of six years, the quantity thus directly imported from Brazil did not exceed 44,000 bags; while in the year 1840 alone there were received at that port from Cuba 91,000 bags. Cuba, however, has now almost entirely ceased to export coffee—has ceased, at least, to any considerable extent.

COMPARATIVE STATEMENT SHOWING THE QUANTITIES OF COFFEE EXPORTED FROM RIO DE JANEIRO FROM 1851 TO 1855, BOTH INCLUSIVE.

Years.	Bags.	Pounds.
1851.....	2,033,743	325,398,880
1852.....	1,886,069	301,457,440
1853.....	1,637,063	261,920,080
1854.....	1,987,632	318,021,120
1855.....	2,409,099	385,455,840
Total.....	9,964,746	1,594,359,360
Annual average.....	1,992,949	318,871,872

These returns show great uniformity, and go to prove that the trade of Rio Janeiro in the great staple of Brazil has attained for the time its maximum. The exports to New Orleans for the same period, however, show a progressive increase.

From official publications received as these pages go to press, it appears that the general foreign commerce of Brazil in 1854 was unusually prosperous. The agricultural productions of the empire, the chief basis of its foreign trade, exceeded those of the preceding year, the returns for the port of Rio de Janeiro reaching as high as 338,000,000 francs; showing an excess over those of the preceding year of 13,000,000 francs. The total number of vessels that entered the port of Rio de Janeiro in 1854 was 1064, and in 1855, 1285; while in 1853 there entered only 1054 vessels; showing an increase for 1854 of 10, and for 1855 of 231 vessels over 1853. The following statement shows how the navigation of this port was distributed in 1853 and 1854:

Nationality	No. of Vessels.	
	1853.	1854.
United States.....	279	281
England.....	264	260
Portugal.....	123	123
France.....	54	63
Hanse Towns.....	72	63
Spain.....	43	44
Sweden and Norway.....	72	44
Montevideo.....	22	37
Buenos Ayres.....	18	43
Belgium.....	36	32
Denmark.....	61	32
Sardinia.....	12	10

For many years the United States occupied the first rank in the navigation of Rio de Janeiro. It will be perceived from the preceding table that England claims the precedence in 1854, a fact which is attributed to the falling off in that year in the importation of flour from the United States. The new line of steamers, established in 1853 between Liverpool and Rio de Janeiro, touching at the same places as the Southampton line—namely, Lisbon, Madeira, Teneriffe, St. Vincent, Pernambuco, and Bahia—notwithstanding the fears as to its success, continued, in 1854, its monthly service with activity and profit. Besides these two lines of steamers, a company, composed of Brazilian and Portuguese merchants, has established a line between Lisbon and Rio, touching at the same points; but this line had in 1854 but one steamer in service, the voyages of which, however, proved very successful.

The port of Rio de Janeiro is becoming yearly more important as the centre of South Atlantic commerce. The number and tonnage of vessels which entered in 1855 were augmented a third when compared with 1845, and more than a half over the number and tonnage of vessels in 1835. From 1850 to 1854 the average increase during the five years was nearly a fifth. The following statement exhibits this progressive movement:

Years.	Vessels.	Tons.
1835.....	572	134,912
1845.....	878	158,949
Average 1850-'54.....	..	214,238
1855.....	1285	380,872

These figures exhibit the results of foreign navigation only. The coasting trade is shown as follows:

Years.	Vessels.	Tons.
1835.....	1920	115,117
1845.....	2602	168,872
Average 1850-'54.....	2390	230,223
1855.....	3068	318,229

The employment of steamboats in the navigation of Rio de Janeiro is yearly extending. In 1845 the number of steamboats engaged in the trade of the port of Rio was 239. In 1855 the number reached 431. Fourteen companies, owning thirty-nine steamboats, with an aggregate of 2428 horse power, keep up the communications between Rio de Janeiro and the other maritime towns of the empire. There are also four tow-boats, with an aggregate of 187 horse power. The following tabular statement exhibits the value of leading importations into Rio de Janeiro in 1854:

1st.—MERCHANDISE.	
Liquors, wines, tea, etc.....	17,000,000 francs.
Provisions, flour, butter, etc.....	24,000,000 "
Lamp-oil, fat, tallow, soap, etc.....	4,000,000 "
Hatters' wares, dry goods, laces, fancy ware, etc.....	9,000,000 "
Tissues of cotton.....	31,000,000 "
" wool.....	7,000,000 "
" linen.....	8,000,000 "
Paper, books, etc.....	4,000,000 "
Skins and leather, shoes, etc., saddlery, etc.....	4,000,000 "
Broom wares, willow wares, woods, furniture, etc.....	8,000,000 "
Pottery wares, porcelain, etc.....	8,000,000 "
Watches, jewelry, hardware, etc.....	10,000,000 "
Coal, metals, manufactured and wrought, etc.....	11,000,000 "
Saltpetre, powder, arms, sea-stores.....	5,000,000 "
Sundries.....	19,000,000 "

22.—COUNTRIES FROM WHICH IMPORTED.

AFRICA.....	350,000 francs.
AMERICA:	
United States.....	18,000,000 "
Buenos Ayres.....	1,400,000 "
Montevideo.....	1,600,000 "
Chili.....	700,000 "
CENTRAL EUROPE:	
England and Possessions.....	56,000,000 "
Austria.....	2,000,000 "
Belgium.....	5,000,000 "
France.....	32,000,000 "
Switzerland.....	4,000,000 "
SOUTHERN EUROPE:	
Spain.....	5,000,000 "
Portugal.....	14,000,000 "
Sardinia.....	3,000,000 "
Sicily and Naples.....	400,000 "
Turkey and Levant.....	300,000 "
NORTHERN EUROPE:	
Holland.....	1,300,000 "
Hanse Towns.....	12,000,000 "
Denmark.....	3,000,000 "
Sweden and Norway.....	8,000,000 "
Prussia.....	1,700,000 "
Fisheries.....	100,000 "
Other places.....	4,000,000 "

As regards the export trade of Rio de Janeiro in 1854, the returns at hand are not so minute. Of coffee, however, the chief article of export from the Brazilian market, there were exported this year 1,987,632 bags, weighing an aggregate of 318,021,120 lbs., of which 899,900 bags, or 143,984,000 lbs., were sent to the United States. The quantity exported the previous year was 1,637,663 bags, or 262,026,080 lbs. The quantity of sugar exported was less than that of 1853—namely, 5905 hhds. and 1739 barrels.

The following *resumé* exhibits the total results of 1854:

	Imports.	Exports.	Total.
	Francs.	Francs.	Francs.
Value in 1854....	171,000,000	167,000,000	338,000,000
Value in 1853....	164,000,000	161,000,000	325,000,000
Increase in 1854	7,000,000	6,000,000	13,000,000

The total flour imports at Rio for 1856 were 317,404 barrels, of which 301,729 barrels were from the United States. Of this amount 151,716 barrels were shipped coastwise or re-exported after reaching Rio.

Total import, 1857.....	317,404
Stock in all hands January 1, 1856.....	80,000
	397,404
Shipped coastwise and re-exported, 1856..	151,716
Stock in all hands January 1, 1857.....	60,000
	211,716

Consumption of 1856.....bbls. 135,687

The imports of flour from all sources last year exceed those of the preceding year 16,536 barrels, while the imports from the United States show an increase for the same period of 74,423 barrels. In fact, the tables for ten years show a somewhat irregular but decisive transfer of the flour trade almost entirely to the hands of the United States.

The total exports of coffee from Rio for the year 1856 show as follows:

To the United States.....	1,169,121 bags.
To Europe.....	889,885 "
To other points.....	40,120 "
Total.....	2,099,126 "

EXPORTS OF 1855.

To the United States.....	1,139,155 bags.
To Europe.....	1,242,326 "
Elsewhere.....	24,343 "
Total.....	2,406,809 "

EXPORTS OF 1854.

To the United States.....	891,705 bags.
To Europe.....	1,064,682 "
Elsewhere.....	87,319 "
Total.....	1,993,706 "

The total exports of sugar for 1856 were: Cases, 2304; barrels, 25,581; showing a decrease from the preceding year of 2381 cases and 12,155 barrels. The export of hides for 1856 was 64,861 pieces, showing a large decline from the two preceding years.

Of the coffee exports to the United States in 1856,

Baltimore received 188,011 bags; New York, 362,248; Philadelphia, 91,985; Boston, 5001; and New Orleans, 404,502.

The foreign commercial arrivals in 1856 number 1050 vessels, of 335,386 tons, of which thirty-two were from Baltimore, thirty from New York, twenty-eight from Richmond, fifteen from New Orleans, fourteen from Boston, eleven from Philadelphia, two from Charleston, two from the Rio Grande, and one from Wilmington. The number of foreign departures in 1856 was 996 vessels, of 426,908 tons, of which 640 were with produce, 34 with foreign merchandise, 140 with their inward cargoes, and 182 in ballast proceeded to other ports of the empire. The coasting trade outward was conducted, exclusively of 303 steamboats, by 2276 vessels, of 253,736 tons burden. The coasting trade inward was conducted by 2222 sailing vessels and 305 steamboats, of 276,967 tons.

The revenue collected at the custom-house of Rio exhibits an increase corresponding with that of the import trade of this port. This is shown by the following comparative statement of receipts:

1835.....	3,553,000 milreas.
1845.....	8,043,000 "
1855.....	13,077,000 "

The last year (1855) does not exhibit the maximum. This was reached in 1852, the amount that year exceeding 14,775,600 milreas, or over \$7,000,000.

Immigration.—The immigration returns of Rio furnish the following statistics:

Years.	Entered.	Departed.
1851.....	9,585	1549
1852.....	6,870	1887
1853.....	9,645	1981
1854.....	8,673	1773
Aggregate.....	34,773	7181
Annual average.....	8,693	1795

The immigrants are very generally Portuguese,

who are employed in the mechanic trades, in commercial pursuits, as domestics, etc. Some hundreds are sent to the new colonies, where they constitute almost the only aid which Brazilian agriculture receives annually from foreigners. There arrived in 1851 and in 1852 a large number of German settlers, engaged in Europe by the agents of the colonial directors. On their arrival these colonists became dissatisfied, and hence German immigration has almost entirely ceased. In 1851, there arrived of this class of immigrants 2958 persons; in 1852, 1047 persons; in 1853, 349 persons; and in 1854, only 295.

General Remarks.—On the 30th of April, 1854, the first railroad in Brazil was thrown open to the public, the inauguration taking place in the presence of their Imperial Majesties, and an immense concourse of the leading personages of the empire. The general navigation and commerce of the southern provinces, as well as the general trade between them and the United States, are decreasing; owing, it is alleged, to the settlement of the difficulties that existed on the River Plata. The more liberal tariff, both on imports and exports, attracts a large bulk of the trade of these provinces to that quarter. A treaty between the United States and Brazil is regarded as the only means of promoting the general commerce and navigation between the two countries. There exists no commercial treaty between the United States and Brazil; but Brazilian vessels, with their cargoes, are admitted on an equal footing with vessels of the United States as respects tonnage and import duties, and all other charges.

The ports of Brazil open to direct foreign trade are: Para, Maranhão, Parnahiba, Fortaleza (Ceara), Aracaty (Ceara), Rio Grande North, Parnahiba, Pernambuco, Maceyo (Alagoas), Lanangeiras (Sergipe), Bahia, Espírito Santo, Rio de Janeiro, Santos, Paranaigua, St. Catherine, Rio Grande, São Borge (R. G. South), Porto Alegre (R. G. South).

COMMERCE OF THE UNITED STATES WITH COAST OF BRAZIL AND DEPENDENCIES, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	\$885,348	\$496,412	\$1,381,760	\$608,126	\$156,999	\$19,500	22,264	314
1822.....	1,217,411	246,518	1,463,929	1,486,567	71,503	23,301	549	549
1823.....	1,062,209	279,181	1,341,390	1,214,810	8,615	46,215	22,616	...
1824.....	1,099,764	602,160	2,301,904	2,074,119	89,219	218,732	38,845	507
1825.....	1,641,296	752,458	2,393,754	2,156,707	98,343	197,188	33,988	707
1826.....	1,597,344	603,005	2,200,349	2,156,678	113,090	104,771	34,372	1,034
1827.....	1,436,433	377,373	1,863,806	2,060,971	1,675	232,232	37,709	381
1828.....	1,505,779	432,936	1,938,715	3,097,752	135,183	181,577	40,114	...
1829.....	1,516,760	419,667	1,926,427	2,635,467	73,612	76,886	40,578	...
1830.....	1,600,999	242,283	1,843,288	2,491,400	1,470	84,636	44,450	601
Total.....	\$14,206,833	\$4,501,989	\$18,708,822	\$19,870,657	\$678,106	\$1,234,809	343,557	4,063
Sept. 30, 1831.....	\$1,652,193	\$423,902	\$2,076,095	\$2,375,829	\$216,375	\$23,147	36,352	208
1832.....	1,232,077	822,717	2,054,794	3,890,845	381,503	20,671	30,439	356
1833.....	2,474,555	797,546	3,272,101	5,089,633	156,840	11,458	41,735	1,015
1834.....	1,536,097	473,254	2,059,351	4,729,069	60,084	31,735	37,002	1,977
1835.....	1,810,791	797,865	2,608,656	5,574,466	343,931	66,605	39,263	2,554
1836.....	1,732,741	1,362,195	3,094,936	7,210,190	900,324	6,940	43,538	3,062
1837.....	1,501,217	441,992	1,943,209	4,091,983	83,531	40,617	19,576	4,107
1838.....	2,064,957	562,237	2,627,194	3,191,238	208,706	123,221	30,623	1,601
1839.....	2,133,997	503,488	2,637,485	5,262,955	154,427	4,838	39,431	3,183
1840.....	2,145,868	360,711	2,506,574	4,927,236	102,174	14,922	34,189	1,764
Total.....	\$18,164,488	\$6,545,907	\$24,710,395	\$47,274,464	\$2,637,875	\$943,876	360,779	19,824
Sept. 30, 1841.....	\$2,941,991	\$575,282	\$3,517,273	\$6,302,453	\$255,308	\$21,352	47,624	3,101
1842.....	2,225,571	375,931	2,601,502	5,048,614	81,734	50,345	38,773	2,443
9 mos., 1843*.....	1,568,584	223,704	1,792,288	3,847,658	22,400	50,347	32,066	1,635
June 30, 1844.....	2,409,418	408,384	2,818,252	6,883,806	142,635	28,609	46,250	1,816
1845.....	2,413,567	424,383	2,837,950	6,084,599	181,159	7,477	40,716	2,077
1846.....	2,754,012	389,383	3,143,395	7,441,803	235,031	2,532	48,026	4,682
1847.....	2,566,938	376,840	2,943,778	7,036,160	149,240	26,535	39,281	3,367
1848.....	3,092,736	279,698	3,372,434	7,992,648	163,072	17,503	57,206	6,036
1849.....	2,888,380	264,597	3,152,977	8,494,368	117,604	9,361	56,335	6,028
1850.....	2,723,768	473,347	3,197,114	9,324,420	279,690	2,166	58,113	3,560
Total.....	\$25,534,964	\$3,791,999	\$29,326,963	\$60,316,938	\$1,628,066	\$216,288	464,405	34,714
June 30, 1851.....	\$3,128,956	\$623,960	\$3,752,916	\$11,525,364	\$430,262	\$6,511	63,020	7,648
1852.....	2,782,179	288,803	3,071,042	12,230,283	177,406	46,317	51,454	5,718
1853.....	3,734,190	260,254	3,994,444	14,817,561	399,029	9,000	61,735	6,158
1854.....	4,046,857	192,384	4,239,241	14,110,387	643,114	24,400	60,348	2,829
1855.....	3,973,219	288,054	4,261,273	15,218,825	141,525	1,471	75,066	2,674
1856.....	4,858,125	236,779	5,094,904	19,202,657	233,593	...	74,280	2,800
1857.....	5,265,166	277,041	5,542,207	21,400,733	146,583	...	84,712	3,186

* Nine months to June 30, and the fiscal year from this time begins July 1.

Anchorage Dues.—\$500 reas (about 16½ cents) per ton of Brazilian measurement. Vessels arriving and departing in ballast pay only half anchorage; and those calling merely for supplies are exempt from anchorage duty. Vessels which make more than two voyages to ports of Brazil during a twelvemonth are exempt from the payment of anchorage dues on all voyages over that number within the same year; vessels, therefore, pay no more than 600 reas annually (33½ cents), be the number of voyages what it may. For passports to leave, from 4 to 8 milreas (from \$2 22 to \$4 44); for pilotage inward 30 milreas (\$16 67), but no obligation to take pilots inward; for pilotage outward 70 milreas (\$38 88), and for canoe-hire, 6 milreas (\$3 33). No vessel is allowed to leave port without a pilot, nor to get under weigh after sunset, or before sunrise. Hospital money, 4 milreas on the vessel (say \$2 22), and 640 reas (or about 36 cents) for each of the crew. The charge for stamps varies, being not less than \$1. A consular return from Pernambuco, under date of January, 1855, gives each specific item of charges upon an American bark of 200 tons burden which entered that port laden with flour, and leaving with a cargo of sugar. The total, inward and outward, including the charges for lighterage, labor, craneage, etc., which are not on government account, amounted to \$571 45. Of this there was paid on government account \$192 45—the remainder belonging to the other class of charges.

Tariff.—The market prices in Brazil are taken as the basis for the duties imposed by the present tariff. The dispatch by invoice will take place when the goods imported have no fixed duties in the tariff, or when they are subject only to a tax for warehousing and clearing out.

For the dispatch of goods subject to *ad valorem* duties the merchant or consignee is obliged to show a declaration stating the prices of his goods, and the original invoice duly certified. In want of the original invoice may be presented two certificates by two brokers, or, in the absence of brokers, of two merchants of the place, showing the current prices of the goods.

The value of the goods subject to *ad valorem* duties will be that of the Brazilian market, as before said; deductions made of the respective duties, or the value of the original invoice, with the addition of 10 per cent. —*United States Com. Relations.*

Remarks on the Trade of Brazil.—This vast empire comprehends the great eastern section of South America. Its length from north to south is computed at about 2600 miles, and its greatest breadth at 2540 miles. The entire area comprises about 2,973,400 square miles, or over ten times the area of Texas, and about seventy times that of Portugal. The climate is generally favorable to agricultural pursuits, the soil being fertile, and in many parts of the empire, particularly in the provinces, abounding with valuable mineral resources. The staple productions of Brazil are such as must necessarily attract an extensive foreign trade; though it is stated that anterior to 1809 she had no direct intercourse with other nations—the mother country, under the policy which dictated her colonial system, excluding from the ports of her extensive colony all foreign flags. The dangers which menaced, and the domestic troubles which agitated Portugal at this period, resulted in the flight of the royal family to Brazil. With the court were introduced new tastes, new ideas, and a more liberal policy in regard to foreign intercourse. The ports of Brazil were at once opened to foreign commerce, and since that period the culture of the staple productions has kept pace with the increased demands of foreign markets. The great staple of Brazil is coffee, though vegetables, fruits, wheat, barley, rice, maize, and tobacco are extensively produced in the southern or temperate provinces; while within the tropics the chief productions are mandioca, rice, bananas, plantains, beans, sweet potatoes, coffee, sugar, cotton, and cocoa—the last four for

exportation. The forests supply the very best timber for ship-building, and almost every variety of wood for cabinet-work and dyeing purposes; among the latter, Brazil-wood, rosewood, and Campeachy-wood are important articles of commerce. Travelers who have minutely explored the interior of Brazil describe no less than 219 varieties of timber, and many of them largely enter into the commercial resources and domestic wealth of that empire. Since the acknowledgment of its independence, the commercial regulations of Brazil have been marked by a spirit of liberality and of freedom from unnecessary and exclusive restrictions. The duties on imports and exports are based upon the valuation principle, and are designed solely with a view to supply the necessary revenues for the support of the government; and the port, pilot, and other navigation charges seldom exceed the actual requirements of a just and liberal intercourse with foreign nations. Indeed, the commercial policy of Brazil seems eminently adapted to a country of such boundless extent and so sparsely populated, as labor is sure to find a remunerative reward, in whatever mode it may seek to develop the exhaustless resources of the empire, in the free competition to which it invites the enterprise and exchanges of foreign nations. The entire population amounts to about six millions—being two persons to the square mile; of which at least three-fifths are blacks. The commercial treaties negotiated by the government of Brazil with foreign countries are generally based upon the principle of reciprocity. That with the United States was concluded December 12, 1828, and established between the two countries freedom of commerce and entire reciprocity of trade and navigation—certain special favors being reserved to Portugal, owing to the former relations between that country and Brazil. This treaty contained the usual stipulation requiring twelve months' notice to be given by either party desiring to terminate the same; and such notice having been given by the government of Brazil, and the twelve months having expired, the treaty is no longer of force. The commercial relations between the two countries were, however, placed upon a footing of similar reciprocity to that guaranteed by the treaty, by virtue of the proclamation of the President of the United States, bearing date November 4, 1847, issued conformably to the provisions of an act of Congress passed on the 24th day of May, 1828.

As the trade between the two countries is placed much on the same footing of reciprocity as that guaranteed by the treaty, it is deemed not irrelevant to present a synopsis of the provisions of that treaty, so far as they relate to commerce.

The contracting parties are placed on the footing of the most favored nation in respect to commerce and navigation, the relations between Portugal and Brazil excepted. Free commercial intercourse, on the basis of perfect equality and reciprocity between the citizens and subjects of the two countries, is established, the coasting trade being reserved by each government to its own flag. The vessels of both countries are placed on the same footing in the ports of each, as to the importation, exportation, or re-exportation of foreign goods, from or to any foreign country; the United States agreeing to consider a vessel as Brazilian when the proprietor and captain are subjects of Brazil and the papers are in legal form. The contracting parties agree that no higher or other duties shall be imposed on the importation of any articles, the produce or manufactures of either country, into the ports of the other, than are or shall be payable on the like articles, being the produce or manufactures of any other foreign country; and export duties shall be the same in each to the ports of the other as when the articles are exported to any other foreign country. It is agreed that it shall be wholly free for all merchants, commanders of ships, and other citizens or subjects of both countries, to manage themselves their own business in all the ports

and places subject to the jurisdiction of each other, as well with respect to the consignment and sale of their goods and merchandise by wholesale or retail, as with respect to the loading, unloading, and sending off their ships; they being in all these cases to be treated as citizens or subjects of the country in which they reside, or, at least, to be placed on a footing with the subjects or citizens of the most favored nation. Vessels in distress, pursued by pirates or enemies, etc., belonging to either of the contracting parties, to be received and protected in the ports, rivers, bays, etc., of the other.

Foreign Commerce of Brazil.—From official documents, it appears that of the whole commerce of Brazil, Rio de Janeiro holds 56 per cent.; Bahia 12 per cent.; Pernambuco 12 per cent.; Alagoas, Santo Paulo, and Santo Pedro do Sul, 8 per cent.; Para, Maranhã, and Santa Catarina, each 4 per cent. The species of merchandise which constitutes the leading imports into Brazil are cottons; of which Rio de Janeiro, Bahia, and Pernambuco usually receive in value about \$47,000,000; wools about \$10,000,000; silks, \$8,000,000. After these rank next in commercial importance provisions, flour (the great bulk of which comes from the United States); wines and other liquors; metals, crude and manufactured; watches, jewelry, arms, ammunition, etc. etc. The principal exports are coffee (which is shipped from Rio) and sugar, (principally from Bahia and Pernambuco). Full a moiety of the former goes to the United States, and the latter chiefly to England, Trieste, and the Hanse Towns. The precious metals next follow in the rank of exports; then diamonds, skins (otter), hides, cotton, and tobacco. The two last, as well as sugar, though not to so great an extent, are either stationary or declining, as respects the quantities annually exported.

The following comparative statements give the figures for two years, 1851 and 1852:

	1851.	1852.
Imports	\$32,300,000	\$34,200,000
Exports	31,920,000	32,680,000
Total	\$64,220,000	\$66,880,000

The proportion which the United States had in the trade of these two years, appear as follows: Exports, 1851, 36 per cent.; 1852, 37 per cent. Imports, 1851, 12 per cent.; 1852, 9 per cent.

Fiscal Years.	DUTIES OF				Total.
	Import.	Export.	Navigation.	Internal and Extraordinary.	
	Reas.	Reas.	Reas.	Reas.	Reas.
1849-'50	17,830,029/000	3,780,453/000	345,580/000	2,125,817/000	24,081,879/000
1850-'51	20,471,262/000	4,706,696/000	515,581/000	2,237,125/000	27,930,664/000
1851-'52	24,793,046/000	4,527,772/000	546,944/000	2,305,810/000	32,233,572/000
Increase in 1852 over 1851	4,321,784/000	.....	31,363/000	128,685/000	4,392,408/000
At the port of Rio Janeiro in 1851-'52	14,049,906/000	2,556,648/000	282,843/000	1,739,347/000	18,666,744/000

Coffee.—Coffee is the leading staple of Brazil. Formerly, and for many years, San Domingo was the source from which Europe derived its supplies of this article—the quantity exported from that island at one time having reached as high as 77,000,000 lbs.; and had not the revolution broken out in 1792, it was estimated that there would have been exported that year about 84,000,000 lbs. That event, combined with other obvious causes, produced a total cessation in the supplies from this source. Being driven from St. Domingo, the culture of coffee at once became a leading branch of industry in Cuba, Jamaica, Surinam, and Java, and was at a subsequent period introduced with much success into Brazil. After the flight of John VI. from Portugal to Brazil, in 1808-'9, the port of Rio de Janeiro was opened to foreign trade, and coffee soon became one of the leading staples of export. At that period the annual crop did not exceed 30,000 bags, or 4,800,000 lbs. In 1820 it reached as high as 100,000 bags, or 16,000,000 lbs. In 1817 and 1821 the supply was so small, that in the market of London it rose as high as 87½ cents per lb. This of course stimulated its cultivation in Brazil. The ruin of San

ANALYSIS OF IMPORTS (BY COUNTRIES).

	1851.	1852.
	Francs.	Francs.
England	60,000,000	74,000,000
France	29,000,000	33,000,000
United States	27,000,000	24,000,000
Hanse Towns	8,000,000	12,000,000
Austria	5,000,000	6,000,000
Belgium	6,000,000	6,000,000
Switzerland	4,000,000	5,000,000

ANALYSIS OF EXPORTS (BY MERCHANDISE).

	1851.	1852.
	Francs.	Francs.
Coffee	132,000,000	140,000,000
Sugar	3,000,000	5,000,000
Hides	3,000,000	1,000,000
Woods	3,000,000	1,000,000

ANALYSIS OF EXPORTS (BY COUNTRIES).

	1851.	1852.
	Francs.	Francs.
United States	68,000,000	71,000,000
England	25,000,000	23,000,000
Hanse Towns	12,000,000	3,000,000
France	11,000,000	12,000,000
Belgium	7,000,000	8,000,000
Austria	8,000,000	7,000,000

The French official report, from which the preceding summary is derived, states that there were received from the United States 230,000 barrels of flour, and from Europe 30,000 barrels; of which 15,000 barrels were shipped from Marseilles, and the remainder from Trieste and Antwerp. Butter, salt, dried beef from the Plata, gin, dried and preserved fruits, fish-oil, linseed oil, &c., maintained the figures of the preceding year; but in the articles of beer, soap, wax and other candles, tea, and codfish, there was a diminution. The following statement shows the relative share assigned to each country in the general importation of 1852:

	Imports.	Exports.
Great Britain	38,100	19,000
France	18,100	19,000
United States	13,100	38,000
Germany, Belgium, Holland, and Switzerland	19,100	25,000
Portugal, Spain, and Italy	12,100	13,000

The following tabular statement will be interesting as exhibiting the custom-house revenues of Brazil for the periods designated, and the sources whence derived. The present value of the rea in United States currency is, 1000 reas or 1 milrea=55 cents.

Domingo transferred, also, the culture of indigo to British India, and its culture was at the same period abandoned in Brazil. Previously to the revolution in Hayti there was exported from that island 76,835,219 lbs.; in 1818 the exports fell to about 26,000,000 lbs.; and now they do not exceed thirty-five to forty millions. In 1834, the year in which the emancipation act went into effect, Jamaica exported to England 18,268,888 lbs. of coffee; five years later, the quantity had fallen to 9,423,197 lbs. The decline in the cultivation of coffee in this island, and the unrestricted supply of African slave labor in Brazil, combined to give a powerful impulse to its culture in that empire. Hence, in 1830, the crop reached as high as 400,000 bags, or 64,000,000 lbs. The coffee-growing districts in Brazil are divided into Serra Abaixo (below the mountains) and Serra Acima (above the mountains). The cost of transporting the coffee from the plantation to market is about 2 cents per lb.; and the actual cost of production is stated to be about 4½ cents per lb. The quantity produced in the empire, year by year, is not officially ascertained; but it has been approximated with sufficient exactness for practical purposes.

Coffee was first imported into the United States from Brazil in 1809, the first importation consisting of 1809 bags. From 1809 to 1849 the imports of coffee into the United States had increased from 1809 bags to over 100,000,000 lbs.; and in 1855 it reached as high as 135,369,383 lbs. The following comparative tabular statement shows the quantities of coffee im-

ported into the United States from Brazil, and the quantities of flour exported from the United States to Brazil, with the total annual values of each respectively; and the current price of flour per barrel, and of coffee per lb., for each year, for a period of eleven years—from 1844 to 1854, both inclusive, showing a greater rate of increase in coffee over flour:

Years.	Coffee to U. S. from Brazil.	Values.	Flour from U. S. to Brazil.	Values.	Value of Coffee per lb.	Value of Flour per bbl.
	Pounds.	Dollars.	Barrels.	Dollars.	Cents.	Dols. Cts.
1844.....	95,291,484	5,802,901	288,181	1,493,413	61 ³ / ₄	5 18 ³ / ₄
1845.....	78,553,616	4,401,269	209,845	1,083,318	53 ³ / ₄	5 16 ³ / ₄
1846.....	97,535,697	5,964,513	296,460	1,675,756	61 ³ / ₄	5 65 ³ / ₄
1847.....	94,916,629	5,673,690	254,300	1,562,979	53 ³ / ₄	6 14 ³ / ₄
1848.....	110,927,284	5,969,993	294,816	1,952,212	51 ³ / ₄	6 62 ³ / ₄
1849.....	122,581,183	6,776,727	314,808	1,885,203	51 ³ / ₄	5 98 ³ / ₄
1850.....	90,319,511	7,422,608	292,464	1,649,696	81 ³ / ₄	5 64 ³ / ₄
1851.....	107,578,257	8,881,105	369,975	2,021,631	81 ³ / ₄	5 46 ³ / ₄
1852.....	138,156,506	10,064,740	345,025	1,639,285	77 ³ / ₄	4 72 ³ / ₄
1853.....	153,338,464	11,844,414	433,843	2,434,187	73 ³ / ₄	5 61 ³ / ₄
1854.....	116,794,773	10,329,992	315,319	2,417,685	83 ³ / ₄	7 66 ³ / ₄

Sugar.—A glance at the preceding tables will show that coffee is the great staple export of Brazil to the United States, the produce of which is most steadily and rapidly advancing. The supply will doubtless always be equal to the demand, owing, in a great measure, to the facility and comparatively small expense attending its production; while the culture of sugar and cotton depends on contingencies, both temporary and permanent, which must materially affect the quantities annually produced. These contingencies may be briefly stated. The culture of sugar depends as much on the science of the manufacturer as on the capital and labor of the planter. Before it can reach the market of Rio, or of any of the other ports of the empire, it requires a vast expenditure of labor, the most assiduous attention, and an outlay of capital that absorbs fully one half, if not more, of the gross yield. Besides, the abolition of the slave-trade, and the severity with which the present laws of Brazil punish those detected in that traffic, must produce decided effects upon the production of those staples in the culture of which slave labor is indispensable.

A French work on statistics, recently published, furnishes the following data relative to the present number of slaves in Brazil: From a publication made in 1843 by Mr. Saturnino de Souza e Oliveira, chief officer of the customs in Brazil, the number of slaves has been computed at three millions, who are thus divided as to employment:

SLAVES IN BRAZIL.	
Employed on the estates.....	2,500,000
Domestics.....	100,000
Without any special employment.....	200,000
Hired out, and others.....	200,000
Total.....	3,000,000

The operation of the present rigid measures in force

TABLEAU STATEMENT SHOWING THE QUANTITIES OF COTTON EXPORTED FROM BRAZIL TO GREAT BRITAIN FROM THE YEAR 1840 TO 1855, AND ALSO TO FRANCE, SPAIN, PORTUGAL, AND BELGIUM, FOR EACH PORTIONS OF THAT PERIOD AS CAN BE SUPPLIED FROM OFFICIAL DATA—BLANKS INDICATING THE ABSENCE OF SAID DATA.

Years.	Great Britain.	France.	Spain.	Portugal.	Belgium.
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1840.....	14,779,171	.....	.....	.....	.....
1841.....	16,671,348	.....	.....	.....	.....
1842.....	15,222,828	.....	.....	.....	.....
1843.....	18,675,123	.....	.....	.....	.....
1844.....	21,084,744	.....	.....	.....	.....
1845.....	20,157,633	.....	.....	.....	.....
1846.....	14,746,321	.....	.....	.....	.....
1847.....	19,666,922	.....	.....	.....	.....
1848.....	19,971,878	.....	.....	.....	.....
1849.....	30,738,133	.....	832,604	.....	14,690
1850.....	30,299,982	.....	.....	.....	None.
1851.....	19,339,104	1,232,000	.....	.....	None.
1852.....	26,506,144	930,517	2,291,578	1,806,286	None.
1853.....	24,190,628	631,829	2,351,279	.....	None.
1854.....	19,703,600	287,802	.....	2,673,766	19,991
1855.....	24,577,952	400,000	.....	1,767,445	.....
Aggregate.....	336,631,011	.....	.....	.....	.....
Annual average.....	21,033,438	.....	.....	.....	.....

in Brazil in respect to the slave-trade is seen in the following table, compiled from an American authority:

SLAVES IMPORTED INTO BRAZIL FROM AFRICA.

1842.....	17,435	1847.....	50,172
1843.....	19,055	1848.....	60,000
1844.....	22,847	1849.....	54,000
1845.....	19,453	1850.....	23,000
1846.....	50,324	1851.....	3,287

The figures for 1851 evidence the vigilance of the government in the detection of those engaged in this traffic. It may be remarked, that of the 3287 given for 1851, 1006 were recaptured by the Brazilian cruisers, and declared free.

How long, under these circumstances, sugar and cotton shall continue to be classed among the staples of Brazil, is scarcely left to conjecture.

QUANTITIES AND VALUES OF SUGAR IMPORTED INTO THE UNITED STATES FROM BRAZIL.

Years.	Pounds.	Values.
1844.....	6,258,288	\$2,300.00
1850.....	10,100,618	418,998
1851.....	15,043,677	518,401
1852.....	19,738,093	630,700
1853.....	28,042,205	968,911
1854.....	11,118,223	300,942
1855.....	8,579,707	296,564

Cotton.—As regards the cultivation of cotton, it is well known that several insuperable drawbacks to its extension exist in Brazil. Among these may be named the ravages of insects, the peculiarities of the climate, and the expense and difficulties attendant upon its transportation from the interior to the coast. Many years ago, it was ascertained in Brazil that the cotton-plant will not flourish near to the sea, and the plantations have, in consequence, receded further inland, as well to avoid this difficulty as to seek new and fresher lands.

The exportations of cotton from Brazil in 1843-'44 and 1853-'54 are stated by Brazilian official authorities as follows:

In 1853-'54.....	28,420,320 pounds.
In 1843-'44.....	26,056,160 "
Increase in ten years.....	2,364,160 "

In 1851-'52 the exportation amounted to 31,983,050 lbs., of which quantity Great Britain received 26,881,201 lbs., Spain 2,291,578 lbs., Portugal 1,896,286 lbs., and France 889,048 lbs. Of the total exportations in 1852-'53, Great Britain received, as appears from the same authorities, 22,575,122 lbs., Spain 2,351,279 lbs., Portugal 2,673,766 lbs., and France 543,611 lbs. The exports to Great Britain from Brazil began in 1781; and from that period to the present time the large bulk—at least four-fifths—of Brazilian grown cotton goes to that kingdom.—*Comm. Rel. U. S.*

The commerce of Brazil has sustained great injury from the wretched state of the currency and of the finances; the value of the former, which consists almost wholly of paper, being excessively depreciated and liable to extreme fluctuations, and the revenue being inadequate to meet the expenditure. Latterly, however, vigorous efforts have been made to increase the revenue; and it is hoped that in the event of the finances being placed on a better footing, measures may also be taken to improve the currency. We subjoin an account of the debt, etc., of the empire in 1851:

Foreign debt.....	£6,187,000
Local funded debt, 62,370,000,000 reis, at exchange 20d.....	7,540,000
Treasury bills afloat, about 2,000,000,000 reis, at exchange 20d.....	240,000
Estimated amount of notes in circulation (paper money) throughout the empire, 56,000,000,000 reis.....	6,700,000
	£20,667,000

or, in round numbers, the debts and liabilities of Brazil may be stated at £20,500,000 sterling. The foreign capital in the empire is computed to be about £10,000,000 sterling.

"The quantity of precious stones shipped is now very considerable. In most cases they are sent to a losing market; being, in fact, more valuable in Brazil than in London or Paris. Aquamarines (see BERYL) of a very large size have been found. In January, 1811, one was found in the Riberao das Americanas, near the diamond district, which weighed 15 lbs.; and in the same place, in the October following, one was discovered weighing 4 lbs. Topazes of fine quality, but seldom large, amethysts and chrysolites, are also articles of exportation; and at times some fine specimens of these gems are to be met with in the jewelers' shops. Correctly speaking, there are no trading companies in Rio de Janeiro; there is a society for effecting maritime assurances, but no other. The Bank of Brazil has had very extensive concessions made in its favor, and ought to be in a flourishing state. It has power of issuing notes; and all disputed moneys and property of the deceased and absent (*mortos e ausentes*) must be placed in its hands, and 2 per cent. per annum charged for the care and trouble. This, in addition to the interest which might be obtained for the deposit, would alone, in an active mercantile country, form no inconsiderable revenue. Specie is prohibited from being carried coastwise; merchants who wish to deposit cash in one of the northern ports, where the largest purchases are made, are therefore forced to take hand bills, and pay a premium for them, varying from 3 to 5 per cent. Some enormous capitals have been amassed; but generally the speculations of the native merchants are conducted on a very limited scale. The legal rate of interest is 6 per cent.; but money can seldom be obtained under 12."—CALDOLEIGH'S *Travels in South America*, vol. i. p. 58-59.

River. A river is a current of fresh water flowing in a bed or channel from its source to the sea. The term is appropriated to a considerable collection of

waters formed by the conflux of two or more brooks, which deliver into its channel the united streams of several rivulets, which have collected the supplies of several rills trickling down from numberless springs, and the torrents which carry off from the sloping grounds the surplus of every shower.

Rivers form one of the chief features of the surface of this globe, serving as voiders of all that is immediately redundant in our rains and springs, and also as boundaries and barriers, and even as highways, and in many countries as plentiful store-houses. They also fertilize our soil by laying upon our warm banks the richest mould, brought from the high mountains, where it would have remained useless for want of genial heat.

Rix Dollar (a corruption of German *reichsthaler*, or *dollar of the empire*). A silver coin of different values in different countries.—See COINS. By authority of Congress, the value of a rix dollar of Denmark is put at 100 cents, and the rix dollar of Bremen at 78½ cents.

Road, in Navigation, a bay or place of anchorage, at some distance from the shore, whither vessels occasionally repair to receive intelligence, orders, or necessary supplies, or to wait for a fair wind. The excellence of a road consists in its being protected from the reigning winds and the swell of the sea, in having a good anchoring-ground, and being at a competent distance from the shore. Those which are not sufficiently protected are termed *open roads*.

Roads, pathways formed through the country with more or less art and care, for facilitating the transit of individuals, carriages, etc., between different places. They are of every variety of form—from rude, narrow, rugged, and unformed paths, carried over mountains, interrupted by every petty rivulet, and almost impracticable to any but foot-passengers, to smooth, broad, and level ways, formed of solid materials, winding round or cut through mountains, and carried over swamps and rivers at an immense expense, and admitting of the easy passage of carriages and of all sorts of goods. The laying out of improved roads, and their construction, forms an important part of what is denominated the science of civil engineering. But as it would be quite foreign to our purpose to enter into any details as to the formation of roads, we shall satisfy ourselves with laying before the reader the following statements as to their importance in a commercial point of view.

Importance and Utility of improved Roads.—Next to the introduction of money, and weights and measures, the formation of good roads and bridges gives the greatest facility to commerce, and contributes more powerfully, perhaps, than any thing else to the progress of improvement. They have been denominated national veins and arteries; and the latter are not more indispensable to the existence of individuals than improved communications are to a healthy state of the public economy. It were vain to attempt to point out in detail the various advantages derived from the easy means of communication. There is not a single district that is not indebted to others for a large part of its supplies, even of some of the bulkiest commodities. Besides the coals, metals, minerals, timber, corn, etc., conveyed from one part of the empire to another by sea, immense quantities are conveyed from place to place in the interior by roads and canals; and every improvement effected in the means of conveyance has obviously the same effect upon the cost of commodities that have to be conveyed, as an improvement in the methods by which they are raised or manufactured. Wherever the means of internal communication are deficient in a country, the inhabitants must unavoidably disperse themselves over the surface. Cities were originally founded by individuals congregating more, perhaps, for the sake of mutual defense and protection than for any other cause. But in countries where good government is established, and property is secure, men resort to cities only from a sense of the advantages they afford. The

scale on which business is conducted in them presents facilities that can not be elsewhere afforded for making a fortune; and the extent to which the subdivision of employments is carried opens a field for the exercise of all sorts of talent; at the same time that it improves and perfects all sorts of arts, whether subservient to industrious or scientific pursuits, or to those of pleasure and dissipation. It is this that attracts the aspiring, the industrious, the gay, and the profligate, to cities—that fills them with the best and the worst part of the species. The competition that takes place in a great town, the excitement that is constantly kept up, the collision of so many minds brought into immediate contact, and all endeavoring to outstrip each other in their respective departments, develops all the resources of the human mind, and renders a great city a perpetually radiating focus of intelligence and invention. There are, however, considerable clogs upon the continued increase of cities. The food and fuel made use of by the inhabitants, and the raw products on which their industry is to be exerted, must all come from the country; and according as the size of a city increases, the distances from which its supplies have to be brought become so much the greater, that ultimately the cost of their conveyance may be so great as to balance or exceed the peculiar advantages resulting from a residence in town. Hence the impossibility of a large or even a considerable city existing any where without possessing extensive means of communication either with the surrounding country or with other countries; and hence, too, the explanation of the apparently singular fact, of almost all large cities having been founded on or near the sea, or a navigable river.

The influence that the growth of a large town has upon agriculture is great and striking. "In the neighborhood," says Paley, "of trading towns, and in those districts which carry on a communication with the markets of trading towns, the husbandmen are busy and skillful, the peasantry laborious; the land is managed to the best advantage, and double the quantity of corn or herbage (articles which are ultimately converted into human provision) raised from it, of what the same soil yields in remoter and more neglected parts of the country. Wherever a thriving manufactory finds means to establish itself, a new vegetation springs up around it. I believe it is true that agriculture never arrives at any considerable, much less at its highest, degree of perfection, when it is not connected with trade; that is, when the demand for the produce is not increased by the consumption of trading cities."—*Moral Philosophy*, book vi. c. 11. But the fact of their being mainly conducive to the growth of cities is not the only advantage which improved roads confer upon agriculture. Without their aid it would be impossible to carry to distant places sufficient supplies of such bulky and heavy articles as lime, marl, shells, and other manures necessary to give luxuriance to the crops of rich soils, and to render those that are poor productive. Not only, too, would inferior roads lessen the market for farm produce, and consequently the quantity raised, but a larger proportional number of horses or other cattle would be required to convey the diminished produce to market. It is plain, therefore, that good roads are both directly and indirectly a prime source of agricultural improvement; directly, by increasing the quantity and reducing the cost of manure, and by increasing the quantity and reducing the cost of conveying farm produce to market; and indirectly, by providing for the growth and indefinite extension of cities and towns, that is, of the markets for agricultural produce. Increased speed of conveyance is one of the principal advantages that have resulted from the formation of good roads, the invention of steam-packets, etc. Suppose that it takes two days to travel by an uneven, ill-made road between any two places, and that, by improving the road, the journey may be accomplished in one day; the effect is the same

as if the distance were reduced one half; and there is not only a great saving of time to travelers, but also a great saving of cost, from the more speedy conveyance of commodities. This latter is a point of much more importance than is commonly supposed. It is not possible to form any correct estimate of the value of the products that are constantly in the act of being carried from place to place. It is certain, however, that it is very great; and every additional facility of conveyance, by bringing such products more rapidly to their destination, and enabling them to be sooner applied to the purposes for which they are intended, renders large quantities of capital available for industrious purposes that would otherwise be locked up.—*See articles RAILROADS and CANALS.*

Rolling. In *Naval language*, the lateral oscillation of a vessel. This motion, which is often very great when the vessel is running before the sea, endangers the masts, strains the sides, and loosens the decks at the water-ways; it is also liable to cause the guns to break adrift. When the centre of gravity is too low, the oscillations begin and end violently. The changes in the stowage necessary to modify the nature or extent of the roll are made by seamen from experimental knowledge.

Rolling Tackle. A tackle or pulley hooked to the weather quarter of a yard, and to a lashing or strap round the mast near the slings or parrel of the yard. The object of it is to keep the yard constantly over to leeward, thereby depriving it of play and friction when the ship rolls to windward.

Rope consists of hemp, hair, etc., spun into thick yarn, of which several strings are twisted together by means of a wheel. When made very small, it is called a cord; and when very thick, a cable. All the different kinds of this manufacture, from a fishing-line or whip-cord to the cable of a first-rate ship of war, go by the general name of cordage.—*See CABLE.*

Roses (Oil, Essence, or Attar of), an oil obtained by distilling the leaves of damask roses. It is limpid, of a light orange color, and has an extremely grateful and powerful perfume. This, which is the most expensive article of Oriental luxury, used to be principally made at Tunis and Ghazipore, in India. But though it be still very extensively produced at these places, and more especially at the latter, what may be called the foreign demand for the oil is now almost wholly supplied by the districts of Eski Zara and Hassanlik, in Bulgaria. There the culture of roses is carried on upon a very large scale. Inasmuch, however, as it is said to require about 300,000 roses to yield an ounce of oil, the quantity produced does not exceed 4500 lbs. in a good, and 3000 lbs. in an ordinary year. The genuine article fetches an enormous price; and is in consequence very generally, or rather, we should say, uniformly adulterated. When the adulteration is effected by means of the oil of geraniums and other fine volatile oils, the fraud is not easily detected except by *connoisseurs*, unless the foreign matter be in excess. Sometimes it is alleged that attar of roses has been sold as genuine when above 80 per cent. of other oils was mixed up with it. That which is hawked about the streets of Constantinople and Smyrna is seldom anything better than olive oil scented with roses. Some of the more expert dealers in the article will tell within 2 per cent. the foreign oil in any parcel given them to examine. The value of the exports of this curious product from Turkey has been estimated at from \$400,000 to \$500,000 a year.—*BLANQUI, Voyage en Bulgarie; HUNT'S Merch. Mag.*

Rose-wood (Ger. *Rosenholz*; Fr. *Bois du rose, de Rhode*; It. *Legno rodie*; Sp. *Leno de rosa*; Port. *Páo de rosado*) is produced in Brazil; the Canary Islands; in Siam, whence it is pretty largely exported by the Chinese; and in other places. It is in the highest esteem as a fancy wood. The width of the log imported into this country averages about 22 inches, so that

it must be the produce of a large tree. Rose-wood has a slightly bitterish, somewhat pungent, balsamic taste, and fragrant smell, whence its name. It should be chosen sound, heavy, of the deepest color, in the largest pieces that can be procured, and of the most irregular, knotty grain. The small, light-colored, and large shivered pieces should be rejected. The more distinct the darker parts are from the purple red, which forms the ground, the more is the wood esteemed. It is usually cut into veneers of nine to an inch.—MILBURN'S *Orient. Comm.*, etc.

Rosin. This substance is obtained from different species of fir; as the *Pinus abies*, *sylvestris*, *larix*, *balsamea*. It is well known that a resinous juice exudes from the *Pinus sylvestris*, or common Scotch fir, which hardens into tears. The same exudation appears in the *Pinus abies*, or spruce fir. These tears constitute the substance called *thus*, or frankincense. When a portion of the bark is stripped off these trees, a liquid juice flows out, which gradually hardens. The juice has obtained different names, according to the plant from which it comes. The *Pinus sylvestris* yields common turpentine; the *larix*, Venice turpentine (see TURPENTINE); the *balsamea*, balsam of Canada. All these juices, which are commonly distinguished by the name of turpentine, are considered as composed of two ingredients; namely, oil of turpentine and rosin. When the turpentine is distilled, the oil comes over, and the rosin remains behind. When the distillation is continued to dryness, the residuum is known by the name of common rosin, or *colophonium*; but when water is mixed with it while yet fluid, and incorporated by violent agitation, the mass is called *yellow rosin*. During winter, the wounds made in the fir-trees become incrustated with a white, brittle substance, called *barras* or *galipot*, consisting of rosin united to a small portion of oil. The yellow rosin, made by melting and agitating this substance in water, is preferred for most purposes, because it is more ductile, owing, probably, to its still containing some oil. The uses of rosin are numerous and well known.—THOMSON'S *Chemistry*. See NAVAL STORES.

Rostock, the principal city of the Grand Duchy of Mecklenburg Schwerin, on the Warnow, about 9 miles above where it falls into the Baltic, lat. 54° N., long. $12^{\circ} 12'$ E. Population in 1837, 18,067. A large fair for merchandise is annually held at Whitsuntide; and there are wool fairs at other seasons of the year. The outport of Rostock is at Warnemünde, at the mouth of the Warnow. The depth of water at the latter varies from $10\frac{1}{2}$ to 12 feet; but when the west pier, now in the course of being constructed, has been completed, it is expected that the depth of water will be from 12 to 14 feet. The depth of water in the river from Warnemünde up to Rostock is usually from 8 to 9 feet; so that vessels drawing more than this must be lightened to get up to the latter. Rostock has a good harbor and commodious quays.

Imports.—The principal articles of import are sugar, coffee, and other colonial products; cottons, woollens, and hardware, with coal, earthen-ware, salt, iron, horses, etc., from England; hemp, flax, tallow, oil, sail-cloth, etc., from Russia; alum, deans, timber, lime, tar, etc., from Sweden; herrings and fish oil from Norway; wine, brandy, molasses, drugs, etc., from France; with rice, rum, groceries, etc., from Copenhagen and Hamburg. The total value of the imports by sea may be estimated at about £250,000.

Exports.—These consist chiefly of very good red wheat, barley, peas, rape-seed, and a few oats; with wool, rags of a very superior quality, oil-cake, rape-oil, bones, etc. The exports of wheat amounted in 1840 to 97,565 quarters, and in 1841 to 124,267. In 1840, the exports of peas from Rostock only were 9503 quarters; but from the duchy they amounted to 43,013 quarters; but at an average their export does not exceed from 20,000 to 25,000 quarters. The export of bones amounted during the same year to 1,550,000 lbs.

At an average, the value of the exports may be estimated at £300,000.

Shipping.—The port of Rostock in 1840 had 230 ships, of the burden of 35,332 tons, which trade with most European nations, the United States, and Brazil. In 1835 there entered the port 540 ships (burden not stated), of which 215 belonged to Mecklenburg, 152 (mostly small craft) to Denmark, 83 to Sweden, 27 to Hanover, 18 to Prussia, 12 to Russia, 19 to Holland, 10 to Lübeck, 2 to Hamburg, and 1 each to France and England. It is only, in fact, when our ports are open to the importation of foreign corn that British ships are met with in considerable numbers in the ports of Mecklenburg.

Port Charges.—These are the same on native and privileged ships, among which are included those of England, France, America, Prussia, Norway, etc. The port charges on a vessel of 100 tons burden are as follow, viz.:

	Privileged.		Not privileged.	
	Rix Dol.	Sch.	Rix Dol.	Sch.
Inward with cargo	10	10	10	2
Outward ditto	23	44	33	8
Inward in ballast	12	6	12	6
Outward ditto	19	36	31	10
Ditto without either	17	32	25	42

Duties.—These are extremely moderate. On most imported articles they amount to only 3 per cent. *ad valorem*. An export duty of about 5d. per quarter is charged on corn, and of about 4s. 8d. per hhd. on wine. Wool is not subject to any duty on export. Goods imported in vessels not privileged pay 50 per cent. additional on the above duties; that is, they pay $4\frac{1}{2}$ instead of 3 per cent. *ad valorem*.

Wismar, the second sea-port town of Mecklenburg, at the confluence of the River Stör with the sea, in lat. $53^{\circ} 49' 25''$ N., long. $11^{\circ} 36' 15''$ E. Population 11,000. The harbor of Wismar is commodious and safe, being nearly land-locked by the islands of Poel and Walfisch. Close to the town there is from 8 to $8\frac{1}{2}$ feet water; in the inner roads there is from 12 to 13 feet; and in the outer from 16 to 20 feet water. The port charges on a native or privileged vessel of 100 tons amount to about 30 rix dollars. The articles of import and export are the same at Wismar as at Rostock; but owing to the proximity of Lübeck, from which Wismar is not more than 27 miles distant, her foreign trade is comparatively limited. About 35 ships, of the burden of 4800 tons, belong to this port. There cleared from it in 1835 227 ships, of which 11 were English. The duties at Wismar are somewhat higher than at Rostock, being $4\frac{1}{2}$ per cent. *ad valorem* on colonial products, and from 4d. to 8d. per quarter on corn exported. It is believed, however, that they will shortly be reduced to the Rostock level.

Trade of the Duchies.—Mecklenburg is essentially an agricultural, wool-growing, grazing, and breeding country. In some places it is sandy and barren; but it is for the most part very fertile, and the crops and pastures are both luxuriant. Having few manufactures, her imports necessarily consist principally, as already stated, of manufactured goods, and her exports of raw produce. Owing, however, to the circumstance of the southwestern part of the province being bounded by the Elbe, and approaching to within about 80 miles of Hamburg, almost all the manufactured goods, as well as a very large proportion of the colonial products used by the population (550,000), are imported by way of Hamburg. Hence, in Mecklenburg, as in Prussia, the direct foreign trade carried on by the sea frontier forms but a very small part of the entire trade of the country. It is impossible, however, to form any precise estimate of what the latter may amount to. Probably there is no European country so little fettered by customs regulations as Mecklenburg. The duties on articles imported by sea amount only, as already stated, to about 3 per cent. *ad valorem*; and those entering by the land frontier are subject merely to a tri-

fling charge, on account of toll, of which we have not seen any account. It is impossible, indeed, that any commercial system can be bottomed on more liberal principles; and this enlightened policy, and her situation near the mouth of the Elbe, and on the western frontier of the Prussian league, give to Mecklenburg far greater importance, as a commercial state, than is indicated by the amount of her population or her internal consumption.

Rotterdam, on the north bank of the Maese, in lat. 51° 55' 19" N., long. 4° 29' 14" E. Population in 1850, 82,000? Rotterdam is the second commercial city of Holland. It is more advantageously situated than Amsterdam, being nearer the sea; and the canals

which intersect it are so deep as to admit of the largest vessels coming up to the quays and warehouses of the merchants. Its commerce during the last fifteen years has increased more rapidly than that of any town in Holland. The exports and imports are similar to those of Amsterdam. The white Zealand wheat shipped here is of a peculiarly fine quality; and it is the best market for madder and geneva. Geneva is sold by the aam; but it used, for the convenience of smuggling to England, to be divided into ankers and half ankers. The legitimate imports of geneva from Holland in 1851 amounted to 155,895 gallons. Rotterdam has a regular and frequent intercourse, by means of steamers, with London, Liverpool, Hull, Leith, Havre, Hamburg, etc.

IMPORTS FOR THE SEVEN YEARS ENDING WITH 1852, AT ROTTERDAM, OF THE UNDER-MENTIONED ARTICLES OF FOREIGN AND COLONIAL PRODUCE.—(FROM THE MONTHLY MARKET REVIEW, JANUARY 1, 1853.)

		Imports.	Imports.	Imports.	Imports.	Imports.	Imports.	Imports.	Stocks, 31st December.
		1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.
Coffee, East India.....	bags	334,800	361,560	320,600	320,500	242,100	346,500	396,000	182,000
Do. West India.....	"	22,630	37,520	42,100	95,000	22,900	25,800	6,100	....
Do. do.....	cases	2,500	1,606	950	3,000	780	2,600	2,100	....
Tea.....	qr. chests	16,115	17,865	20,800	21,700	34,250	26,800	31,400	9,600
Rice.....	bags	111,072	147,960	153,200	136,490	111,800	138,000	325,000	45,700
Do.....	tierces	2,880	3,998	3,200	2,550	3,420	2,700	4,200	190
Pepper.....	bags	8,620	8,716	7,700	4,830	9,600	8,800	6,000	7,300
Sugar.....	tons of 1000 kilogr.	30,750	23,500	34,000	34,000	37,000	45,750	23,750	abt. 4,000
Cotton.....	bales	8,230	2,816	7,840	9,575	3,500	7,410	14,026	3,710
Tobacco, Maryland.....	hhds.	4,074	6,577	5,653	8,404	5,157	3,999	9,148	1,923
Do. Virginia.....	"	612	1,203	659	1,076	1,045	574	2,184	139
Do. Kentucky.....	"	198	200	633	624	153	787	376	75
Do. Stems.....	"	79	....	275	380	25	201	107	....
Do. Java.....	packages	4,807	5,509	8,544	5,367	1,215	4,785	4,180	....
Hides, East India.....	pieces	22,354	46,183	79,600	44,072	53,550	91,474	73,062	22,790
Do. West India.....	"	7,276	5,064	500	1,100	192	5,663	9,848	3,175
Oil, South Sea Whales.....	hects.	26,800	21,700	22,300	22,700	1,600	15,400	....	....
Indigo.....	chts. & bxs.	5,784	7,006	6,648	3,724	3,572	3,338	3,091	184
Ashes, United States, pots.....	barrels	3,573	2,085	3,260	2,382	2,906	3,186	960	310
Do. do.....	pearls	898	303	386	291	468	203	612	92
Do. sundries.....	casks	20	532	1,090	329	1,601	712	5,172	2,087

COMPARATIVE STATEMENT OF STOCKS OF CORN AND GRAIN IN THE UNDER-MENTIONED PORTS OF HOLLAND, IN 1850, 1851, AND 1852.

	31st December.	Wheat.	Rye.	Barley.	Oats.	Buck-wheat.	Hemp-seed.	Pigeon Beans.	White Beans.	Brown Beans.	Gray Peas.	White Peas.	Blue Peas.	Rape-seed.	Linseed.	Hemp-seed.	Mustard Seed.	Canary Seed.
1850.	Amsterdam*.....	7,750	29,000	2500	325	490	30	14	....	....	255	150	143	2650	2600	30	250	....
	Rotterdam.....	5,862	5,506	245	81	321	91	44	34	22	86	24	30	160	62	23	4	19
	Dordrecht.....	359	956	11	95	79	204	37	4	15	18	14	20	752	88	52	....	....
	Schiedam.....	90	10,067	1507	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	Delfshaven.....	232	730	260	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	Total lasts.....	14,293	46,259	4613	501	890	325	95	38	37	355	188	193	3562	2750	105	254	19
1851.	Amsterdam.....	10,265	21,235	758	237	808	....	....	....	....	67	32	12	8130	2510	....	300	200
	Rotterdam.....	5,682	7,151	573	24	573	33	10	13	6	8	48	24	25	100	8	3	27
	Dordrecht.....	686	895	11	35	86	61	8	2	2	12	12	12	1414	135	....	....	....
	Schiedam.....	130	8,238	567	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	Delfshaven.....	160	635	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	Total lasts.....	16,923	38,214	1915	236	1432	94	18	15	8	87	92	49	9833	2805	8	303	227
1852.	Amsterdam.....	9,400	18,300	700	19	980	....	....	....	....	....	....	170	3300	1700	....	....	....
	Rotterdam.....	3,141	6,485	149	121	680	2	13	28	9	67	9	53	230	203	3	....	10
	Dordrecht.....	273	537	22	118	85	26	68	2	2	....	....	15	1577	232	....	....	21
	Schiedam.....	956	8,633	911	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	Delfshaven.....	60	1,114	70	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	Total lasts.....	10,835	35,035	1852	258	1754	28	81	30	11	67	9	274	5107	2185	3	....	31

—See HOLLAND and AMSTERDAM.

* The stocks in Amsterdam include the quantities on hand at Zaandam.

Rouble, a Russian coin. (For the silver rouble, see COINS, division *Russian*; the value of the paper rouble is variable.) By the official valuation of the paper rouble, in the payment of taxes, a few years since, one silver rouble was equal to three roubles sixty copecks paper. By authority of Congress, the value of the Russian rouble formerly was fixed at 75 cents.

Rouge (Fr. *Fard*). The only cosmetic which can be applied without injury to brighten a lady's complexion is that prepared, by the following process, from safflower (*Carthamus tinctorius*). The flowers, after being washed with pure water till it comes off colorless, are dried, pulverized, and digested with a weak solution of crystals of soda, which assumes thereby a yellow color. Into this liquor a quantity of finely-carded white cotton wool is plunged, and then so much lemon juice or pure vinegar is added as to supersaturate

the soda. The coloring matter is disengaged, and falls down in an impalpable powder upon the cotton filaments. The cotton, after being washed in cold water, to remove some yellow coloring particles, is to be treated with a fresh solution of carbonate of soda, which takes up the red coloring matter in a state of purity. Before precipitating this pigment a second time by the acid of lemons, some soft powdered talc should be laid in the bottom of the vessel, for the purpose of absorbing the fine rouge, in proportion as it is separated from the carbonate of soda, which now holds it dissolved. The colored mixture must be finally triturated with a few drops of olive oil, in order to make it smooth and marrowy. Upon the fineness of the talc, and the proportion of the safflower precipitate which it contains, depend the beauty and value of the cosmetic. The rouge of the above second precipitation is received

sometimes upon bits of fine-twisted woolen stuff, called *crepons*, which ladies rub upon their cheeks.

Row, to propel a boat by oars. Rowing is reckoned the most favorable application of human strength; the whole force is, however, not effective on the oar, as the part inside the actual fulcrum, which is in the water, acts as a backwater. Some nations take short strokes, which they rise up in making; a long stroke sitting, to say the least, saves much exertion. As the theory of rowing involves the resistance of fluids, it is necessarily defective.

Royal, in *Naval affairs*, the sail above the top-gallant sail. The term *royal* is also applied, in artillery, to a kind of small mortar.

Royal Exchange, London. The foundation of the original edifice was laid by Sir Thomas Gresham, June 7, 1566, on the site of the ancient Tun prison. Queen Elizabeth visited this Exchange in January, 1571, and by the sound of trumpets her herald named it the *Royal Exchange*.—HUME. This grand fabric was totally destroyed by the great fire in 1666, precisely a century after its erection. Charles II. laid the foundation of the next edifice, October 23, 1667, which was completed by Mr. Hawkesmoor, a pupil of Sir Christopher Wren, in about three years; and it was repaired and beautified in 1769. This last also became a prey to a destructive fire, January 10, 1838, and was burned to the ground, with a number of public offices and adjoining houses. The new Royal Exchange, commenced in 1840, under the direction of Mr. Tite, was opened by the queen in state, accompanied by her ministers and a grand civic procession, October 28, 1844.

Ruby, a precious stone, very highly esteemed; but under this name a variety of minerals have not unfrequently been sold, which differ essentially in their characters. The *Oriental ruby* is, in fact, a red variety of the sapphire. When perfect, its color is a cochineal red, presenting a richness of hue the most exquisite and unrivaled: it is, however, in general more or less pale, and often mixed with blue; hence it occurs rose red, peach-blossom red, and lilac blue, passing into the amethyst. It is harder than any other mineral, except the diamond. Easily frangible. Specific gravity from 3.916 to 4.283. Infusible before the blowpipe. Oriental rubies of 10 carats are extremely rare and valuable. One of 22 grains was sold for £160. Rubies in lots, Indian cut, or small sizes, and of different qualities, are at all times to be had, and sell at from 15s. to 65s. a carat; but a perfect stone of a carat, or 6 grains, may be deemed rare, and falls little short of the value of the diamond: nay, in some cases, rubies of 2, 3, or 4 carats, if *very fine*, are much scarcer, and even more valuable than diamonds of equal weight. The finest ruby in England, or perhaps in Europe, is in the collection of the late Mr. Hope, the author of "*Anastasis*." There are two other species of ruby, the *Spinelle* and *Balaïs*. When perfect, the spinelle is a gem of great value and scarcity. Its color is a fine full carmine or rose red, but it never presents that rich mellow tinge that attends the Oriental ruby. It is also inferior to the latter in hardness and specific gravity. Stones of 3 carats and upward are very rare and valuable.

The *Balaïs ruby* is a pale variety of the spinelle. It varies in color from light red to yellowish red. Though not so rare as the spinelle, it is by no means common. It is much admired for its agreeable tinge of color; and, when pure and perfect, fetches a very high price, though considerably less than the other varieties. Rubies are not found in any considerable quantity except in Ava.—MAWE on *Diamonds*; THOMSON'S *Chemistry*.

Rudder. A heavy flat piece or frame of wood, hung upon the stern-post by means of pintles and gudgeons, for the purpose of steering the ship. The rudder is turned round the stern-post as an axis, by the tiller, which enters the rudder-head. In vessels

drawing much water the rudder is deep and narrow; in flat-bottomed vessels it is shallow and broad. When carried to a considerable breadth, as in the Chinese vessels, it is pierced with holes, which preserves an increased leverage with a diminished direct resistance from the water. When the rudder is broken off by the ship getting aground, or by a heavy sea, a temporary one is made by a topmast and other spars placed parallel, and loaded at the bottom with pigs and ballast, and confined to the stern-post by hawsers leading on each side of the keel.

Rudder Coat.—A covering of tarred canvas loosely put round the rudder-head to keep the water from entering by the aperture, while it admits of the rudder being turned freely round.

Rudder Pendants.—Strong pieces of rope ending in chains, by which the rudder, if unshipped, is held to the ship's quarter.

Rudder Shock.—A piece of wood fitting between the head of the rudder and the rudder-hole, to prevent the play of the rudder in case of the tiller being removed.

Rum, a well-known and highly esteemed spirituous liquor imported from the West Indies, of which it forms one of the staple products. It is obtained by means of fermentation and distillation from molasses, the refuse of the cane juice, and portions of the cane, after the sugar has been extracted. The flavor and taste peculiar to rum are derived from the essential oils carried over in distillation. When the distillation has been carelessly performed, the spirit contains so large a quantity of the grosser and less volatile part of the oil as to be unfit for use till it has attained a considerable age. When it is well rectified, it mellows much sooner. Rum of a brownish transparent color, smooth oily taste, strong body and consistence, good age, and well kept, is the best. That which is clear and limpid, and has a hot pungent taste, is either too new, or mixed with other spirits. Jamaica rum is the first in point of quality; the Leeward Island rum, as it is called, being always inferior to it, both in flavor, strength, and value. The price of the latter is usually 20 per cent. below that of the former. It is customary, in some of the West India Islands, to put sliced pineapples in puncheons of rum: this gives the spirit the flavor of the fruit; and hence the designation *pine-apple rum*. Rum is also produced in and imported from the Mauritius and the East Indies; but that of the latter is more nearly allied to arrack than to genuine rum.

We know nothing about the origin of the word *rum*, or the time at which the manufacture of the spirit commenced. At present the manufacture is chiefly carried on in the islands belonging to Great Britain. Dr. Ure states that in Jamaica the wort is made by adding together 120 gallons of molasses, 1000 gallons of the spent wash of a former distillation, 720 gallons of the skimmings of the sugar boilers, and 160 gallons of water; so that there is in the wort nearly 12 per cent. of solid saccharine matter. Other proportions, however, are used, bringing the proportion of saccharine matter up to nearly 15 per cent.; as, for instance, 100 gallons of molasses, 800 gallons of skimmings, 200 gallons of spent wash, and 400 gallons of water. The proportions vary in almost every estate, so that no certain rule can be laid down. The fermentation is in general conducted very slowly (apparently very unnecessarily so), occupying from nine to fourteen days. The saccharine matter is, therefore, very imperfectly converted into alcohol, and the yield of spirit is usually so low as 115 gallons of proof-spirit for every 1200 gallons of wash. On some estates, and depending on the price of sugar in the market, the greater proportion of the sugar is converted into rum; and the same imperfect fermentation being followed, the average yield is said to be only 200 gallons of rum for every three hogsheads of sugar, whereas the proportion ought to be very nearly double. It is from the skimmings, which

are rich in aroma, that the peculiar flavor of rum is derived; for it is a curious fact that sugar and molasses distilled in this country yield a spirit entirely destitute of all rum flavor, and in nothing distinguishable from the ordinary spirit derived from grain. Any depth of color may be given to the rum by the addition of molasses or caramel, though it is commonly but erroneously stated that the color of the rum is derived from the oak casks.—See SPIRITS and WINE.

The manufacture of rum entirely of sugar or molasses is not carried on in Great Britain. The number of gallons of rum manufactured in Great Britain during the year ending January 5, 1854, of a mixture of sugar or molasses with unmalted grain, was as follows:

England	989,010 gallons.
Scotland	915,681 "
Ireland	4,005 "
Great Britain	1,908,646 "

EXPORTS OF RUM FROM THE UNITED STATES FOR THE YEAR
ENDING JUNE 30, 1857.

Whither exported.	Spirits from Molasses.	
	Gallons.	Dollars.
Danish West Indies	2,955	1,648
Hamburg	200	90
Bremen	13,087	9,417
England	6,270	3,135
Gibraltar	42,425	20,740
Malta	103,924	57,024
British North Amer. Possessions ..	163,103	106,766
British West Indies	17,352	9,705
British Honduras	5,532	4,504
British Possessions in Africa	140,836	72,140
British Australia	9,432	6,819
France on the Atlantic	108,458	74,850
France on the Mediterranean	157,885	88,752
French North Amer. Possessions ..	50,107	24,415
French West Indies	8,031	3,955
Canary Islands	800	350
Cuba	300	154
Madeira	4,201	1,955
Cape de Verd Islands	27,135	12,162
Sardinia	40,764	25,374
Two Sicilies	5,647	3,237
Austria	35,443	17,757
Turkey in Europe	323,824	146,832
Turkey in Asia	233,752	110,177
Ports in Africa	826,668	3 2,873
Hayti	1,687	865
New Granada	5,283	2,588
Uruguay, or Cisplatine Republic ..	27,481	11,648
Argentine Republic	6,156	3,750
Chili	2,544	1,271
Peru	1,251	563
Sandwich Islands	80	50
Total	2,378,603	1,216,635

Rupee, a silver coin current in the East Indies, equal to from 50 to 60 cents. By authority of Congress, the value of the rupee of British India was fixed at 44½ cents, and the sicca rupee of Bengal and the rupee of Bombay at 50 cents.

Russia. This extensive empire comprises the whole northern portion of the eastern hemisphere, from the frontiers of Posen and the Gulf of Bothnia on the west, to the Pacific Ocean and Behring's Straits on the east. It includes the greater part of the ancient kingdom of Poland, Finland, Astrakhan, and Kazan, conquered from the Tartars; the Crimea, Little Tartary, Bessarabia, and a portion of Moldavia, taken from Turkey.

The Russian empire embraces nearly one-half of the surface of Europe. It chiefly consists of an enormous plain, being little diversified by rising ground, except toward the Urals and the Caucasus in the south and east, and in the province of Finland in the northwest. The northern part of the country is a cold and barren region of heaths and marshes; the central provinces are rich and fertile; the southern, mere steppes, or grassy, sandy, and salt plains, which afford, however, in their hollows, along the river-courses, abundance of excellent pasturage for cattle and horses. The population is chiefly agricultural or nomadic; and the manufactures that are to be found in some places are more indebted to the fostering care of the government, and the high import duties, or absolute prohibition of

foreign wares, than to native enterprise, for their origin and continuance. Russia is an immense military power, so far as that depends on the numbers of her armies; but the want of national wealth is such a drawback on military enterprise as she has not yet been able to overcome.

The origin of the Russians as a distinct branch of the Slavonians is a moot point among archaeologists. They seem to have borne at one time the name of Antes, consisting of several tribes that formed a sort of confederation. In the 9th century, Ruric the Varangian established himself in Novgorod the Great; and his successors, extending their dominion by conquest, established their capital at Kieff, where the dynasty reached the zenith of its power under Vladimir the Great, who introduced Christianity among his subjects, according to the creed and ritual of the Greek Church, A.D. 983. His empire was subsequently overthrown by the Poles and Lithuanians, and the greater part of it remained subject to Poland till the accession of the house of Romanoff. The eastern provinces beyond the Dnieper were conquered by Tartars, and remained under their dominion till the 16th century. The city of Moscow was founded by Andrey I. in A.D. 1156. In the middle of the 15th century, Ivan Vasiliwitz, Duke of Moscow, recovered his independence, and having subdued a number of petty chieftains, and added the duchies of Tver and Novgorod to his dominions, assumed the title of Grand Duke. His grandson, of the same name, subdued the Tartar kingdoms of Kazan and Astrakhan, and assumed the title of Czar or Great King.

During the last three centuries the successive dukes and czars of Moscow and emperors of all the Russias have followed the same policy of extending their dominions by every possible means, fair or foul. They have now declared themselves the heads and protectors of all the Slavonic races, and of the orthodox Greek Church, and seem to make no secret of their deep-laid project of unscrupulous aggrandizement. Their vast dominion now extends in length through 202° of longitude, and in breadth through 38° of latitude, and is supposed to contain about 65,000,000 of inhabitants, of whom five-sixths are in Europe.

The following is believed to be a correct estimate of the extent and population of this vast empire:

AREA AND POPULATION OF RUSSIA.

Natural Divisions.	Area in English Square Miles.	Population in 1852.
Great Russia	328,781	20,493,371
Little Russia	150,141	11,775,865
New Russia	96,636	3,251,612
White Russia	70,379	2,937,436
Western provinces	47,076	2,870,667
Baltic provinces	36,616	1,761,907
Northern provinces	536,226	1,420,629
Ural provinces	447,788	10,770,181
Cossack districts	123,776	1,156,736
Poland	41,230	5,156,543
Finland	135,800	1,470,199
Total in Europe	2,023,478	63,012,146
Caucasian provinces	86,578	2,850,000
West Siberia	2,681,147	3,500,000
East Siberia	2,122,000	237,000
American possessions	371,350	61,000
Total extra European	5,261,075	6,648,000
Grand total	7,284,553	69,660,146

The rivers of Russia are usually divided into five groups or systems, corresponding to the seas in which they have their embouchures; viz., the Arctic Ocean, the Baltic Sea, the Black Sea, the Caspian Sea, and the Pacific Ocean. The first division comprises the Dwina, Mezen, and Petchora, in Europe; the Obi, Jenisei, and Lena, with numerous other small rivers, in Asia: the three last have a course of from 2000 to 2500 miles. The rivers which fall into the Baltic, though possessing much more commercial importance to Russia, are of inferior magnitude. The principal are—the Neva, which has St. Petersburg at its mouth, the Düna, and the Niemen. The rivers which fall into the Black Sea are of

equal importance with those just named, and exceed them in length of course and volume of water. The principal among these are the Dniester, Dnieper, Bug, Don, and Kuban. The Volga, in the basin of the Caspian Sea, is the largest and most important of the rivers of Russia. This extensive river has its sources in the government of Twer, about 180 miles south by east from St. Petersburg. Its course is about 1000 leagues, while that of the Danube is only about 450. It is of vast importance to the internal commerce of Russia. Its affluents, which are connected by several canals with the Neva, establish a communication between the Caspian and the Baltic, White, and Black seas. Two other rivers—the Ural and the Emba—have their embouchures in the Caspian Sea.

Staples.—The products of Russia vary with the difference of soil and climate. Cereals of every kind are raised in great abundance; but rye, being the common food of the peasantry, is produced in much greater quantities than any other sort of grain. The most productive provinces are Orel, Kasan, Nijni Novgorod, Penza, Tambov, and Kursk. The total annual production of grains in European Russia (including Poland) may be estimated in ordinary years at 1,495,000,000 bushels, at a value of about \$720,416,665. Flax and hemp are also extensively cultivated, and constitute a leading export of Russia. Tobacco is cultivated in the southern provinces, and of late years much attention has been given to the cultivation of beet-root. In 1848, the quantity of sugar manufactured from this article was estimated at 32,240,000 lbs. Tallow and wool are also important articles in the export trade of Russia; of the latter, the exports amount annually to about 18,000,000 lbs. The climate of Russia is not, however, well adapted to the production of fine wool; and although much attention has been given to the improvement of the breed of sheep, Russia can not enter into competition with Australia in supplying foreign markets with this article. The quantity of wool furnished by the Cape of Good Hope colony, from 1840 to 1852 inclusive, was 48,859,748 lbs.; furnished by Australia in same period, 256,008,415 lbs.; by Cape colony, in 1852, 7,772,505 lbs.; by Australia, in 1852,

32,500,000 lbs.; number of sheep in Cape colony, 4,496,000; number of goats in Cape colony, 1,093,000; number of sheep in Russia in Europe, 35,666,598; number of goats in Russia in Europe, 1,188,178.

Manufactures.—The manufactures of Russia are not generally in a very advanced condition. In some departments of manufacturing industry, however, Russia excels all other countries. Every attempt to imitate her leather, especially such as is used for book-binding purposes, has proved a failure; and Russia still continues to enjoy, as she doubtless ever will, an undisputed monopoly in supplying foreign markets with this valuable production. Her glass manufactures are also highly esteemed. Single plates have been manufactured at the St. Petersburg glass-works which have readily sold for \$3000. Her other manufactures are sail-cloth, cordage and canvas, tick, felt, mats, pot-ashes, soap, candles, caviar, isinglass, spirits, and some minor articles for domestic consumption. The cotton manufactures of Russia have made rapid progress during the past twenty years; and, instead of the vast quantities of cotton yarns formerly imported, she now imports largely of the raw material. In 1852 the quantity of raw cotton imported was 116,000 poods (4,176,000 lbs.); in 1852 it ascended to 1,748,000 poods (62,928,000 lbs.), of which she received from the United States 10,475,168 lbs. The total manufactures of Russia employ 6,064,700 persons, of which number 4,500,000 are engaged in the manufacture of flax and hemp. The total annual value of Russian manufactures is estimated at about 486,000,000 silver roubles (\$364,500,000). Moscow is the grand centre of this branch of industrial pursuits, and is inhabited almost exclusively by manufacturers and artisans.

The following table, translated from Russian official returns, will exhibit the number and character of manufactures in Russia, the number of workmen employed, and the quantity and value of their productions, in the year 1852. It is proper to remark, that the table gives only the principal manufactures which enter into the export trade of Russia. Those consumed in the country, and numerous minor manufactures, are omitted in the following summary:

RUSSIAN MANUFACTURES, ETC.

Denomination of Manufactures.	Number of Factories.	Quantities manufactured.	Value of Manufactures in Silver Roubles.*	Number of Workmen.
Manufactures of woollens (cloths).	414	13,446,236 archines† and 180,057 pieces of woollen cloths: 12,854 poods‡ of woollen yarn.	19,120,833	86,443
Manufactures of woollens (tissues).	180	861,769 pieces and 1,691,014 archines of woollen tissues: 8800 poods of yarn.	5,231,457	13,806
Manufactures of cotton yarns, thread, etc.	55	1,136,326 poods of cotton thread, 88,150 pieces and 88,500 archines of tissues.	15,647,898	30,976
Manufactures of cottonades.	440	3,770,030 pieces, 8,764,881 archines, 118,917 dozen tissues, and 5230 poods of thread.	14,208,540	81,451
Dyeing factories.	349	6,785,988 archines, 4,411,007 pieces, 23,466 dozen, 166,986 poods.	15,425,334	25,867
Factories for weaving.	112	275,196 pieces, 170,044 archines, 1086 dozen tissues, 1800 poods of thread.	2,230,099	12,450
Manufactures of silks and brocades.	532	5,302,567 archines, 1,270,191 pieces, 3691 dozen of tissues, 888 poods of silk thread.	5,672,252	15,782
Manufactures of cables.	142	757,344 poods.	1,940,042	3,408
Manufactures of paper.	177	1,888,365 reams, 50,454 poods, 716,134 sheets, 40,000 packages of pasteboard.	3,928,976	14,742
Manufactures of tobacco.	345	182,732 poods of tobacco, 205,095,256 pieces, 451,755 boxes and packages of cigars and cigarettes.	4,687,005	4,861
Foundries and forges.	115	5,258,405 poods and 64,274 pieces of cast iron, 929,927 poods of iron, and 38,731 poods of steel.	3,660,000	27,879
Manufactures of hardware.	280	2,533,058 poods, 223,610 pieces, and 6370 archines of iron wire.	2,254,262	19,543
Manufactures of copper.	149	133,023 poods and 1,261,192 pieces.	1,366,915	4,255
Manufactures of chemicals.	102		2,20,492	2,612
Manufactures of soap.	262	514,142 poods.	1,227,122	64
Manufactures of sugar.	304	2,418,238 poods of sugar, and 148,890 poods of sirup.	17,315,603	45,711
Manufactures of glass and crystals.	181	47,524,376 pieces of glass dishes, plates, etc., 68,018 covers, and 150,980 plates or sheets of glass.	3,387,868	11,650
Tallow factories.	534	2,141,868 poods.	5,266,659	4,311
Candle factories.	43	1,174,452 poods.	4,478,484	2,003
Wax-candle factories.	15	254,638 poods.	1,577,578	1,264
Tanneries.	2,032	4,286,321 pieces.	9,134,741	14,565
Other manufactures.	3,148		19,043,551	51,774
Total.	10,388		161,151,708	470,711
Total in 1851.	10,126		15,380,596	465,016

* The silver rouble is equal to 75 cents.

† The archine is equivalent to 28 inches.

‡ The pood is equal to 36 lbs.

The large manufacturing establishments are located in the government of Moscow. The 1244 factories of this government give employment to 114,623 workmen, the annual value of whose productions amounts to \$33,146,606. In the government of St. Petersburg there are 477 factories, employing 24,581 workmen; annual value of productions, \$24,723,555. Before the commencement of the late European war, the foreign commerce of this vast empire was very extensive. In 1852 the imports reached the sum of 114,773,829 silver roubles, and the exports amounted to 100,864,059 silver roubles. This trade gave employment to 17,162 vessels, measuring an aggregate of 1,559,200 lasts.* Previous to the war, the exports of Russia from the ports of the Black Sea alone amounted to 80,000,000 bushels of grain annually. There is no official or reliable information at hand which would indicate the diminution which Russian trade has experienced from the blockading measures of the allied powers. It is certain that not half the usual quantity of hemp, flax, and tallow can pass from the territories of Russia. There is at all times a considerable overland trade across Prussia, but the heavy expenses attending the transportation of merchandise over this route must necessarily confine its consumption to the wealthier classes. The value of coffee, salt, sugar, etc., has been augmented to the most exorbitant figure; and these enhanced prices, with the expenses of land transportation superadded, must, in the event of prolonged hostilities, † drive these articles out of general use altogether. These are, however, but the unavoidable effects of war; and as the philanthropist must hope that peace shall soon return, and the channels of commerce be again reopened, so the commercial statistician must regard these interruptions to the peaceful trade of the world as but temporary and unfixed, and treat only of the permanent commercial regulations, and relations with foreign nations, of such countries as may come within the scope of his official duties. The commercial relations of the United States with Russia are regulated by the treaty of October 6 [18], 1832. Its stipulations provide for entire reciprocity and perfect commercial equality between the two countries. It has been observed in good faith by both governments, and its provisions and spirit faithfully adhered to. The principal articles of export from Russia are tallow, grain, hemp, and flax; timber; potashes; leather; fox, hare, and squirrel skins; canvases and coarse linen; cordage, caviare, wax, isinglass, furs, tar, etc. The principal imports are sugar, cotton, cotton stuffs and yarns; machinery for mills, factories, etc.; hardwares and iron; coffee, indigo, and other dye-stuffs; woollens, oils, spices, wine, tea, lead, tin, coal, and salt; linens, silks, etc. The principal ports for foreign commerce are St. Petersburg and Riga, on the Baltic; Archangel, on the White Sea; Ketch and Taganrog, on the Sea of Azof; and Astrakhan and Baku, on the Caspian. The interior commerce of the empire has its principal entrepôt at Moscow; and Kiachta is the centre of the trade with China. This trade with China is strictly one of barter. The interchange takes place at the town named above, lying on the Salenga, and at some distance from the great lake Baikal. The Russian merchandise and wares are here deposited in warehouses, which are visited by the Chinese merchants, with whom the interchange is effected.

None (says McCulloch, in a work published in 1854) but native Russians are allowed to engage in the internal trade of the country; and hence a foreigner who imports goods into Russia must sell them to Russians only, and at the port where they arrive. The merchants engaged in the foreign trade are mostly foreigners, of whom the English are the principal. Every Russian carrying on trade must be a burgher, and have his name registered in the Burghers' Book. These

* The last is about two tons.

+ While this report was in press the result of the conferences at Paris was officially proclaimed.

burghers are divided into three guilds. Foreign merchants or guests are permitted to enroll their names in the city register, on the payment of from \$900 to \$950 per annum. *The Journal of the Manufactures of the Empire*, 1846, published in Russia, gives the following information relative to these guilds:

Number of merchants of the 1st guild	890
“ “ “ 2d “ “ “	2,258
“ “ “ 3d “ “ “	37,051
“ of foreign merchants	84
Total	40,228
Burgbers possessing licenses, 1st class	5
“ “ “ 2d “ “ “	36
“ “ “ 3d “ “ “	2,851
“ “ “ 4th “ “ “	4,225
Total	7,147
General total of those engaged in trade	47,375

Declared capital of those engaged in commerce :

First guild.....	\$9,675,000
Second guild.....	10,273,500
Third guild.....	66,691,800
Declared capital of foreign merchants ..	882,500
Total capital invested in trade	\$87,022,800

In the whole of European Russia about 7,000,000 tchetwerts of grain are employed in the distillation of 64,000,000 vedros (208,000,000 imperial gallons) of brandy, nearly all for home consumption.

The tariff regulations of Russia have during the past few years undergone several modifications. . . . Under the tariff of 1841, the duties on most kinds of manufactures were equivalent to a prohibition. This tariff was entirely remodeled in 1850; and in June, 1854, various other alterations and changes were made, reducing still lower the duties prescribed by the tariff of 1850. These alterations and reductions are given down to the 23d June, 1854, the date of the last change in the Russian tariff; for which see Tariffs of Northern Europe, "Russia," Part II. Prior to the year 1850, there was a separate tariff for Poland; but the imperial ukase, promulgating the tariff of 1850, observes, in reference to this kingdom: "In our constant solicitude for the promotion of commerce and industry, we have judged it expedient, with a view to facilitate the interior, as well as the exterior, relations between our faithful subjects of the empire of Russia and the kingdom of Poland, to establish a uniform tariff of customs applicable to the empire and kingdom alike, and to suppress the customs-line which has heretofore separated them." The only other separate tariff now in force in Russia is that which applies to the ports of the Black Sea. For the purpose of comparison with subsequent tables, giving the commercial movements of Russia for later periods, the following table is annexed, exhibiting the total commerce of the empire with foreign countries, by land and sea, from 1832 to 1842, both inclusive:

Years.	Imports.	Exports.	Total.
	Francs.	Francs.	Francs.
1832.....	190,887,000	265,644,000	446,081,000
1833.....	211,984,000	265,153,000	477,137,000
1834.....	240,044,000	243,401,000	483,445,000
1835.....	245,542,000	237,720,000	485,260,000
1836.....	261,879,000	304,003,000	565,882,000
1837.....	277,062,000	280,855,000	557,917,000
1838.....	273,200,000	336,018,000	609,218,000
1839.....	274,875,000	371,843,000	646,218,000
1840.....	300,766,000	324,307,000	625,073,000
1841.....	317,718,000	345,529,000	663,247,000
1842.....	338,000,000	381,000,000	661,000,000

If to the total for 1841 we add for specie imported, and the commerce of Poland and Finland, neither of which is included in the above table—about 100,000,000 francs in all—we shall have for that year a general total of nearly 760,000,000 of francs, or \$141,360,000. A comparison of the Russian official reports from 1832-'33 (annual average) to 1842, as above condensed, shows that the general commerce of Russia has increased; viz., imports 46 per cent., exports 22 per cent.

	FRANC.
Revenue from customs and other sources in 1839,	105,000,000
“ “ “ “ 1840,	109,420,000
“ “ “ “ 1841.	109,550,000

The amounts derived from the different branches of customs in 1841 were,

Duties from custom-house	106,172,000 francs.
" entrepôts	604,000 "
Excise on salt in the Crimea	500,000 "
Other duties	2,184,000 "
Total	109,550,000 "

Years.	Annual Value.	Proportion to each Country.	Per Cent.
1841.....	74,817,000	To England	4)
1842.....	72,262,000	To France	8
1843.....	71,200,000	To Prussia	6
1844.....	80,515,000	To Turkey	6
1845.....	78,802,000	To Holland	5
		To Italy	5
		To other countries.....	21

The following table exhibits in detail the principal foreign merchandise entering into the import trade of Russia, and also the value or quantities imported, in the years 1849, 1850, and 1851:

Description of Merchandise.	1849.	1850.	1851.
Coffee..... poods	231,147	185,186	228,803
Raw sugar	2,088,258	1,979,281	1,829,877
Olive oil	656,809	548,009	576,180
Wines and other liquors, value in..... roubles	7,815,509	8,090,926	7,008,635
Fruits	8,462,541	8,612,193	8,045,118
Cotton, raw	1,554,919	1,200,738	1,812,356
Cotton, white spun	279,108	168,803	138,065
Dye-stuffs	5,421,509	5,453,177	5,806,944
Silk..... poods	16,894	15,513	11,631
Wool.....	56,344	67,290	67,443
Tissues, or woven goods: Of cotton... roubles	4,448,349	3,290,515	4,486,221
Of silk.....	4,448,057	4,253,187	4,466,211
Of flax.....	579,041	587,906	962,048
Of wool.....	2,201,688	1,958,705	1,728,894
Machinery, etc.	2,567,270	2,674,805	2,889,116

The augmentation which the official returns of Russia exhibit in cottons, dye-stuffs, wool, machinery, and tools, evinces the progressive condition of Russian manufactures. It has already been shown that in 1832 the quantity of raw cotton imported into Russia was only 116,000 poods; in 1851 it reached 1,812,356 poods; and in 1852 it ascended to 1,748,000 poods of 36 lbs. each. In 1845 the importation of cotton yarns (chiefly from England) reached 606,045 poods; in 1851 this amount fell to 188,065 poods, making a difference of 467,980 poods, or 16,847,280 lbs. The activity and progress of the cotton manufactures of Russia explain this great falling off in the quantity of cotton yarns imported, as the annual diminution of the latter will be found to be proportionate to the annual augmentation in the quantity of the former. An analysis of the returns of trade between Russia and the United States will also show an increase in the quantities of raw cotton imported by the former, corresponding with the diminished importation of cotton yarns; our raw cotton supplying to a great extent the different factories in Russia. The following table, compiled from the United States official authorities, exhibits the quantities and value of this staple exported to Russia direct from the United States:

Years.	Cotton exported to Russia from United States.	Value.
1844.....	2,767,766 lbs.	\$241,454
1850.....	4,338,705 "	540,222
1851.....	10,098,448 "	1,297,164
1852.....	10,475,168 "	962,346
1853.....	21,286,563 "	2,254,345
1854*.....	2,914,454 "	301,293
1855.....	448,837 "	48,047

* The war was formally declared March 31, 1854.

The diminished quantity exported to Russia in 1854 shows the effect of the war on the direct trade between the two countries. This, however, can be more fully shown by the following comparative table, exhibiting the general trade between the two countries in 1853, 1854, and 1855:

TOTAL VALUE OF DOMESTIC PRODUCE EXPORTED FROM THE UNITED STATES TO RUSSIA.

In 1853.....	\$2,813,175
In 1854.....	335,221
In 1855.....	48,940

An analysis of the foregoing figures will show that the duties amount to about 33½ per cent. on the total value of imports. The following table exhibits the total value of products exported from Russia in European commerce from 1841 to 1850, and the share assigned to each country:

Years.	Annual Value.	Proportion to each Country.	Per Cent.
1846.....	88,373,000	To England.....	4)
1847.....	84,112,000	To France.....	9
1848.....	75,988,000	To Prussia.....	6
1849.....	83,134,000	To Turkey.....	6
1850.....	83,381,000	To Holland.....	5
		To United States.....	2
		To other countries.....	23

Cotton absorbed \$48,647 of this last sum. Besides the domestic produce exported to Russia in 1855, there was also exported foreign produce to the amount of \$20,414.

In 1854, exports to Russia from the United States consisted principally of two articles: Rice, \$21,728 in value; and cotton, \$801,293.

In 1853 we sent—Spermaceti oil, \$7160; lumber, \$1485; dye-stuffs, \$6648; hams and bacon, \$441; ship-bread, \$3268; rice, \$5564; cotton, \$2,254,315; tobacco, leaf, \$14,109; tobacco, manufactured, \$1164; sundries, \$18,991; total, \$2,313,175.

We here give the export trade of Russia for the years 1850 and 1851. The table includes only the principal articles exported, which are usually denominated Russian staples:

EXPORTS OF PRINCIPAL STAPLES FROM RUSSIA IN 1850 AND 1851.

Articles.	1850.	1851.
Corn..... silver roubles.	19,267,188	19,393,281
Red hides	1,052,829	1,288,121
Raw hides.....	1,055,526	833,698
Flax..... poods.	4,807,618	3,015,780
Hemp.....	2,728,938	3,042,422
Timber..... roubles.	2,797,576	8,519,263
Copper..... poods.	114,976	110,905
Iron.....	757,566	718,064
Potash.....	477,598	507,380
Tallow.....	3,313,873	2,908,438
Hemp and flaxseed... tchetwerts.*	1,065,173	963,784
Wool..... poods.	617,062	479,074
Bristles.....	88,358	74,075

The exports from Poland are not included in the above table.

The foreign trade of Russia, though interrupted in its usual course in 1854 by the war, still exhibits considerable importance, as is shown by the following summary of official returns:

TOTAL EXPORTS.

To Europe from Russia proper	\$38,056,623
" from Poland.....	7,084,604
To Asia.....	7,481,034
To Finland.....	1,481,021
Total.....	\$43,003,262

EXPORT OF COIN (GOLD AND SILVER) IN 1854†

To Europe from Russia proper	\$6,448,434
" from Poland.....	641,413
To Asia.....	2,288,525
Total.....	\$9,378,372

TOTAL IMPORTS.

From Europe into Russia proper	\$38,679,902
" into Poland.....	7,198,905
From Asia.....	11,701,371
From Finland.....	248,601
Total.....	\$57,828,780

IMPORTS OF COIN (GOLD AND SILVER) FROM ABROAD.

From Europe into Russia.....	\$4,441,091
" into Poland.....	212,070
From Asia.....	72,853
Total.....	\$4,726,014

Trade with Finland.—The exports of merchandise to

* Tchetwert—nearly six bushels.

† A supreme ukase of February 27, 1854, prohibited the exportation of gold coin. Silver coin has been exported only by ship-masters, carriers, and passengers, in the quantities allowed by law.

Finland amounted to \$1,431,022; the imports from thence amounted to \$248,691.

The trade beyond the Caucasus, in 1854, was confined to Persia. The total imports amounted to \$2,645,955; exports, \$878,297; total trans-Caucasian trade, \$3,024,252.

The value of goods imported at the port of Astrakhan was \$784,742; of which raw cotton amounted to 138,183 silver roubles, or \$103,638.

The total trade on the frontiers of Orenburg and Siberia, in 1854, amounted to: Imports, \$3,890,571; exports, \$2,415,270; total, \$6,305,841.

*Trade of Kiachta.**—Total amount of goods taken by the Chinese, \$4,380,104; being woollens, \$1,875,375; cottons, \$1,145,620; linen goods, \$119,991; jewelry (gold and silver), \$745,966; furs, \$185,997; dressed skins, and red leather, \$72,830; miscellaneous, \$234,325.

EXPORTS OF WOOL FROM RUSSIA.

	Poods.
From 1800 to 1813, average annual exportation.....	9,813
" 1814 to 1823, " " " "	35,173
" 1824 to 1833, " " " "	111,546
" 1834 to 1837, " " " "	300,100
" 1838 to 1841, " " " "	375,650
In 1841, average annual exportation.....	436,181
In 1845, " " " "	733,588
In 1849, " " " "	691,636
In 1850, " " " "	617,062

M. de Tegoborski gives the following account of the exports of flax and hemp from Russia from 1822 downward:

Years.	Flax and Codilla of Flax.	Hemp and Codilla of Hemp.	Total of Flax and Hemp.
	Poods.—Average of four Years.	Poods.—Average of four Years.	Poods.—Average of four Years.
1822-1826	1,906,641	2,938,673	4,845,314
1827-1831	2,539,978	2,526,095	5,066,073
1832-1836	2,491,922	3,065,420	5,556,342
1837-1841	3,125,517	3,260,817	6,386,324
1842-1846	5,663,766	2,802,419	6,466,175
1847-1850	4,616,755	2,819,781	7,436,536

The total custom-house receipts at Kiachta were \$2,146,778.

Total tonnage at the different ports in 1854: entered, 226,774 lasts; cleared, 268,477.

The amounts of duties in 1854 were as follows:

On imports and exports, and tonnage duties	\$13,831,521
Duties for benefit of various cities.....	292,028
Excise on Crimean salt.....	260,476
For bridge on the Neva.....	105,823
Warehouse and storage duties.....	146,648
For the Odessa Lyceum.....	17,360
Total.....	\$14,654,465

In the kingdom of Poland the custom-house receipts amounted to \$993,978.

The Asiatic commerce of Russia centres at three principal points. Kiachta, at which place the operations with China are conducted, is the most important of these. Considerable trade is also prosecuted with the Tartars in Central Asia. Astrakhan, on the Caspian Sea, is the entrepôt for this trade. The land route is from Astrakhan, through a barren and desert country, to Khiva. Steam vessels are now established between Novgorod, Astrakhan, the Caucasian provinces, and Persia.

In 1854 a steam navigation company was organized at Astrakhan for the purpose of opening a regular steam communication between the ports of the Caspian Sea. Up to 1852 there were but a few small government steamers employed on the waters of the Caspian. The steamers of this new company will offer abundant facilities for commercial movements. Not being obliged to winter at Astrakhan, they can be kept afloat the entire year, and thus maintain regular communications, not only with the trans-Caucasian ports of Russia and the eastern ports of the Caspian, but also with the Persian coast.

* This trade is exclusively a trade of barter with the Chinese.

In 1848 the entire commerce of Russia with Asia is thus summed up in official returns:

Exports.....	9,144,500 silver roubles.
Imports.....	13,471,750 "
Total.....	\$22,616,250 "

If to the above we add the European commerce of Russia, we shall have for that year nearly 710,000,000 francs, or \$132,060,000.

The general navigation of Russia, for a series of years, is found in official returns, as follows:

Ports of	Vessels entered.				Vessels cleared.			
	1845.	1846.	1847.	1848.	1845.	1846.	1847.	1848.
Baltic Sea.....	2 87	3766	6,231	30,92	29,90	3790	6,241	3023
White Sea.....	573	801	824	330	588	807	822	327
Black and Azof Seas.....	2245	2442	4,201	2815	2222	2432	4,231	2685
Caspian Sea.....	121	116	110	161	140	184	130	162
Total.....	5926	7125	11,366	6401	5940	7213	11,424	6197
Laden.....	3037	2930	3,063	3010	5812	7028	10,968	5456
In ballast....	2889	4195	8,303	3391	1298	185	456	711

ENTERED AND CLEARED.

	1845.	1846.	1847.	1848.
Vessels entered.....	5,926	7,125	11,366	6,401
Vessels cleared.....	5,940	7,213	11,424	6,197
Total.....	11,866	14,338	22,790	12,598
Tonnage entered....	567,702	654,236	968,034	661,540
Tonnage cleared....	573,911	672,864	999,284	588,997
Total.....	1,149,613	1,327,100	1,967,318	1,250,537

The preceding figures demonstrate the increasing activity of Russian maritime commerce. It is proper to observe, however, that the years of 1846 and 1847 are exceptional, as the commerce of these years was simulated by circumstances which were, happily, of a transient character; and they can not, therefore, form a basis for legitimate comparison. The movements in grain alone, in 1847, augmented Russian exports upward of 640,000 tons, equivalent to an increase of 50 per cent.

COMMERCIAL SHIPPING.

	Ships arrived.		Ships sailed.	
	1850.	1851.	1850.	1851.
Baltic ports.....	3,423	3,790	3,545	3,781
White Sea ports....	547	721	541	698
Southern ports.....	2,510	2,535	2,480	2,599
Caspian ports.....	220	227	235	305
Total.....	6,780	7,233	6,801	7,342
Of which				
With goods.....	3,659	3,253	6,433	6,821
In ballast.....	3,121	4,070	368	521
The tonnage of the whole.....	626,373	579,396	576,077	576,299
amounted to tons	1,252,746	1,158,792	1,152,154	1,152,578

The greatest number of ships were English and Russian, viz.: of the former there arrived 1875; and of the latter, 1019. Of ships arrived under other flags were, Turkish, 978; Dutch, 586; Greek, 444; Swedish, 366; Mecklenburg, 329; Russian, 299; Danish, 223; Sardinian, 210; Austrian, 191; and of other nations, 803.

These arrivals and departures were thus distributed in 1852:

Ports of	Arrived.	Cleared.
The Baltic.....	3627	3507
The White Sea.....	827	845
The Black and Azof Seas.....	3929	3889
The Caspian Sea.....	272	266
Total.....	8655	8507

The following table exhibits the national character of the vessels arrived:

Nationality.	No. of Vessels.	Nationality.	No. of Vessels.
England.....	2020	Austria.....	383
Russia.....	1125	Prussia.....	380
Turkey.....	1072	Denmark.....	361
Greece.....	660	Mecklenburg.....	291
Holland.....	513	Hanover.....	253
Sweden.....	470	France.....	186
Sardinia.....	453	Other countries....	493

EXPORTS AND IMPORTS FOR 1854.—(Value in Silver Roubles.)

	Exports.	Imports.
	Roubles d'Arg.	Roubles d'Arg.
By the European frontier of the empire	44,075,497	44,906,535
The kingdom of Poland	9,446,133	9,518,659
The frontiers of Asia.....	9,908,018	15,601,827
Finland.....	1,908,028	331,587
	65,337,681	70,358,608

NAVIGATION FOR 1854.

Ports of	Vessels.	
	Arrived.	Departed.
The Baltic.....	473	463
The White Sea.....	685	747
The Black Sea.....	1183	1409
The Caspian Sea.....	181	211
Total.....	2522	2830

Steam Navigation.—The steam navigation of Russia has largely increased since 1850. In that year there visited the port of Cronstadt 82 steamers, viz.: From London, 8; Hull, 13; Dunkirk, 7; Lübeck, 26; Stettin, 24; Kiel, 2; Havre, 2; Total, 82. Two steamers maintain a regular communication between Riga, Hull, and Stettin, making monthly, sometimes semi-monthly, trips. The frigate-built steamers the *Odessa*, the *Crimea*, and the *Odessa and Kherson*, make annually 33 trips between Odessa and Constantinople, and the steamer *Peter the Great* 19 between Odessa and Galatz. Regular communication is also kept up between St. Petersburg and the ports of Finland and of the Baltic; also between Odessa, Kherson, Nicolaief, and other ports in the south of Russia. These steamers usually make 104 voyages yearly. Two steamers connect the ports of the Sea of Azof; and communication between the ports of Russia and those of Persia is regularly maintained by national steamers. The prospectus of the new Russian Steam Navigation and Traffic Company, the statutes of which received the emperor's sanction on the 3d of August, is published very conspicuously in the *Journal de St. Petersburg*. This company, which, by the extent of its resources, and by its importance to "the regeneration of the internal and foreign trade of Southern Russia," is regarded as one likely to take rank above all other existing Russian companies, will have a capital of six millions of roubles to begin with, divided into 20,000 shares of 300 roubles each. At a future period this capital may be raised to nine millions, by the creation of 10,000 new shares, if agreed to by a general meeting of shareholders. By the 25th statute of the company, none but Russian subjects are capable of holding shares, the laws of the empire prohibiting any foreigners from taking part in the coasting trade between the Sea of Azof and the Russian Black Sea ports, which is an essential part of the company's undertaking. Like the Russian American Company, it is to be placed under the special protection of the imperial government. The objects of its establishment are defined as being "the development of the trade of Southern Russia, and of the commercial as well as the postal communications by steamboats between that part of the empire and foreign countries."

The company is bound to keep up certain lines of communication. Between Odessa and Constantinople, Athos, Smyrna, Rhodes, Beyrout, Jaffa, and Alexandria, its steamboats are to ply three times a month, as well as between Odessa, the Sea of Azof, and the Circassian coast. If it should be deemed advisable, boats from Odessa may touch at the ports of the Crimea, and also at those of the Anatolian coast, before proceeding to Constantinople, or a line may be established from Odessa, taking in Galatz and the ports of the Principities, and ending at Constantinople.

The company are bound, moreover, to provide for eighteen voyages in the year from Odessa to Trieste, calling at Constantinople, Syria, the Ionian Isles, and Ancona, as well as for eighteen voyages in the year from Odessa to Marseilles, stopping at Constantinople, the Piræus, Messina, Naples, Leghorn, and Genoa.

The government will cede to the company, at a price to be fixed by valuation, all the steamboats belonging to the department which has conducted hitherto the postal and commercial intercourse between the different ports of New Russia, together with the wharves, warehouses, and stores belonging to that department.

The company is to be aided by the government with a subvention, calculated at so much per mile, allowed upon the voyage actually made by the company's vessels. This allowance during the first ten years will be at the rate of 5-roubles 22 kopecks for the Levant voyages, 3 roubles 49½ kopecks for the Marseilles, and 4 roubles 7½ kopecks for the Trieste voyages; the allowance for the Black Sea trips will be somewhat lower. After the first ten years the subsidy will decrease regularly in each year. Above this mileage, an annual grant of 64,000 roubles is secured during twenty years.

Commerce with the trans-Caucasian Provinces and on the Caspian Sea.—The trade with the trans-Caucasian countries consists in the importation of Asiatic produce, for which European and colonial merchandise is sent in return. Silk is the principal article of import from this region, and is chiefly destined for European markets. The transit through Persia, of merchandise destined for the trans-Caucasian countries, is becoming more active each succeeding year. The establishment of regular steam packets on the Black Sea, as well as the steamboats belonging to the Volga Steamboat Company, have contributed to make Astrakhan a place of considerable importance to Russian commerce. The yearly increasing commerce of this port attests the importance of these lines of communication. In 1850 there was received from trans-Caucasian countries merchandise valued at 954,625 silver roubles, showing an increase over the imports of the preceding year of 290,432 roubles. This augmentation is to be attributed to the increased demand for the silk of these countries. In 1850 this article alone covered 332,115 roubles, while the quantity in market in 1849 reached only 69,840. The imports into Astrakhan in 1850 amounted to 453,039 roubles, against 139,094 roubles in 1849.

From Russian official statistics for 1853, the following extracts are translated:

"The position of Astrakhan on the Volga, the convenience of its port, and its proximity to the Caspian Sea, are the chief foundations of its commercial importance. The advantage of water transportation of merchandise over land conveyance, draws to this market the larger bulk of all the trade of the neighboring territory. The imports and exports of Astrakhan are thus given for 1853:

Imports.....	768,389 silver roubles.
Exports.....	1,190,143 "
Total.....	1,958,537 "

"This sum is, however, largely augmented, if we add the amount of the internal trade, or trade with the neighboring provinces of Astrakhan. Official returns show this trade to have been in 1853, 28,666,732 francs, or 5,446,790 dollars. The imports at Astrakhan are silk, cottons, dry fruits, and sundries. The exports are cotton tissues, iron, grains, copper, sugar, tea, and hides."

Commerce by the Lines of Orenburg and Siberia.—The commercial movements of Russia with Central Asia are prosecuted with much activity. The value of merchandise exchanged with the Tartars of this portion of Asia in 1850 reached nearly 6,000,000 roubles, showing an increase over the total trade of 1849 of 600,000 roubles. The principal imports were tea (19,070 poods), which passed through the western frontiers of China, amounting in value to 512,482 roubles (equal to 50 cents per pound nearly). In 1851 this trade maintained still greater activity. The value of merchandise imported across the lines of Orenburg and Siberia reached 3½ millions of roubles; and the exchanges, consisting of cotton and woolen cloths, leaf-

sugar, raw and tanned hides, amounted to 2,746,322 roubles. This exhibits an increase over 1850, viz.:

Silver Roubles.	
Imports from China by the frontiers of Orenburg and Siberia.....	219,494
Exports to China by the frontiers of Orenburg and Siberia.....	3,502,502

The principal imports were black and other teas (755,830 lbs., valued at \$437,891, or nearly 58 cents per pound), raw and spun cotton, etc.

Commerce with China at Kiachta in 1851.—This trade, as already remarked, is strictly a barter of merchandise. It takes place from the 6th of February to the 6th of April each year. In 1851 the export trade consisted of woollen cloths, value 3,267,058 silver roubles; cotton cloths, value 1,193,716 silver roubles; Russian leather, 240,939 silver roubles; corals, 259,527 silver roubles; making a total of 4,961,226 roubles, or \$3,720,920. The imports (merchandise received in barter) were teas (122,839 chests and 26,289 small packages). For the interior of Russia there were imported at Kiachta 121,249 half chests, and 30,849 small packages of tea. The duties levied on these imports at the Kiachta custom-house amounted to 4,685,433 roubles, or \$3,504,076; an excess of \$280,560 over the receipts of 1850, and of \$615,225 over those of 1849. The duties, cost of transportation, and other incidental expenses between Kiachta and Moscow, amount to about 100 per cent. on the original cost. This would make the cost price of tea in Moscow \$1 per pound. The profit, however, is realized on the merchandise bartered, on which high and arbitrary prices are usually fixed. The tea in small packages is consumed in Siberia.

Official returns, received since the above was prepared, afford materials for bringing down a report of trade at this important point to a later period. From these it appears that the number of chests of tea (black and green) deposited by the Chinese merchants at Kiachta during the trading season of 1852 reached 100,000. There also arrived 1000 packages for consumption in Siberia. The number of pounds per chest varies; they average, however, about 60 lbs. to a chest of black tea, and about 90 lbs. to the chest of family tea. Besides tea, the Chinese also exchange sugar and sugar-candy; but these articles are usually consumed in the vicinity of Kiachta.

Of late years the Russian traders have derived immense profits from the barter of velvets and velvetens, which are in great demand among the Chinese.

The trade of 1853 presented some novel features. The announcement that 180,000 chests of tea were *in transitu* for Kiachta threw the market, at this point, into the greatest confusion. The merchants received weekly advices as to the state of the market at Moscow, and the great decline which teas had experienced at that time left no alternative to the merchants, in view of the heavy arrivals of teas daily expected, than to raise the prices of Russian merchandise 50 per cent. Any other course would have annihilated the profitable trade so long carried on at this place. The arrivals, however, did not exceed 67,000 chests, and the market maintained its usual tranquillity.

General Summary.—The following summary of the navigation of the different ports of Russia, in 1851 and 1852, is abstracted from official returns:

1851.—Vessels arrived.....	7,325
“ “ cleared.....	7,942
Total tonnage, last.....	700,300
1852.—Vessels arrived.....	8,653
“ “ cleared.....	8,507
Total tonnage, last.....	768,900

Navigation of the Volga in 1852.—The importations at Rybinsk, by the Volga, in 1852, reached in value \$75,449,000 francs, and the exportations 101,621,000 francs. The excess of exports over imports is explained by the fact that Rybinsk exports by water only, and imports by land as well as by water. The returns of imports by land are inaccessible to the stat-

istician; but it is supposed that they would equalize the values of the imports and exports of this market. Rybinsk is one of the most important markets in the interior of Russia. In the import trade there are employed 32 steamboats belonging to the Volga-Kama Steamboat Company; 681 canal-boats; and 3141 barks, flat-boats, etc., propelled by sails and oars.

The export trade of Rybinsk (*i.e.*, the re-exportation of merchandise) employs: By the Volga, 8765 vessels of all kinds; Mologa, 1779; Sheksna, 2221; total, 7765.

Steam Company of the Volga.—From the report of the general meeting of this company, held 27th February [11th March], 1852, the information is gleaned, that the company was organized in 1843 with a capital of 1,300,000 roubles (\$975,000), divided into 6200 shares of 250 roubles (\$187 50) each; that it now owns (in 1852) five iron steamers, which navigate the Volga; namely, the *Sampson* and the *Hercules*, each of 77; the *Kama*, of 50; the *Volga*, of 42; and the *Oka*, of 17 horse-power. Besides these, the company owns nineteen barks and three large bateaux. The capital invested in property (vessels, etc.) amounts to 1,200,000 roubles (\$900,000). In 1852 the company received for freights 384,805 roubles 90 kopecks (\$251,104 42½), besides 3215 roubles 60 kopecks (\$2411 70) interest on capital invested, which brings up their total receipts to 338,021 roubles 50 kopecks (\$253,516 12½).

	Roubles.	Kopecks.	Dollars.	Cts.
Total expenses during the year.....	170,038	45	134,278	83½
Total receipts.....	338,021	50	253,516	12½
Net receipts during the year.....	158,83	05	119,237	28½

This net amount was thus distributed:

	Roubles.	Kopecks.	Dollars.	Cts.
To stockholders, at 20 roubles per Rouble.....	104,000	00	78,000	00
share.....	7,949	15	5,961	86½
Premium to the directors.....	47,038	90	35,275	42½
For reserved capital.....	158,838	05	119,237	28½
Total.....				

Extra Duties.—In addition to the rates given in the tariff, special duties are levied for the benefit of cities, etc., as follows:

At the Port of Archangel.—For the benefit of the town, ½ per cent. on the value of all imports and exports.

At Odessa.—For the benefit of the town: On wheat exported by sea, 1 cent per 5½ bushels. For the benefit of the lyceum, 1½ cent per 5½ bushels, on all kinds of corn exported.

At the Port of Taganrog.—For the benefit of the city: On all merchandise passing through the scales, imported, ½ cent per 36 lbs. Exported, ¾ cent per 36 lbs. On wines imported, ¾ cent per 2½ gallons.

At the Port of Mariopol.—For the benefit of the city: Imports, ¾ cent per pood, dry measure; ¾ cent per pood, liquid measure.

St. Petersburg.—For the bridge on the Neva: On all imports, 2 per cent. on amount of duties.

Moscow.—For a similar purpose to the foregoing: On all imports *via* St. Petersburg, 2 per cent. on amount of duties.

The custom-houses of St. Petersburg, Archangel, and Riga allow foreign goods, imported by privileged merchants, to remain in bond without paying duty, or to be re-exported, during twelve months; if imported by others, six months.

Progress of Cotton Manufactures in Russia.—It has already been remarked, that the manufacture of cotton in the Russian empire is progressing with extraordinary activity. The number of spindles in Russia exceeds 350,000, producing annually upward of 10,800,000 lbs. of cotton yarns. The manufacture of cotton velvets, especially, is becoming highly import-

* A simple calculation will show this to be equal to 8 per cent. on the capital invested. The dividend for the year 1851 was not so large (only seven roubles, or \$5 25 per share), and consequently stock fell to 120 @ 130 roubles per share (\$90 @ \$97 50). In 1853 it again became firm, and commanded a premium.

ant to the direct trade between the United States and Russia, the raw material being almost exclusively supplied, either in the direct or indirect trade, by the former country. Formerly cotton velvets were supplied to the Chinese exclusively by the British. The Chinese now prefer the Russian manufacture; hence it has become a leading staple of barter at the Russo-frontier markets of China.

No foreign nation is allowed to participate in the coasting or internal trade of Russia—*Ordinance, September 9, 1845*. The treaties between Russia and other maritime states all contain the same terms as that between Russia and the United States of December 18, 1832; viz., the vessels of friendly nations, with cargoes in ballast, are to be regarded quite as the domestic, as to export or import, and to port or other duties, or taxes of any kind whatever; but the coasting trade is interdicted. From Finland, flax, and hemp, and iron can be profitably exported to the United States; and from the United States into Finland may be advantageously imported cotton, tobacco, and rice.

The following table exhibits the quantities of raw and spun cotton imported into Russia during the years designated:

Years.	Raw Cotton.	Cotton Twists.	
		White.	Colored.
	Kilogrammes.*	Kilogrammes.	Kilogrammes.
1846	11,863,000	8,128,000	51,000
1847	14,119,000	6,732,000	57,000
1848	20,171,000	6,325,000	56,000
1849	25,470,000	4,672,000	67,000
1850	19,670,000	2,765,000	50,000
Total	91,293,000	28,522,000	281,000
Annual average	18,258,600	5,704,400	56,200

* 100 kilogrammes=220 pounds.

The imports of raw cotton from the United States to Russia for designated periods have already been given, and it has been noticed that the diminution of cotton twists is in a ratio corresponding with the augmentation in the importation of raw cotton. Below is annexed a table, exhibiting the direct trade and navigation between the United States and Russia during the years designated.—*Comm. Rel. U. S.*

COMMERCE OF THE UNITED STATES WITH RUSSIA FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.		Export.	Import.	American.	Foreign.
Sept. 30, 1821	\$127,530	\$500,955	\$628,894	\$1,252,199	....	....	4,521	..
1822	177,261	351,820	529,081	3,307,328	....	\$500	4,325	..
1823	51,635	517,009	648,734	2,253,777	....	1,800	2,771	..
1824	92,766	130,215	231,981	2,209,663	....	....	2,201	..
1825	55,151	232,210	287,401	2,067,110	....	....	3,279	..
1826	11,044	163,604	174,648	2,617,169	....	....	1,366	..
1827	45,510	336,734	382,244	2,080,077	....	....	3,500	117
1828	108,22	341,573	450,495	2,788,362	\$13,553	....	2,755	286
1829	51,684	334,452	386,226	2,218,995	10,213	....	2,443	..
1830	35,461	331,114	416,575	1,621,899	28,700	....	3,492	234
Total	\$757,413	\$3,378,866	\$4,136,279	\$23,027,579	\$52,466	\$2,100	31,212	637
Sept. 30, 1831	\$114,552	\$347,914	\$462,466	\$1,008,328	\$50,423	....	4,310	..
1832	121,114	351,508	582,682	3,251,532	82,083	\$3,000	3,147	391
1833	223,734	430,071	703,805	2,772,550	85,494	2,192	6,495	..
1834	163,627	162,067	325,694	2,535,840	1,546	....	4,979	300
1835	231,607	\$53,840	285,447	2,335,245	6,977	....	3,424	555
1836	326,283	534,730	911,013	2,778,554	12,000	....	6,196	1,199
1837	144,080	1,162,652	1,306,732	2,516,116	3,000	4,000	6,644	4,147
1838	357,047	1,024,252	1,481,299	1,808,596	7,070	1,000	7,253	198
1839	434,837	804,059	1,239,240	2,333,894	1,356	50	8,540	358
1840	234,856	954,025	1,193,481	2,572,427	9,231	....	6,018	477
Total	\$2,358,757	\$5,951,368	\$8,340,165	\$25,083,202	\$299,680	\$10,242	57,009	7,665
Sept. 30, 1841	\$146,118	\$879,611	\$1,025,729	\$2,717,448	....	....	7,405	808
1842	316,026	520,567	836,593	1,350,106	\$4,578	....	5,631	1,699
9 mos., 1843*	301,567	76,226	377,793	742,803	626	\$3,491	4,163	271
June 30, 1844	414,882	140,532	555,414	1,050,419	1,120	....	6,305	1,931
1845	535,845	150,492	727,337	1,492,262	....	....	9,100	1,066
1846	535,388	97,079	632,467	1,570,054	....	....	5,451	1,543
1847	626,332	124,118	750,450	924,673	....	....	4,135	1,362
1848	1,047,582	108,428	1,156,010	1,319,084	....	....	9,588	393
1849	937,567	197,947	1,135,504	940,283	....	74	10,340	1,893
1850	666,435	198,506	864,941	1,511,572	....	....	5,048	3,990
Total	\$5,537,032	\$2,534,206	\$8,071,238	\$18,027,059	\$6,724	\$3,475	67,247	15,346
June 30, 1851	\$1,465,704	\$145,887	\$1,611,691	\$1,302,732	....	....	9,241	3,230
1852	1,061,748	133,792	1,200,480	1,581,620	....	....	10,006	3,045
1853	2,313,175	143,478	2,456,653	1,278,501	....	....	11,958	5,257
1854	335,521	145,055	480,576	1,544,235	....	....	3,891	1,485
1855	48,040	20,414	68,454	250,556	....	....	1,583	..
1856	600,153	86,252	686,405	330,581	....	....	9,720	550
1857	4,474,842	255,039	4,729,881	1,519,420	....	....	27,979	5,436

* Nine months to June 30, and the fiscal year from this time begins July 1.

Principal Ports.—Odessa, a sea-port of southern Russia, on the northwest coast of the Black Sea, between the rivers Dniester and Bug, in lat. 46° 28' 51" N., long. 30° 43' 22" E. The bay or roadstead of Odessa is extensive, the water is deep, and the anchorage is good—the bottom being fine sand and gravel; it is, however, exposed to the southeasterly winds, which render it less safe in winter. The port, which is artificial, being formed of two moles, one of which projects a considerable distance into the sea, and has deep water, with room for three hundred ships.

St. Petersburg, the capital of Russia, situated at the confluence of the River Neva with the eastern extremity of the Gulf of Finland, in lat. 59° 56' 23" N., long. 30° 18' 45" E. Cronstadt, situated on a small island about twenty miles west of St. Petersburg, may in some

measure be considered as the port of the latter. Almost all vessels bound for St. Petersburg touch here, and those drawing above eight feet of water load and unload at Cronstadt—the goods being conveyed to the city in lighters. The water to Cronstadt is ample, there being from twenty-four to thirty-six feet of water.

Russian Possessions in America.—The territory belonging to the Russian American Company comprehends the northwestern portion of North America, extending from Behring's Straits eastward to the meridian of Mt. St. Elias, along both the Arctic and Pacific oceans, and from that mountain southward along the coast chain of hills till it touches the coast in 54° 40' N. lat., forming an area of 394,000 square miles. The Aleutian Islands, though comprised in the Asiatic government of Irkutsk, may be considered as belonging to

this region. The settlements originated with an association of merchants, formed at Irkutsk, who obtained from the Emperor Paul the exclusive privilege of trading for peltries in the Aleutian Islands and adjacent coasts. This privilege was extended by the Emperor Alexander over all Russian America, and the charter was renewed by Nicholas in 1849. The capital and principal factory was first established at Kodiak, but the increasing scarcity of sea otters led the then governor to lay the foundation of New Archangel, which has now become the chief depôt. The Russian dominion over the vast solitudes of the interior is only nominal: the interior, indeed, is a *terra incognita*, and inhabited by tribes who scarcely know the name of their lords. At the present day the Russians occupy only the islands off this coast. New Archangel, the capital, is situated on the island of Sitka, in lat. $57^{\circ} 30' N.$, and long. $135^{\circ} 13' W.$ It is a town of some 1000 inhabitants, and contains the Boards and warehouses of the company. The whole country is under the surveillance of a governor, who derives his authority from the company at Irkutsk. The total population of Russian America is estimated at 60,000 or 70,000, including aborigines. The commerce of this country is chiefly confined to the exportation of furs to Canton, and the import of provisions and agricultural supplies from the Puget's Sound Agricultural Company. It is of little value, being less than \$300,000 a year, and is constantly declining, consequent on the decline of the seal and otter. Bodega, on the coast of California, was formerly a Russian settlement. The British lease the continental part of Russian America for hunting purposes.

Shipping and ship-building are considerably increasing in Finland. The causes are to be sought in the increasing commerce and the general prosperity of the country, in the high prices which have been paid in the last years for the principal exports—wood articles—especially in Southern Europe, and in the high freights paid by foreigners for the employment of Finnish vessels. To encourage shipping and ship-building in Finland, the Russian government has allowed that all materials and articles which are used in ship-building, and are to be had cheaper in foreign countries, may be imported into Finland free of duty. American improvements in ship-building have, in part, already been introduced, and will probably be more generally adopted.—*Comm. Rel. U. S.*

For able articles on the commerce, commercial policy, commercial strength, mines, resources, etc., of Russia, see BLACKWOOD'S *Magazine*, liii. 807; *Bankers' Magazine*, ii. 273; *Quarterly Review*, lxxvii. 188, xix. 131, lxxvi. 218; *Journal of Science*, iii. 153; *Edinburgh Review*, xl. 476 (JEFFREY), xxiii. 340, lxxix.; *Hunt's Merchants' Magazine*, v. 297 (F. WHARTON), x. 207; *Living Age*, xxiv. 529; *American Whig Review*, xii. 616; *North American Review*, xxvii. xxx.

Russia Company, a regulated company in Great Britain for conducting the trade with Russia. It was first incorporated by charter of Philip and Mary, sanctioned by act of Parliament in 1566. The statute 10 and 11 William III., ch. 6, enacts, that every British subject desiring admission into the Russia Company shall be admitted on paying £5; and every individual admitted into the company conducts his business entirely as a private adventurer, or as he would do were the company abolished.

Russia Leather (Fr. *Cuir de Russie*; Ger. *Juften*; It. *Cuojo di Russia*; Pol. *Jachta*; Russ. *Juft*, *Youft*; Sp. *Muscovia*), the tanned hides of oxen and other kine, denominated by the Russians *youfts*, or *juffs*—a designation said to be derived from their being generally manufactured in pairs. The business of tanning is carried on in most towns of the empire, but principally at Moscow and St. Petersburg. Russia leather is soft, has a strongly prominent grain, a great deal of lustre, and a powerful and peculiar odor. It is principally either

red or black: the former is the best, and is largely used in this and other countries in book-binding; for which purpose it is superior to every other material. The black is, however, in very extensive demand in Russia, large quantities being made up into boots and shoes. The process followed by the Russians in the preparation of this valuable commodity has been frequently described; but notwithstanding this circumstance, and the fact that foreigners have repeatedly engaged in the business in Russia, with the intention of making themselves masters of its details, and undertaking it at home, the efforts made to introduce the manufacture into other countries have hitherto entirely failed. One of the best tests of genuine Russia leather is its throwing out a strong odor of burned hide upon being rubbed a little.—RICARD, *Traité Général du Commerce*, tome i. p. 275, ed. 1781.

We extract from Mr. Borrisow's work on the *Commerce of St. Petersburg* the following details with respect to this article: Russia leather forms one of the principal export commodities of St. Petersburg. But since the ports of the Black Sea have been opened, the exports of leather from this port have considerably decreased; Italy, the principal consumer, supplying its wants from Odessa and Taganrog more easily, cheaply, and expeditiously than from St. Petersburg. The chief exportation from the latter is to Prussia, Germany, and England. Frankfort-on-the-Maine and Leipzig are of great importance as respects the trade in Russia leather, on account of the fairs held in them. Juffs are never bought on contract, but always on the spot at cash prices. It nevertheless often happens that agents—in order to secure a lot of juffs, pay a certain sum in advance, and settle for the amount at the first market prices; no prices being fixed in the months of January, February, March, and sometimes even April. Juffs are assorted or *bracketed* when received, according to their different qualities, into *Gave*, *Rosval*, *Malja*, and *Domashna*. The three first sorts are again divided into *heavy* and *light Gave*, *heavy* and *light Rosval*, etc. *Domashna* is the worst, and consequently the cheapest sort. It often happens that juffs are bought unsorted, and then the prices are regulated according as the quantity of *Domashna* contained in the lot is greater or less. Persons well acquainted with the nature of Russia leather prefer purchasing it in this state. Juffs are sold by the *pood*, which consists, as it is commonly expressed, of $4\frac{1}{2}$, $4\frac{3}{4}$, $5\frac{1}{2}$, and $5\frac{3}{4}$ hides. By this is understood, that so many hides make a *pood*, calculated upon the whole lot; and it is to be observed that the lightest juffs are esteemed the best in quality. Heavy juffs, or those of 4 and $4\frac{1}{2}$ hides, are shipped for Italy: the Germans, on the contrary, prefer the lighter sort. Juffs are packed in rolls, each containing 10 hides; and from 10 to 15 of these rolls are packed together in a bundle, which is well secured by thick matting. There are red, white, and black juffs; but the red are most in demand. Their goodness is determined by their being of a high red color, of equal size, and unmixed with small hides: they must also be free from holes, well stretched, and equally thin. In a well-finished lot no thick head or feet parts should be found. If spots resembling flowers are seen on the red hides, it is an additional sign of their good quality, and they are then called *bloomed juffs*. The inside should be clean, soft, and white, and, when taken in the hand, should feel elastic. The best connoisseurs of Russia leather can nearly determine the quality by the smell alone. Great attention must be paid, in shipping juffs, to secure them from being wetted, as damp air alone is sufficient to injure them. Sixty rolls of juffs make a last; 88 *poods* net weight, when shipped for Italy, make a last; and 44 *poods* a ton. The exports of juffs from Russia in 1841 amounted to 177,838 *poods*, and 150,951 pieces, worth together 1,538,191 silver roubles.

Rye (Ger. *Rogken*, *Rocken*; Du. *Rog*, *Rogge*; Fr.

Seigle; It. *Segale*, *Segala*; Sp. *Centeno*; Russ. *Rosch*, *Sel*, *Jar*; Lat. *Secale*; according to some, is a native of Crete; but it is very doubtful if it can now be found wild in any country. It has been cultivated from time immemorial, and is considered as coming nearer in its properties to wheat than any other grain. It is more common than wheat in many parts of Europe, being a more certain crop, and requiring less culture and manure. It is the bread corn of Germany and Russia.—*LOUDON'S Encey. of Agriculture.*

Rye is supposed by some authorities to be a native of the Caspian Caucasian desert; and has been cultivated in the north of Europe and Asia from time immemorial, where it constitutes an important article of human subsistence, being generally mixed with barley or wheat. Its introduction into western Europe is of comparatively recent date, as no mention is made of it in the *Ortus Sanitatis*, published at Augsburg in 1485, which treats at length of barley, millet, oats, and wheat.

The production of rye has decreased 4,457,000 bushels in the aggregate; but in New York it is greater than in 1840 by about 40 per cent. Pennsylvania, which is the largest producer, has fallen off from 6,613,373 to 4,805,160 bushels. Perhaps the general diminution in the quantity of this grain now produced may be accounted for by supposing a corresponding decline in the demand for distilling purposes, to which a large part of the crop is applied.

EXPORTS OF RYE AND SMALL GRAIN FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1856.

Whither exported.	Rye, Oats, and other small grain, and Pulse.
Swedish West Indies	\$634
Danish West Indies	1,308
Hamburg	264,860
Bremen	440,473
Other German ports	8,860
Holland	427,065
Dutch West Indies	222
Dutch Guiana	570
Belgium	1,071,639
England	176,535
Ireland	14,600
Canada	88,317
Other British North American Possessions	14,609
British West Indies	45,325
British Honduras	110
British Guiana	8,037
British Possessions in Africa	1,104
British Australia	94,821
British East Indies	386
France on the Atlantic	18,535
French North American Possessions	178
French West Indies	85
French Guiana	93
Cuba	7,571
Porto Rico	1,676
Turkey in Europe	3,910
Turkey in Asia	67
Hayti	849
San Domingo	86
Mexico	13,6
Central Republic	70
New Granada	350
Venezuela	13,214
Brazil	1,477
Chili	285
Peru	172
Sandwich Islands	4,028
China	461
Whale Fisheries	536
Total, 1855-1856	\$2,718,620
Total, 1850-1857	680,108

Rye was cultivated in the North American colonies soon after their settlement by the English. Gorges speaks of it as growing in Nova Scotia in 1622, as well as of barley and wheat. Plantagenet enumerates it among the productions of North Virginia (New England) in 1648, and alludes to the mixing of it with

maize in the formation of bread. It was also cultivated in South Virginia by Sir William Berkeley previous to that year.

Geographically, rye and barley associate with one another, and grow upon soils the most analogous, and in situations alike exposed. It is cultivated for bread in northern Asia, and all over the continent of Europe, particularly in Russia, Norway, Denmark, Sweden, Germany, and Holland; in the latter of which it is much employed in the manufacture of gin. It is also grown to some extent in England, Scotland, and Wales. In this country it is principally restricted to the Middle and Eastern States, but its culture is giving place to more profitable crops.

The three leading varieties cultivated in the United States are the Spring, Winter, and Southern, the latter differing from the others only from dissimilarity of climate. The yield varies from 10 to 30, or more, bushels per acre, weighing from 48 to 56 lbs. to the bushel.

This grain has never entered largely into our foreign commerce, as the home consumption for a long period nearly kept pace with the supply. The amount exported from the United States in 1801 was 392,276 bushels; in 1812, 82,705 bushels; in 1813, 140,136 bushels. In 1820-'21 there were exported 23,523 barrels of rye flour; in 1830-'31, 19,100 barrels; in 1840-'41, 44,031 barrels; in 1845-'46, 38,530 barrels; in 1846-'47, 48,892 barrels; in 1850-'51, 44,152 barrels.

During the year ending June 1, 1850, there were consumed, of rye, about 2,144,000 bushels in the manufacture of malt and spirituous liquors.

According to the census returns of 1840, the product of the country was 18,645,567 bushels; in 1850, 14,188,637 bushels. Of this amount there was exported from New York \$2,022,352.

PRODUCTION OF RYE IN THE UNITED STATES FOR THE YEARS 1840 AND 1850.

States and Territories.	1840. Bushels.	1850. Bushels.
Alabama	51,088	17,261
Arkansas	6,219	8,047
Columbia, District of	5,081	5,509
Connecticut	737,424	600,893
Delaware	33,546	8,066
Florida	305	1,152
Georgia	60,633	53,750
Illinois	88,197	88,364
Indiana	120,621	78,792
Iowa	3,72	19,916
Kentucky	1,321,973	415,073
Louisiana	1,812	475
Maine	137,441	162,916
Maryland	723,577	226,014
Massachusetts	536,014	481,021
Michigan	43,236	105,871
Mississippi	11,444	9,606
Missouri	68,608	44,268
New Hampshire	393,148	183,117
New Jersey	1,665,820	1,255,578
New York	2,579,323	4,148,182
North Carolina	213,971	221,563
Ohio	814,205	425,918
Pennsylvania	6,613,573	4,805,160
Rhode Island	84,521	20,409
South Carolina	44,738	48,790
Tennessee	304,320	89,137
Texas	...	3,108
Vermont	280,993	176,233
Virginia	1,482,799	458,930
Wisconsin	1,665	81,253
Terri- tories. (Minnesota)	...	125
(Oregon)	...	106
(Utah)	...	210
Total	18,645,567	14,188,637

Ryots. The name given to the cultivators of the soil of Hindostan, who hold their land by a lease which is considered as perpetual, and at a rate fixed by ancient surveys and valuations.

S.

Sable (Ger. *Zobel*; Fr. *Zibelline*; It. *Zibellino*; Russ. *Sohol*), an animal of the weasel tribe, found in the northern parts of Asiatic Russia and America, hunted for the sake of its fur. Its color is generally of a deep glossy brown, and sometimes of a fine glossy black, which is most esteemed. Sable skins have sometimes, though very rarely, been found yellow, and white. The finer sorts of the fur of sables are very scarce and dear. A single skin of the darker color, though not above four inches broad, has been valued as high as \$60. The sable (*Mustela zibellina*, Linn.) is principally a native of the northern regions of Asia; it is hunted and killed for the Russian market, either by a single ball, a blunt arrow, or traps, by exiles or soldiers sent for that purpose, in the deserts of Siberia. The skin is in the highest perfection from November to February. A nearly allied animal, called the "fisher," inhabits North America, and is similarly sought after and destroyed for its fur.—See FUR TRADE.

Saddles (Fr. *Selles*; Ger. *Sattel*; It. *Selle*; Russ. *Sädla*; Sp. *Selles*), seats adapted to horses' backs, for the convenience of the rider.

Safflower, or Bastard Saffron (Ger. *Safflor*; Du. *Saffloer*, *Basterd Safran*; Fr. *Carthame*, *Safran batard*; It. *Zaffrone*; Sp. *Alazor*, *Azafran bastardo*; Russ. *Polerroi*, *Prostoi schafraan*), the flower of an annual plant (*Carthamus tinctorius*, Linn.) growing in India, Egypt, America, and some of the warmer parts of Europe. It is not easily distinguished from saffron by the eye, but it has nothing of its smell or taste. The flowers, which are sometimes sold under the name of *saffranon*, are the only parts employed in dyeing. They yield two sorts of coloring matter: one soluble in water, and producing a yellow of but little beauty; the other is resinous, and best dissolved by the fixed alkalies: it is this last which alone renders safflower so valuable in dyeing; as it affords a red color exceeding in delicacy and beauty, as it does in costliness, any which can be obtained even from cochineal, though much inferior to the latter in durability. The color of safflower will not bear the action of soap, nor even that of the sun and air for a long time; and being very costly, it is principally employed for imitating upon silk the fine scarlet (*ponceau* of the French) and rose colors dyed with cochineal upon woolen cloth.

The fine rose color of safflower, extracted by crystallized soda, precipitated by citric acid, then slowly dried, and ground with the purest talc, produces the beautiful *rouge* known by the name of *rouge végétale*. Safflower should be chosen in flakes of a bright pink color, and of a smell somewhat resembling tobacco. That which is in powder, dark-colored, or oily, ought to be rejected.—HASSELQUIST'S *Voyages*, Engl. ed. p. 352; BANCROFT'S *Permanent Colors*, vol. i. p. 286-289; MILBURN'S *Orient. Commerce*.

Saffron (Ger. *Saffran*; Du. *Safran*; It. *Zafferano*; Sp. *Saffron*; Fr. *Azafran*; Russ. *Schafraan*), a sort of cake prepared from the stigmas, with a proportion of the style, of a perennial bulbous plant (*Crocus sativus*, Linn.). When good, saffron has a sweetish, penetrating, diffusive odor; a warm, pungent, bitterish taste; and a rich, deep orange-red color. It should be chosen fresh, in close, tough, compact cakes, moderately moist, and possessing in an obvious degree all the above-mentioned qualities. The not staining the fingers, the making them oily, and its being of a whitish yellow or blackish color, indicate that it is bad, or too old. Saffron is used in medicine and in the arts; but in England the consumption seems to be diminishing. It is employed to color butter and cheese, and also by painters and dyers.—THOMSON'S *Dispensatory*; LONDON'S *Encyclopædia of Agriculture*.

Sagapenum (Arab. *Sugbenuj*), a concrete gum-resin, the produce of an unknown Persian plant. It

is imported from Alexandria, Smyrna, etc. It has an odor of garlic, and a hot, acrid, bitterish taste. It is in agglutinated drops or masses, of an olive or brownish yellow color, slightly translucent, and breaking with a horny fracture. It softens and is tenacious between the fingers, melts at a low heat, and burns with a crackling noise and white flame, giving out abundance of smoke, and leaving behind a light spongy charcoal. It is used only in medicine.—THOMSON'S *Dispensatory*.

Sago (Malay *Sagu*; Jav. *Sagu*), a species of meal, the produce of a palm (*Metroxylon Sagu*) indigenous to and abundant in such of the Eastern islands as produce spices, where it supplies a principal part of the farinaceous food of the inhabitants. It is produced in China, Japan, Molucca, and the South Sea Islands. The tree, when at maturity, is about 30 feet high, and from 18 to 22 inches in diameter. Before the formation of the fruit, the stem consists of an external wall about two inches thick, the whole interior being filled up with a sort of spongy medullary matter. When the tree attains to maturity, and the fruit is formed, the stem is quite hollow. Being cut down at a proper period, the medullary part is extracted from the trunk, and reduced to a powder like saw-dust. The filaments are next separated by washing. The meal is then laid to dry; and, being made into cakes and baked, is eaten by the islanders. For exportation, the finest sago meal is mixed with water, and the paste rubbed into small grains of the size and form of coriander seeds. This is the species principally brought to England, for which market it should be chosen of a reddish hue, and readily dissolving in hot water into a fine jelly. Within these few years, however, a process has been invented by the Chinese for refining sago, so as to give it a fine pearly lustre; and the sago so cured is in the highest estimation in all the markets. It is a light, wholesome, nutritious food. It is sent from the islands where it is grown to Singapore, where it is granulated and bleached by the Chinese. The export trade to Europe and India is now principally confined to that settlement.—AINSLIE'S *Mal. Indica*; CRAWFORD'S *East. Archipelago*; BELL'S *Review of the Commerce of Bengal*.

Sahara, or the Great Desert (Arab. *Zahra*), a vast region of northern Africa, extending between lat. 16° and 33° N., and long. 17° W., and 23° 10' E. Bounded east by Egypt and Nubia, south by Senegambia and Nigritia, west by the Atlantic, and north by Barbary. It consists of an elevated table-land, covered with large blocks of stone, hard-baked earth, gravel, and loose sand; and in many places it is incrustured with salt. It is the greatest desert on the globe, but numerous oases and habitable spots are scattered over its surface, the largest of which are Gadames and Tuat. It is traversed in many directions by caravan routes; travelers on which undergo the most intense sufferings from thirst, and from exposure to the *simoom*, or hot, dry wind from the south and east, which usually lasts 10 or 12 hours: during its continuance the air is impregnated with fine sand, and the sun is barely perceptible. Rain appears to fall in torrents at intervals of 5, 10, or 20 years, and many places of the desert bear evidence of its action even for a much longer period. The heat is excessive during the summer, but in winter the evenings are cool, and during night frequently cold. Palm-trees grow on the borders of the Sahara, and the chief products of its oases are dates and gums.

Sail, in Navigation, an assemblage of several breadths of canvas sewed together by the lists, and edged round with cord, fastened to the yards of a ship to make it drive before the wind. The edges of the cloths or pieces of which a sail is composed are generally sewed together with a double seam, and the whole is skirted round the edges with a cord, called the bolt-rope. Although the form of sails is extremely different, they

are all, nevertheless, triangular or quadrilateral figures; or, in other words, their surfaces are contained either between three or four sides. The former of these are sometimes spread by a yard, as lateen sails, and otherwise by a stay, as stay-sails, or by a mast, as shoulder-of-mutton sails; in all which cases the foremost leech or edge is attached to the said yard, mast, or stay, throughout its whole length. The latter, or those which are four-sided, are either extended by yards, as the principal yards of a ship; or by yards and booms, as the studding-sails, drivers, ring-tails, and all those sails which are set occasionally; or by gaffs and booms, as the mainsails of sloops and brigantines.

Sail is also a name applied to any vessel seen at a distance under sail, and is equivalent to ship.

To *set sail*, is to unfurl and expand the sails upon their respective yards and stays, in order to begin the action of sailing.

To *make sail*, is to spread an additional quantity of sail, so as to increase the ship's velocity.

To *shorten sail*, is to reduce or take in part of the sails, with an intention to diminish the ship's velocity.

To *strike sail*, is to lower it suddenly. This is particularly used in saluting or doing homage to a superior force, or to one whom the law of nations acknowledges as superior in certain regions.—See BLUNT's *Coast Pilot*; BLUNT's *Ship-master's Assistant*, New York, 1857; BOWDITCH's *Navigation*.

Sailing, the movement by which a vessel is wafted along the surface of the water by the action of the wind upon her sails. When a ship changes her state of rest to that of motion, as in advancing out of a harbor, or from her station at anchor, she acquires motion very gradually, as a body which arrives not at a certain velocity till after an infinite repetition of the action of its weight. The first impression of the wind greatly affects its velocity, because the resistance of the water might destroy it: since the velocity being but small at first, the resistance of water which depends upon it will be very feeble. But as the ship increases her motion, the force of the wind on the sails will be diminished; and, on the contrary, the resistance of the water on the bow will accumulate in proportion to the velocity with which the vessel advances. Thus the repetition of the degrees of force, which the action of the sail adds to the motion of the ship, is perpetually decreasing; while the new degrees added to the effort of resistance on the bow are always augmenting. The velocity is then accelerated in proportion as the quantity added is greater than that which is subtracted; but when the two powers become equal, when the impression of the wind on the sails has lost so much of its force as only to act in proportion to the opposite impulse of resistance on the bow, the ship will then acquire no additional velocity, but continue to sail with a constant, uniform motion. The great weight of the ship may, indeed, prevent her from acquiring the greatest velocity; but when she has attained it, she will advance by her own intrinsic motion, without gaining any new degree of velocity, or lessening what she has acquired. She moves then by her own proper force *in vacuo*, without being afterward subject either to the effort of the wind on the sails, or to the resistance of the water on the bow. If at any time the impulse of the water on the bow should destroy any part of the velocity, the effort of the wind on the sails will revive it so that the motion will continue the same. It must, however, be observed, that this state will only subsist when these two powers act upon each other in direct opposition, otherwise they will mutually destroy one another. The whole theory of working ships depends upon this counter action, and the perfect equality which should subsist between the effort of the wind and the impulse of the water.

The effect of sailing is produced by a judicious arrangement of the sails in the direction of the wind. Accordingly, the various modes of sailing are derived

from the different degrees and situations of the wind with regard to the course of the vessel.

Sailing also implies a particular mode of navigation, which is formed on the principles and regulated by the laws of trigonometry. Hence we say, Plain Sailing, Mercator's, Middle-latitude, Parallel, and Great-circle Sailing.

Saint Christopher, or **Saint Kitt's**, one of the British West India Islands, leeward group; lat. (Fort Smith) 17° 17' 7" N., long. 60° 42' 2" W. Length, northwest to southeast, 20 miles; breadth, 5 miles. Area, 68 square miles. Population about 25,000. The soil is particularly adapted to sugar.

Staple Productions.—Sugar, rum, molasses, arrow-root, fruits, and vegetables. The United States export to this island, and the other islands which compose this consular district, flour, grain, lumber (principally pitch-pine), and provision of all kinds. American tonnage employed in the trade with this island in 1853: 81 vessels, with an aggregate tonnage of 5070. There are no British vessels regularly engaged either in the foreign or coasting trade of this island. Hence American ships are frequently chartered to convey sugar, molasses, and other products to England, where, by reason of a protective duty on foreign similar products, they find the best market. In addition to the staples of this island, United States vessels export large quantities of old metals (as brass, iron, copper, lead) and hides. A large portion of the revenue of this island is derived from an export duty on its staple productions.

Port Regulations.—All vessels on entering pay a tonnage duty of 36 cents per ton, and a fee of \$4 to the colonial secretary. There is no pilotage tax, as the port of St. Christopher is open and free from all obstacles, such as reefs, etc. The official returns for six months, from 1st July to 31st December, 1854, will sufficiently exhibit the extent of trade between the United States and St. Christopher.

Imports from United States	\$81,556
Exports to United States	14,714
Balance in favor of the United States	66,842

Saint Croix, the southernmost and largest of the Virgin Islands, and the most important of the Danish possessions. Area, 100 square miles. Population (1845), 25,600.

The commercial intercourse between this island and the United States depends partly on the mother country, and partly on local legislation fixed for the time. There are no privileges allowed other countries which are not allowed the United States. Goods may be re-shipped in American vessels. The money currently passing here is dollars and cents. Danish weight is about 10 per cent. heavier than English. The trade to this island is now less than one-third of what it was before the emancipation. Oftentimes there is not an American vessel in port for months together. The supplies come generally through St. Thomas, which is a free port, and yet under the same government.—For Geology of St. Croix, see SILLIMAN'S *Journal*. XXXV. 64.

AMERICAN PRODUCE IMPORTED DIRECT INTO THE ISLAND OF ST. CROIX.

Articles.	1851.	1852.	1853.
Corn meal..... punch'ns.	3,963	3,740	4,060
Corn meal..... barrels.	66	830	745
Superfine flour..... "	3,594	3,240	3,150
Bread..... "	240	210	190
Beef..... "	60	74	80
Pork..... "	410	560	610
Herrings..... "	320	410	280
Salt fish..... casks.	250	278	310
Rye flour..... barrels.	124	168	210
Red oak staves..... "	231,000	246,000	260,000
White oak staves..... "	140,000	120,000	110,000
White pine lumber feet.	1,867,000	1,760,000	1,720,000
Pitch pine lumber..... "	310,000	185,000	265,000
Shingles..... "	2,315,000	1,580,000	1,956,000
Horses..... number.	14	22	20
Mules..... "	150	165	150
Kegs of nails..... "	70	55	78
Wood hoops..... "	210,000	250,000	280,000

PRODUCTS OF THE ISLAND EXPORTED TO THE UNITED STATES,
1851-53.

Articles.	1851.	1852.	1853.
Sugar..... hogsheads.	1953	806	1057
Sugar..... barrels.	1159	788	75
Rum..... puncheons.	1921	910	1531

Saint Helena, an island in the south Atlantic Ocean, belonging to Great Britain, about 800 miles southeast from Ascension, and nearly 1200 miles from the coast of Lower Guinea. Lat. of observatory, $15^{\circ} 55' S.$, long. $5^{\circ} 44' E.$ Area, 30,300 acres. Population in 1850, 7000, of whom nearly one-half were whites. It is of volcanic origin, and consists of rugged mountains, interspersed with numerous ravines, in one of which, on its northwest shore, is James Town, the residence of the principal authorities. Its centre is a table-land, with an elevation of 1500 feet, but from which several mountains rise to a greater elevation, Diana's Peak being 2700 feet. Climate mild. Mean temperature of year, $61^{\circ} 3'$; winter, $58^{\circ} 4'$; summer, $63^{\circ} 8'$. The island is watered by numerous brooks, and about a fifth part of its surface is fertile, yielding the products both of European and tropical countries. Goats are plentiful in the uplands; but supplies of provisions are mostly procured from abroad, the island lying in the homeward track of ships returning from India. St. Helena is chiefly noted as the place of exile of Napoleon Bonaparte, whose residence, Longwood, was on the elevated plateau of the interior. He lived there from 1816 till his decease, May 5th, 1821.

The United States have a consul resident at this island, which is frequently visited by our ships to and from Asia, India, Cape of Good Hope, etc. By act of 3 and 4 William IV. the island of St. Helena, and all forts, factories, and public edifices, were vested in His Majesty, and the island shall be governed by orders in council.

The average aggregate values of imports at this island from the United States are: For the year 1851, \$6429; for the year 1852, \$8377; for the year 1853, \$30,809; for the six months ending 30th June, 1854, \$12,254. Value of oil and whalebone transhipped by American vessels to the United States, \$16,525. There are no privileges permitted to the commerce of other nations which are denied to the United States; but, on the other hand, there are privileges granted *solely* to vessels of the United States, such as the reduction of custom charges on the transhipment of oil, whalebone, and empty oil casks, as per proclamation of September, 1853, and the remission of port charges to whaling vessels calling here within three months after their first arrival, as per notice of July, 1854, which accommodations have had their effect in the increase of the American fleet at this port. The port charges are levied alike on all foreign vessels as on British. There are no charges on national vessels, either British or foreign, and all are alike furnished with water free of charge. There is no Chamber of Commerce, and the rates of exchange depend on the parties agreeing; generally, however, they are private bills, and are taken at par; the commissariat, however, charges $1\frac{1}{2}$ per cent. There are no duties except on wines, spirits, and beer; only a wharfage tax on all goods landed from Great Britain or any foreign country. There are no price-current sheets issued, the market being unstable; and the supplies from abroad (almost entirely from England) being irregular, every thing, as a general thing, bears a high value. The American whaling fleet, after once entering this port and paying the custom fees, may return to the island at any time within three months, *for water or any other supplies whatsoever, without being subject to the payment a second time of the tonnage or other custom fees; and that every facility will be given for the accommodation of the fleet.*

Saint Johns, a sea-port, and capital of the island and British colony of Newfoundland, North America, near the extremity of the most eastern of the numerous

peninsulas which project from the eastern portion of the island; lat. $47^{\circ} 33' 6'' N.$; long. $52^{\circ} 43' W.$ Population in 1850, 19,000; in 1852, 21,000 (resident), 6000 fishermen. The trade of St. Johns consists chiefly in supplying the fishermen, most of whom are Roman Catholics, with clothing, provisions, and fishing and hunting gear. The harbor of St. Johns is excellent, although narrow at the entrance; the channel, from point to point, being only 360 fathoms wide. The tide rises 5 feet, neap-tides $3\frac{1}{2}$ feet, but very irregularly, being much influenced by the winds. Goods may be transhipped in United States vessels to any place out of this colony without restriction of any sort. The weights and measures are the same as in England. The moneys are in a great degree the same, namely; sovereigns, with Spanish and Mexican dollars, which, however, are now fast disappearing. The current value of the sovereign is 24 shillings, equal to \$4 80, and of the dollar 5 shillings, or 100 cents.

The average wholesale prices of the exports to the United States since July 1, 1853, have been as follows: Seal oil, 60 cents per gallon; cod oil, 55 cents per gallon; codfish, \$2 50 per quintal; herrings, \$2 40 per barrel. Salmon, not quoted above, varies from \$12 to \$20 generally for the tierce of 310 pounds. These articles are rarely sold at retail in this market. The average rate of exchange was 4 to 5 per cent. discount from this colony to the United States. The true par of exchange is 2 per cent. The duties are on imports from all countries alike, as follows: Bread, 6 cents per bag of 112 lbs.; flour, 35 cents per barrel; pork, 72 cents per barrel; beef, 48 cents per barrel; butter, 48 cents per cwt.; manufactured tobacco, 4 cents per lb.; tea, 6 cents per lb. On all unenumerated goods 5 per cent. *ad valorem*; and in this port an additional duty is levied of 10 per cent. *on the duties* above.

Saint Lawrence river, United States and Canada, forms the outlet of the great lakes Superior, Huron, Michigan, Erie, and Ontario, and, after a course of more than 2000 miles, flows into the Gulf of St. Lawrence. It forms the boundary, with the middle of the lakes through which it passes, between the United States and Canada, until it arrives at the 45th degree of north lat. It has different names in different parts of its course. From its mouth to Lake Ontario it is called the St. Lawrence; between Lakes Ontario and Erie, Niagara River; between Lakes Erie and St. Clair, Detroit River; between Lakes St. Clair and Huron, St. Clair River; and between Lakes Huron and Superior, St. Mary's River. It is navigable for ships of the line 400 miles, to Quebec; and for ships of 600 tons to Montreal. The distance from Montreal to Lake Ontario is nearly 200 miles. From Quebec to Montreal it has an average breadth of two miles. At its mouth, the Gulf, from Cape Rosier to Mingau settlement, in Labrador, is 105 miles in length. The elevation from tide-water to Lake Ontario (exceeding two hundred feet) is overcome by seven canals of various lengths, from 12 miles to one mile (but in the aggregate only forty-one miles of canal), having locks two hundred feet in length between the gates, and forty-five feet in width, with an excavated trunk from one hundred to one hundred and forty wide on the water-surface, and a depth of ten feet water. From Lake Ontario to Lake Erie an elevation of three hundred and thirty feet is surmounted by a canal twenty-eight miles in length, with about thirty cut stone locks one hundred and fifty feet long, by twenty-six and a half feet wide, designed for propellers and sail craft. These locks will pass a craft of about five hundred tons burden, while those on the St. Lawrence have a capacity double this amount. The total cost of this navigation may be set down at \$12,000,000. The St. Lawrence Canal was designed for paddle-steamers, which are required as tugs, or to ascend against the current; but from the magnitude of the rapids, and their regular inclination, the aid of the locks is not required in de-

ascending the river. At some of the rapids there are obstacles preventing the descent of deeply-laden craft, but the government are about to give the main channel in all the rapids a depth of ten feet water, when the whole descending trade by steam will keep the river, leaving the canals to the ascending craft.—See CANADA and MONTREAL.

The relative position of the United States and Great Britain in respect to the navigation of the great northern lakes and the River St. Lawrence, appears to be similar to that of the United States and Spain, previously to the cessation of Louisiana and Florida, in respect to the Mississippi; the United States being in possession of the southern shores of the lakes, and the River St. Lawrence to the point where the northern boundary line strikes the river; and Great Britain of the northern shores of the lakes, and the river in its whole extent to the sea, as well as of the southern banks of the river, from the latitude of 45° to its mouth. The claim of the people of the United States of a right to navigate the St. Lawrence to and from the sea was, in 1826, the subject of discussion between the American and British governments.

The navigation of the continuous waters of the United States and Canada is provided for in the following articles of the treaty of June 5, 1854: The third article, whose operation may be affected at the will of the American government, by a suspension of this privilege, as stipulated for in the fourth article, on the part of Great Britain, provides for a reciprocal trade, free of duty, between the United States and the British colonies, in the articles of their respective growth and produce, as enumerated in the schedule thereto annexed.

"It is agreed that the citizens and inhabitants of the United States shall have the right to navigate the River St. Lawrence and the canals in Canada, used as the means of communication between the great lakes and the Atlantic Ocean, with their vessels, boats, and crafts, as fully and freely as the subjects of Her Britannic Majesty, subject only to the same tolls and other assessments as now are or may hereafter be exacted of Her Majesty's said subjects; it being understood, however, that the British government retains the right of suspending this privilege, on giving due notice thereof to the government of the United States.

"It is further agreed, that if at any time the British government should exercise the said reserved right, the government of the United States shall have the right of suspending, if it think fit, the operation of Article 3, of the present treaty, in so far as the province of Canada is affected thereby, for so long as the suspension of the free navigation of the River St. Lawrence or the canals may continue.

"It is further agreed, that British subjects shall have the right freely to navigate Lake Michigan with their vessels, boats, and crafts, so long as the privilege of navigating the River St. Lawrence, secured to the Americans by the above clause of the present article shall continue; and the government of the United States further engages to urge upon the State governments to secure to the subjects of Her Britannic Majesty the use of the several State canals on terms of equality with the inhabitants of the United States."—WHEATON'S *International Law*. For correspondence on navigation of St. Lawrence, see *American Annual Register*, ii. 137; NILES'S *Register*, xxxiii. 411.

Saint Louis, city, Missouri, capital of St. Louis county, is situated on the right bank of the Mississippi, in lat. 38° 37' 28" N., and long. 90° 15' 16" W. from Greenwich, and is one of the largest and most flourishing cities in the great valley of the Mississippi. It is 1200 miles above New Orleans, and 1350 miles above the mouth of the river. About 180 miles south of the city the Ohio comes in to the Great Father of Waters, from its eastern sources in the Alleghanies, after a course of 1000 miles, while a short distance above its mouth the Cumberland and the Tennessee pour their

streams into La Belle Riviere. To the northward, 17 miles, the Missouri pours out its turbid stream into the Mississippi, and the waters flow down to the very front of the city, before the clear waters of the Mississippi yield themselves to the embraces of the great rivers of the West, coming down from the snows of the Rocky Mountains 2000 miles away; At a distance of 33 miles to the northward, the Illinois—now connected with the lakes by the Illinois and Michigan Canal—comes in from the northeast, and is navigated by St. Louis boats as far as the junction of the canal and river at La Salle, 290 miles from St. Louis. St. Louis is the centre of a great railroad system, radiating to all parts of the Union. The system, as at present planned, may be stated as follows: The Pacific Road with its branches. This road runs from St. Louis to the Merrimac River; the main line then crosses the divide between the Merrimac and the Missouri to Jefferson City, the capital of the State; thence leaving the river, it runs directly to the mouth of the Kansas River, to be extended to the Pacific, through the great chain of the Rocky Mountains. This road is 911-60 miles in length, and is finished to Jefferson City. The Ohio and Mississippi Railroad, from Cincinnati to St. Louis, was opened in 1857, 336 miles in length.

The steamboat tonnage of this city will appear from the following table. For the year ending June 30, 1853, the following cities stood entered on the books of the custom-house, as follows:

Cities.	1850.	1851.	1852.
St. Louis.....	24,915	24,065	45,441
Cincinnati.....	16,906	14,187	10,191
Nashville.....	3,776	3,587	3,414
Louisville.....	14,820	12,937	14,166

thus showing an increase at the rate of 11,000 tons per year. For the year ending December 31, 1853, the sugar landed at St. Louis was 50,774 hhds., 13,993 bbls., 46,257 boxes and bags; molasses, 54,933 bbls. and hhds. For this article St. Louis is the great central supply mart. By the government returns, all the sugar shipped from New Orleans for 1852 was 50,793 hhds., and 6534 bbls., while St. Louis imported 50,774 hhds., and 13,993 bbls. The whole imports of coffee into the United States in 1853 were 199,089,823 lbs., and of this St. Louis imported 16,714,720, or about one-twelfth. To show the business of the years 1852-1857, we give the receipts of certain articles:

Articles.	1852.	1853.	1857.
Tobacco.....	14,053	10,102	5,107
".....	12,386	10,529	12,111
Hemp.....	40,122	68,350	78,950
Lead.....	409,314	442,218	162,500
Flour.....	131,333	200,203	305,061
Wheat.....	1,591,886	2,077,427	2,800,000
Corn.....	344,720	459,121	2,243,000
Oats.....	323,081	464,062	618,000
Barley and malt.....	47,264	62,855	111,000
Pork.....	66,306	75,354	110,000
Lard.....	42,515	35,168	55,000
".....	11,815	16,899	15,000
Whisky.....	46,446	51,207	155,000
Hides.....	97,148	101,440	136,000
Bagging.....	3,680	2,326	....
Bale rope.....	42,121	58,437	44,000

Flour manufactured at St. Louis in 1851, 408,099 bbls.; 1852, 383,184 bbls.; 1853, 457,076 bbls.; to this must be added receipts by wagons from country mills, 80,220 barrels, making the sum total of the flour manufactured and brought to St. Louis, 737,499 barrels. The flour manufactured in St. Louis in the year 1856 was 678,000 barrels; and in 1857, 662,000. There are sixteen flour-mills within the limits of the city. The number of steamboat arrivals in 1857 was 3415, with an aggregate tonnage of 964,700 tons. Foreign goods imported in St. Louis for the year ending December 31:

	1851.	1852.	1853.
Goods, etc.....	\$873,672 80	\$1,039,473 00	\$1,496,961 40
Duties.....	239,318 68	290,168 85	457,646 44

—See MISSISSIPPI RIVER.

Saint Petersburg, the modern metropolis of the Russian empire, situated at the confluence of the River Neva with the eastern extremity of the Gulf of Finland, in lat. $59^{\circ} 56' 23''$ N., long. $30^{\circ} 18\frac{1}{2}'$ E. Population, 480,000. This flourishing emporium was founded by Peter the Great, whose name it bears, in 1703. In the same year, the first merchant ship that ever appeared on the Neva arrived from Holland; and the czar, to mark his sense of the value of such visitors, treated the captain and crew with the greatest hospitality, and loaded them with presents. In 1714, 16 ships arrived at St. Petersburg; in 1730 the number had increased to 180; and so rapid has been the progress of commerce and civilization in Russia since that period, that at present from 1200 to 1500 ships annually enter and clear out from St. Petersburg! It is much to be regretted that, although favorable to commerce, the situation of St. Petersburg is in other respects far from good. The ground on which it stands is very low and swampy; it has on different occasions sustained great injury from inundations; and the country round is, generally speaking, a morass and forest, so that almost every thing required for the subsistence of the inhabitants must be brought from a distance. No one less bold and daring than Peter the Great would have thought of selecting such a situation for the metropolis of his empire; and none possessed of less power and resolution could have succeeded in overcoming the all but insuperable obstacles which the nature of the country opposed to the completion of his gigantic schemes.

Cronstadt, situated on a small island about 20 miles west of St. Petersburg, may, in some measure, be considered as the port of the latter. Almost all vessels bound for St. Petersburg touch there; and those drawing above 8 feet water load and unload at Cronstadt; the goods being conveyed from and to the city in lighters, the charges of which vary according to the demand at the time. The merchants' harbor at Cronstadt is fitted to contain about 600 ships; but it is exposed to the westerly winds. Cronstadt is strongly fortified, and is the principal station of the Russian fleet. Vessels bound for St. Petersburg must pass by the narrow channel to the south of the island, commanded by the fortifications of Cronstadt on the one side, and of Cronslot on the other.

Money.—Accounts are kept at St. Petersburg, and throughout Russia, in roubles of 100 copecks.

The only gold coin at present struck is the $\frac{1}{2}$ imperial, or 3-rouble piece, = 16s. sterling very nearly. The silver rouble, worth 3s. 2½d. sterling very nearly, was declared, by a ukase issued in 1839, to be worth 8½ paper roubles.

But another ukase, issued on the 14th June, 1843, directs that the old bank-note roubles in circulation, amounting to the sum of 595,776,310, being equal, at the exchange of 3½, to 170,221,803 silver roubles, should be called in, and replaced by an issue of 170,221,000 *billets du credit*, to be exchangeable at the pleasure of the holder for silver roubles. This is a most important regulation, and if it be fully carried out, the distinction between silver and paper roubles will disappear; at the same time that additional security will be given to all sorts of industrious undertakings, and to the credit of the government.

Weights and Measures.—The Russian weights are the same for gold, silver, and merchandise: viz.,

3 Soltnicks = 1 Loth.	40 Pounds = 1 Poood.
32 Loths = 1 Pound.	10 Pooods = 1 Berkovitz.

The Russian pound contains, according to Kelly, 6318.5 English grains. Hence 100 lbs. Russian = 90.26 lbs. avoirdupois = 40.93 kilog. The poood = 36 lbs. 1 oz. 11 drs., but among merchants it is reckoned = 36 lbs. According to Nelkenbrecher, 100 lbs. Russian = 90.19 lbs. avoirdupois = 40.9 kilog. = 82.8 lbs. of Amsterdam = 84.444 of Hamburg.

The principal measure for corn is the chetwert, divided into 2 osmins, 4 pajocks, 8 chetwericks, or 64 ger-

nitz. The chetwert = 5.77 imperial bushels. Hence 100 chetwerts = 72.12 imperial quarters.

In liquid measure,	3 Wedros = 1 Anker.
11 Tsharky = 1 Krashka.	6 Ankers = 1 Oxhoft.
8 Krashka = 1 Wedro.	2 Oxhoft = 1 Pipe.
40 Wedros = 1 Sorokovy.	In long measure,
The Wedro = 3½ English	16 Werzhok = 1 Arsheen.
wine gallons.	8 Arsheen = 1 Sashen.
13½ Bottles = 1 Wedro.	500 Sashen = 1 Verst.

1 sashen = 7 English feet. 1 arsheen = 28 English inches. 100 Russian feet = 114½ English feet. The verst, or Russian mile, = 5 furlongs 12 poles. The English inch and foot are used throughout Russia, chiefly, however, in the measuring of timber.—KELLY'S *Cambist*, art. *Russia*; NELKENBRECHER, *Manuel Universel*.

The following regulations for the importation of foreign goods are strictly enforced. All goods imported must be accompanied by the following documents:

1. The declaration of the captain, according to the form ordered by the custom-house.

2. An attestation from the Russian consul, and, where there is no consul, from the custom-house of the place, of the quantity and quality of the goods, and a declaration that they are not the produce, manufacture, or property of an enemy's country.

3. Bills of lading of all goods, in which the weight, measure, or quantity of each package must be specified. In case the bills of lading are not exactly after this regulation, the goods pay double duty as a fine. In case more is found than specified in the bill of lading, the surplus is confiscated; if less is found, the duty must be paid on the quantity specified. Of wine, it is not sufficient to specify the number of pipes or hogheads only, but also their contents in gallons, etc. Of lemons, the number in each box must be specified. Of manufactured goods, the measure of each piece must be specified, and the number of pieces in each bale. It is indifferent whether the gross or the net weight be specified. If the packages be all of the same weight, measure, or contents, a general specification will do; as, for example, 100 casks alum, of 17 lispond each. Of dye-woods the weight of the whole need only be mentioned. Of goods of small bulk, as pepper, etc., it is sufficient to state the weight of every five or ten bales, but with specification of the numbers. There must not be any erasures or blots in the bill of lading. All goods not accompanied by these documents, or where the documents are not according to the above regulations, will be sent back. Bills of lading may be made out either to some house or to order.

The following charges have been fixed by the merchants of St. Petersburg:

	Per Ct.
Commission on sales and purchases	2
Extra charges on all goods	1
Commission and extra charges for goods delivered up	2
Brokerage on sales and purchases	½
Ditto on bills	½
Ditto on freight, per ton, 60 copecks.	½
Stamps	½
Charges on duty, paid inward	4
Ditto, paid outward	4
Commission for collecting freight, or average inward	3
Commission for procuring freight outward	2
For clearances, 40 roubles.	
Dues to be paid to the Church, 10 roubles each vessel.	
Clearing of ships of or under	
25 lasts each	40 roubles each vessel.
25 to 50 lasts each	60 " " "
50 to 75 " "	80 " " "
75 to 100 " "	100 " " "
100 to 150 " "	150 " " "
150 or above	200 " " "

Tare on Goods exported, as fixed by the Custom-house.

	Per Ct.
Dry Goods.	
In barrels or chests	10
In sacks	2
In mats, or sacks made of mats	3
Except Muscovy leather, of which is deducted	5
Moist Goods.	
Pressed caviare	13
Soap	3
Meat and salt fish	20

Moist Goods.	Per Ct.
Tallow.....	10
Honey.....	17
Treacle.....	10
All other moist goods.....	17

Tare on Goods imported.

Dry Goods.	Per Ct.
In barrels or chests.....	10
In vessels of glass or earthen-ware.....	20
In sacks.....	2
In double sacks.....	4
In mats.....	5
In casks and mats together.....	5
In baskets.....	5

Moist Goods imported.—The following are some of the tares specified in the tariff:

Olive oil in casks.....	17 per cent.
“ of Italy, in flasks and straw.....	20
“ of France, in flasks and earthen-ware.....	40
Salt fish in barrels.....	36
And generally on all moist goods in barrels.....	17
“ in glass and earthen-ware.....	20

Miscellaneous Goods.

Cotton twist in bales.....	6 per cent.
“ in chests and barrels.....	15
Cochineal must be weighed in the sacks after being taken from the casks; for every sack of from 4 to 7 poods.....	2 lbs.
“ sacks of from 2 to 3½ poods.....	1
Indigo in serons; every seron of from 5½ to 7 poods.....	84
“ in half serons, 2½ to 4 poods.....	20
“ of Guatemala.....	20 per cent.
“ in boxes.....	20

Bills drawn in Russia, and payable after date, are allowed 10 days' grace; but if payable at sight, 3 days only. Sundays and holidays are included in both cases. The Julian calendar, or old style, is still retained throughout Russia. This is 12 days later than the new style; and in leap-years, 13 days, after the month of February.

Port Charges.—The regular charges which ships have to pay at the ports of St. Petersburg and Cronstadt comprise the following fixed dues and expenses; viz., lastage, passes, clearing at Cronstadt, address money, St. Petersburg and Cronstadt church money, Cronstadt expedition and allowance to the Russia Company's agent, for all which a charge is made in the ship's account in one sum, proportionally to the ship's register tonnage, according to the following scale: viz.,

Tons Register.	Silv. Roub.	Tons Register.	Silv. Roub.
For 61.....	43 0	For 322 to 341.....	136 0
“ 62 to 81.....	56 0	“ 342 to 361.....	141 14
“ 82 to 101.....	61 14	“ 362 to 381.....	149 14
“ 102 to 121.....	66 28	“ 382 to 401.....	154 0
“ 122 to 141.....	74 0	“ 402 to 421.....	162 0
“ 142 to 161.....	79 14	“ 422 to 441.....	167 14
“ 162 to 181.....	84 28	“ 442 to 461.....	175 14
“ 182 to 201.....	92 0	“ 462 to 481.....	180 0
“ 202 to 221.....	97 14	“ 482 to 501.....	188 0
“ 222 to 241.....	102 28	“ 502 to 521.....	193 14
“ 242 to 261.....	110 28	“ 522 to 541.....	200 86
“ 262 to 281.....	115 14	“ 542 to 561.....	206 0
“ 282 to 301.....	123 14	“ 562 to 581.....	214 0
“ 302 to 321.....	128 28	“ 582 to 600.....	218 86

Trade, etc.—St. Petersburg has the most extensive foreign trade of any city in the north of Europe. This arises from its being the only great maritime outlet on the Gulf of Finland, and from its vast and various communications with the interior of the country. Few countries have such an extent of internal navigation as Russia. The iron and furs of Siberia, and the teas of China, are received at St. Petersburg by rivers and canals *via* the Caspian; but owing to the great distance of those countries, and the short period of the year during which the rivers and canals are navigable, they take three years in their transit. Immense quantities of goods are also conveyed during winter upon the ice, in sledges, to the different ports, and to the nearest *pristans*, or places in the interior where barks are built for river or canal navigation. They are put on board in anticipation of the period of sailing, that the barks may be ready to take advantage of the high water, by floating down with the current as soon as the snow and ice begin to melt. The cargoes carried up the river into the interior during summer are principally

conveyed to their ultimate destinations by the sledge roads during winter. The conveyance by the latter is generally the most expeditious; and it, as well as the internal conveyance by water, is performed at a very moderate expense. The barks that come from the interior are mostly of a very rude construction, flat-bottomed, and seldom drawing more than 20 or 30 inches water. When they arrive at their destination, they are sold or broken up for fire-wood. Those that leave the ports for the interior are of a superior description, and are comparatively few in number; the commodities imported being at an average, of much greater value relatively to their bulk and weight than those that are exported.

Principal Articles of Export.—The principal articles of export are tallow, hemp, and flax; grain, particularly wheat; linseed, timber, copper; hides, potashes, bristles, hemp-seed oil, furs, leather; fox, hare, and squirrel skins; canvas and coarse linen, cordage, caviare, wax, isinglass, quills, tar, etc. Tallow, both for candles and soap, is more largely exported from this than from any other port in the Baltic or elsewhere, and is an article of great commercial importance.—*See TALLOW.* Hemp is of good quality, though inferior to that of Riga: it is assorted, according to its quality, into *clean*, or *firsts*; *outshot*, or *seconds*; and *half-clean*, or *thirds*. The first sort should be quite clean, and free from spills; the second is less so; and the third, or *half-clean*, contains a still greater portion of spills, and is, besides, of mixed qualities and colors. Russian flax is much esteemed for the length of its fibre; it is naturally brownish, but becomes very white after the first bleaching. Three qualities are distinguished; viz., 12 head, 9 head, and 6 head. Iron of good quality, and preferable to that from the other Russian ports, is of two kinds, old and new sables, the former being the best. It used to be exported in considerable quantities; but the shipments are now much reduced.

Commerce.—The total value of the exports of St. Petersburg in 1852 amounted to nearly \$30,000,000. A considerable augmentation was experienced in certain descriptions of merchandise. The quantities of wool and copper more than tripled, and of wheat and flax-seed oil more than doubled the quantities exported during the year 1850. Potashes increased 50 per cent.; on the other hand, oats decreased $\frac{3}{5}$, peltries $\frac{1}{3}$, iron $\frac{1}{2}$, tallow 25 per cent.; flax-seed, hemp, and woven goods more than 10 per cent. Sugar, tobacco, salt, wines, silk, and cotton yarns also fell much below the usual importations. An augmentation, however, was noted in the importation of fruits, rice, raw cotton, and Champagne wine.

Notwithstanding a heavy expenditure was applied by the Russian government to the improvement of St. Petersburg as the commercial emporium of Russia, still, owing to the numerous difficulties encountered, and the severity of the climate allowing but six months in the year for the continuance of these works, the result by no means realized the expectations of the government. The consequence was, that the low waters in the rivers, and the almost total absence of water in the canals, kept back the produce usually forwarded from the interior. It was not until toward the end of July that the trade of St. Petersburg exhibited any briskness. During the month of May, several British vessels arrived and cleared in ballast; but in the latter part of July and August freight offered in great abundance, although the arrivals were numerous. From this period the trade continued unusually brisk, until early in November, when the navigation closed.

Subjoined is a statement of the principal exports from St. Petersburg in 1852:

TALLOW. To England.....	1,861,982 poods.
Other countries.....	174,834 “
Total.....	2,037,816 “
Average price:	
31 roubles 71 kopecks per berkowitz = 7½ cents per lb., nearly.	

FLAXSEED. To England	145,860 tchetwerts.
Other countries.....	57,834 "
Total	203,694 "
Average price, 83½ cents per bushel, nearly.	

FLAX. To England	513,780 poods.
Other countries.....	57,762 "
Total	571,542 "
Average price for best, 6½ cents per pound, nearly.	

HEMP—1st quality. To England.....	1,009,075 poods.
United States.....	125,230 "
Germany.....	30,828 "
Sweden, etc. ..	14,961 "
Total	1,180,094 "

" 2d quality—To England.....	161,047 "
Germany.....	27,040 "
Sweden, etc. ..	16,485 "
France.....	6,292 "
United States.....	3,074 "
Total	213,938 "

" 3d quality—To England.....	118,649 "
Germany.....	118,274 "
Sweden, etc. ..	22,521 "
United States.....	7,081 "
France.....	746 "
Total	267,271 "

Average prices, 1st quality, 5 cents per pound, nearly.	
2d " 4½ "	" "
3d " 4½ "	" "

CLOTHS—canvas for sails.*

To United States.....	4,914 pieces.
Germany.....	3,789 "
England.....	1,630 "
France.....	5 "
Total	10,398 "

" Flemish woollens:

To Germany.....	4,030 "
United States.....	1,304 "
France.....	7 "
Total	5,341 "

" Raven's-duck:

To Germany.....	7,871 "
United States.....	7,350 "
Sardinia.....	3,448 "
England.....	1,978 "
Italy.....	298 "
France.....	80 "
Total	20,025 "

Average prices:	
Sail-cloth (best quality), 16 roubles per piece = \$12 00	
Flemish woollens " 9 " = 6 75	
Raven's-duck " 6 r. 50 kop. " = 4 87½	

BRISTLES. To England	42,443 poods.
United States.....	8,489 "
France.....	7,495 "
Sweden.....	194 "
Other countries.....	62,146 "
Total	121,347 "
Average prices:	

Okalka, 40 a 47 r. per pood = \$80 a \$85 25 per 36 pounds, or 97½ cents per pound; second quality do., 80 r. per pood = \$22 50 per 36 pounds, or 62½ cents per pound.

Souchaya, 20 r. per pood = \$15 00 per 36 pounds, or 41½ cents per pound; 2d quality do., 10 r. per pood = \$7 50 per 36 pounds, or 20½ cents per pound.

HORSE TAILS AND HAIR:

To Germany.....	2,867 poods.
United States.....	2,078 "
France.....	1,766 "
England.....	1,418 "
Sweden, etc. ..	1,012 "
Total	9,726 "
Average price:	

3 r. 80 kop. per pood = \$2 62½ per 36 lbs., or 7½ cents per lb.

ISINGLASS.† To England.....	2,545 poods.
Germany.....	1,160 "
France.....	761 "
Total	4,466 "
Average price:	

1st quality, 140 r. per pood = \$105 per 36 pounds, or \$2 92 per pound, nearly; 2d quality, 100 a 120 r. per pood = \$75 a \$90 per 36 pounds, or \$2 08½ a \$2 50 per pound.

* Sail-cloth is of variable length and width. The pieces of Flemish woollens are usually 50 archines long, by 1½ wide. Raven's-duck usually the same length, but only one archine wide.

† The supply of this article was so small, and the demand so brisk, as to create the most active competition. This is usually the case.

WOOL. To England	46,260 poods.
France.....	41,952 "
Germany.....	17,530 "
Italy.....	3,105 "
Total	108,857 "

Prices ranged at 9, 10, and 12 roubles per pood = \$6 75, \$7 50, and \$9 per 36 pounds, or 18½, 20½, and 25 cents per pound.

The foregoing were the principal exports from St. Petersburg in 1852, and they are given in detail, inasmuch as they constitute, together with iron, copper, timber, grains, Russian leather, quills, etc., the leading staples of this great commercial emporium.

Navigation of the Neva in 1852.—The following table exhibits the navigation of the Neva (i. e. of St. Petersburg and Cronstadt) in 1852:

Nationality.	Vessels.	Tonnage.	Per Centage on the Whole.
English.....	1159	320,448	54.22
Russian.....	222	62,570	10.59
Prussian.....	205	44,306	7.50
Dutch.....	365	38,915	6.58
United States.....	66	27,284	4.62
Swedish.....	173	16,862	2.85
Danish.....	182	16,290	2.76
French.....	113	13,913	2.35
Sardinian.....	42	11,612	1.96
Norwegian.....	84	9,286	1.57
Lübeck.....	60	7,086	1.20
Hanoverian.....	118	7,052	1.20
Mechlenburg.....	54	6,244	1.06
Oldenburg.....	64	5,760	.97
Bremen.....	10	1,608	.27
Hamburg.....	14	1,536	.26
Portuguese.....	2	272	.04
Total.....	....	....	100.00

It is proper to observe that the percentage is predicated upon the actual entries. Seventy-six of the vessels included in the table wintered at St. Petersburg, and do not, of course, enter into the calculation. These were:

English.....	21	Lübeck.....	6
Bremen.....	1	Norwegian.....	2
Danish.....	6	Prussian.....	3
French.....	1	Russian.....	7
Hanoverian.....	2	Swedish.....	3
Dutch.....	24	Total vessels.....	76
Aggregate tonnage.....		12,034	

—C. D. For further information see *Living Age*, ii. 347; *South. Lit. Messenger*, xv. 427; *Democratic Review*, xi. 151; *British and Foreign Review*, viii. 83; *Blackwood's Magazine*, lxx. 154; *Foreign Quarterly*, xxxviii. 398. For an account of the commercial policy of Russia and the general statistics of trade, see *RUSSIA*.

Saint Thomas, a Danish West India Island, Virgin group, three miles west of St. Johns. Latitude of west extremity, 18° 20' N., long. 64° 55' W. Area, 43 square miles. Population (1847), 12,800. Soil poor. The principal products are sugar and cotton.

The commercial intercourse of the United States with this island is dependent partly on the action of Denmark, and partly on the colonial government. The present commercial regulations are not fixed for a definite period, but may be changed at any time by the recommendation of the colonial council, approved by the Ministry and King of Denmark. There is, however, no change contemplated. By the existing laws and regulations, all nations, including the mother country, are placed on the same footing in their commercial intercourse with this island, except as to the tonnage duties on vessels entering and clearing at this port, which are: on all European vessels, 45 cents per ton; on all others, including American, 19 cents. The distinction is probably made to encourage the introduction of provisions, rather than the dry goods, fancy articles, and liquors imported from Europe. The transshipment in vessels of the United States of goods to ports in Denmark, the Danish colonies, or to a foreign port, is permitted without any privileges or restrictions not granted to or imposed on Danish vessels, or the vessels of any other nations. The moneys, weights,

and measures known and in common use in this island are the same as those established by the supreme law of the mother country, yet the gold and silver coins of the United States and the doubloons of Mexico are also in common use; the latter is worth \$16. The notes of the "Bank of St. Thomas" (a private institution not incorporated) and the notes of the Colonial Bank, issued in \$5, \$10, \$50, and \$100, redeemable in gold and silver, according to the standard value of the currency of the United States, form also a considerable part of the colonial circulation.

The navigation between the United States and St. Thomas, as shown by Consular Returns, was: entered in 1851, 375 vessels, 71,410 tons; cleared, 366 vessels, 69,847 tons; total, 741 vessels, 141,257 tons. Entered in 1852, 368 vessels, 69,490 tons; cleared, 361 vessels, 68,461 tons; total, 829 vessels, 137,941 tons.

FOREIGN IMPORTATIONS AT ST. THOMAS, FROM APRIL 1, 1853, TO MARCH 31, 1854.

Denmark	\$12,349
The Duchies	40,652
Altona and Hamburg	651,607
Bremen	7,833
Great Britain	2,821,114
Holland	80,232
France	421,720
Spain	44,866
Italy	50,406
South American States	75,891
United States of America	670,733
British possessions in North America	9,454
British West India colonies	81,884
Danish colonies	48,884
Spanish colonies	106,477
French colonies	12,250
Dutch colonies	82,089
Swedish colony	2,310
Hayti	84,131
Total	4,654,781

St. Thomas is the central station for packets in general, and for the steam communication between Southampton and the West Indies.

Sal Ammoniac. The manufacture of this salt may be traced to the remotest era. Its name is derived from Ammonia, or the temple of Jupiter Ammon, in Egypt, near to which the salt was originally made. Sal ammoniac exists ready formed in several animal products: The dung and urine of camels contain a sufficient quantity to have rendered its extraction from them a profitable Egyptian art in former times, in order to supply Europe with the article. In that part of Africa, fuel being very scarce, recourse is had to the dung of these animals, which is dried for that purpose by plastering it upon the walls.

Salap, a species of powder prepared from the dried roots of a plant of the orchis kind (*Orchis mascula*, Linn). That which is imported from India is in white oval pieces, hard, clear, and pellucid, without smell, and tasting like tragacanth. As an article of diet, it is said to be light, bland, and nutritious.—AINSLIE'S *Mat. Indica*; MILBURN'S *Oriental Commerce*.

Salmon (Ger. *lachs*, *Salm*; Fr. *Saumon*; It. *Sermone*, *Salamone*; Sp. *Salmon*; Russ. *Leuga*). This excellent fish is too well known to require any description. It is found only in northern seas, being unknown in the Mediterranean and other warm regions. In this country it is an article of much value and importance. It is said to be exceedingly abundant in Japan and Kamtschatka.

Great Britain.—Such salmon as are taken in estuaries or rivers are, of course, the property of those to whom the estuaries or rivers belong, the fisheries in them frequently letting for very large sums; but of late very considerable quantities of salmon have been taken in bays and in the open sea, where the fishing is free to any one who chooses to engage in it. The London market, where the consumption is immense, has been since 1790 principally supplied from the Scotch rivers. The Tweed fishery is the first, in point of magnitude, of any in the kingdom; the take is sometimes quite astonishing, several hundreds having been frequently

taken by a single sweep of the net! Salmon are dispatched in steamers or fast-sailing vessels from the Spey, the Tay, the Tweed, and other Scotch rivers, for London, packed in ice, by which means they are preserved quite fresh. When the season is at its height, and the catch greater than can be taken off fresh, it is salted, pickled, or dried, for winter consumption at home, and for foreign markets. Formerly, such part of the Scotch salmon as was not consumed at home was pickled and kitted after being boiled, and was in this state sent up to London under the name of Newcastle salmon; but the present method of disposing of the fish has so raised its value, as to have nearly deprived all but the richer inhabitants in the environs of the fishery of the use of salmon. There are considerable fisheries in some of the Irish and English rivers, but inferior to those of Scotland. The Scotch salmon fisheries seem to have attained their maximum value toward the end of the last war, when the fisheries in the Tweed were let for from £15,000 to £18,000 a year! and those of the Tay, Dee, Spey, etc., were proportionally valuable. But the value of the Scotch salmon fisheries has, speaking generally, declined greatly of late years; in consequence, partly and principally, of a diminished supply of fish in the rivers, but in some degree, also, from the greater facility of the communication between London and Liverpool, and the consequent importation of Irish salmon into the London markets.—*General Report of Scotland*, vol. iii. p. 327.

This fishery in Canada, at the present time, is very small. In 1786, however, the export was considerable. In parts of the country where, in former years, the catch was large, a few barrels of pickled salmon only were shipped in 1848. In the Gulf of St. Lawrence there were once extensive establishments for the prosecution of this business; but some have been broken up, and others have become unprofitable. Streams that half a century ago afforded sufficient for domestic consumption, and thousands of barrels for export, now yield only hundreds of barrels, and the quantity is rapidly diminishing.

Nova Scotia.—The loyalists, who went to this colony at the peace of 1783, depended very much upon this fishery, and carried it on to advantage. The quantity of salmon exported for some years was sufficient to purchase many articles of comfort, and to save them at times from the miseries of pressing want. The salmon has entirely disappeared in some parts of the colony, and has ceased to be plentiful in all of its rivers and streams. The export of salmon caught in the colony is not large. The whole produce of the fishery in 1851 appears to have been but 1669 barrels.

Newfoundland.—The fishery is still worthy of attention, as reference to the accompanying statistics will show. The export in 1843 was even larger than in 1814.

Labrador.—Captain Henry Atkins, of Boston, who made a voyage to Davis's Straits in the ship *Whale* in 1729, and who visited the coast a second time in 1758, found salmon very abundant. In Salmon River both he and his men caught many while wading, and with their hands. They took all they had salt to cure, and one that measured four feet ten inches in length. Atkins's account, after his return, seems to have induced no attention to the fishery on the part of his townsmen. In 1831 the exports amounted to 2430 tierces of the pickled fish, of the value of \$35,650.

New Brunswick.—The loyalists and other early settlers found the salmon in almost every river and stream in the colony. At present it is never seen in some, is becoming scarce in most, and is of importance as an article of export in the St. Johns alone.

The catch at Salmon Falls, in the St. Croix, thirty years ago, was two hundred in a day, on the average, for three months in a year. A person standing on a "jam of logs" caught there at one time one hundred and eighteen with a dip-net; and a boy fifteen years

old took about five hundred in a season. But such has been the decline, that it is said only two hundred were taken during the entire year of 1850 by all who engaged in the business on the river. It is stated that the dams erected across the river have produced this change in the fishery, and facts appear to sustain the position. The few salmon that now appear in the Oromocto, the Nashwaak, the Maduxnakeag, and the Mispech, as well as in Emerson's and Gardner's creeks, in Great Salmon River and Goose Creek, is attributed to the same cause. In two or three of the streams of minor size, where no obstructions exist, and where the water is not muddy, the pursuit is still attended with some success and profit.

In some other places, the fishery, but for the wanton and lawless destruction of the fish, without reference to its condition or the season of the year, might be carried on advantageously.

To the people of the city of St. Johns the annual catch of salmon is a source of gain. The fisheries of the harbor, by a provision in the city charter, belong to the citizens, or "freemen." The fishing grounds or stations are lotted out, and sold at auction every year for the benefit of those who are entitled to them under the charter. The practical fishermen are the purchasers. The lots are of unequal value, and some merely nominal. The number of salmon taken at St. Johns in 1850 was estimated at 32,000, which sold, whether large or small, at the contract price of one dollar each—except a small part for city consumption—to be packed in ice and sent to Boston. Drift-nets and weirs are used in the fishery, though the former are prohibited by law. Fishermen deprecate the use of torch and spear; but both are sometimes seen in the hands of lumberers and gentlemen sportsmen. The salmon is found on the St. Johns, two hundred miles from the sea, and on several of its tributaries nearer to the ocean. On the Nerepis, one of its branches, on which no mill-dams have been erected, there is a fishery of note—from 1500 to 2000 being taken annually.

It will be seen that the exportation of *cured* salmon from New Brunswick ceased entirely in 1848—the whole catch, not required for consumption, having been packed in ice, and shipped fresh.

STATISTICS OF THE SALMON FISHERY.

EXPORTS FROM CANADA.

Years.	Pickled.			Smoked.
	Tierces.	Barrels.	Kits.	
1788.....	...	...	..	304
1784.....	...	...	..	221
1796.....	1100	...	...	253
1832.....	348	198	47	...
1838.....	49	111	...	...
1843.....	268	120	...	...
1848.....	70	28	...	...

EXPORTS FROM NEWFOUNDLAND.

Years.	Pickled.	
	Tierces.	Value.
1814.....	20.00	\$48,000
1838.....	4408	66,550
1839.....	2922	53,460
1840.....	3396	64,005
1841.....	3642	61,510
1842.....	4715	68,330
1843.....	4053	61,080
1844.....	3753	59,725
1845.....	3545	63,970
1847.....	4976	48,910
1848.....	3822	...
1849.....	5911	...
1850*.....	1953	...

* From St. Johns alone.

EXPORTS FROM LABRADOR.

Year.	Pickled.	
	Tierces.	Value.
1831.....	2430	\$35,650

CAPE BRETON, PRODUCE.

Years.	Barrels.
1847.....	335
1848.....	2.5

EXPORTS FROM NEW BRUNSWICK.

Years.	Pickled.		Smoked.	Fresh.
	Barrels.	Kits.	Number.	Number.
1819.....	362	...	...	...
1822.....	...	2271	...	...
1827.....	594	2692	2,655	...
1828.....	295	1725	2,531	...
1829.....	489	2721	5,795	...
1830.....	1776	2635	5,350	...
1831.....	1199	2597	4,812	...
1832.....	692	2947	4,897	...
1838.....	652	2151	3,708	...
1834.....	160	1965	4,506	...
1835.....	88	5273	9,476	...
1836.....	80	4650	6,964	...
1837.....	1843	1120	6,073	...
1838.....	930	8261	...	...
1839.....	1400	6300	10,201	...
1840.....	1804	2276	1,059	...
1841.....	1825	2653	4,853	...
1842.....	2879	1232	1,858	...
1843.....	2155	855	900	...
1844.....	2479	6419	406	...
1845.....	2621	1261	80	...
1846.....	1811	1529	20	...
1847.....	2426	170	2,243	...
1848.....	2175	...	5,460	...
1850.....	...	...	...	32,000*

* A proportion of the annual catch has been exported fresh for some years, but the quantity can only be conjectured.

IMPORTS AND EXPORTS, NOVA SCOTIA.

Years.	Imports.		Exports.	
	Barrels.	Tierces.	Barrels.	Tierces.
1785.....	...	...	2850	...
1845.....	4251	...	8053	...
1846.....	4745	...	6118	...
1847.....	3716	208	5586	588
1848.....	3219	82	2011	49
1849.....	...	...	5055	...
1850.....	...	...	6412*	340

* From Halifax alone.

—SABINES' *American Fisheries*.

Salonica, a large city and sea-port of European Turkey, at the northeast extremity of the gulf of the same name, lat. 40° 38' 47" N., long. 22° 57' 13" E. Population estimated at 60,000 to 75,000.

This city, originally called Therma, and afterward Thessalonica, is celebrated both in sacred and profane history. It was visited by St. Paul, who has addressed two of his epistles to the Thessalonians. In the days of its prosperity it had an amphitheatre, an extensive hippodrome, numerous temples and triumphal arches, the ruins of which sufficiently attest its ancient splendor.—CLARKE'S *Travels*, vii. 441-478, 8vo ed.

Being the principal emporium of Macedonia, Salonica has always had a considerable trade; and to this circumstance may be ascribed its continued and comparatively prosperous existence, notwithstanding the many vicissitudes it has undergone.

There is no port at Salonica, but there is excellent anchorage in the roads opposite to the town. The access to them is by no means difficult, and pilots are seldom employed. Vessels anchor very near the walls of the town, though it is prudent not to come too close in, owing to the number of small craft at anchor. The depth of water a cable's length from the shore varies from 3½ to 4, and at two cables' length from 7 to 8 fathoms, whence to Cape Carabourum it varies from 12 to 17 fathoms. There is very little rise. Owing to the rivers which empty themselves into the Gulf, the currents setting out are at times strong, and in light winds sufficient to impede the way of the vessel. Next to Constantinople, Salonica is the most important port of Turkey in Europe. In 1850 its maritime commerce reached upward of \$3,500,000; viz., about \$2,000,000 for imports, and \$1,500,000 for exports.

The foreign trade of this port is chiefly engrossed by the British and French flags. The imports consist chiefly of cheap cottons and woolen cloths, and various other manufactures. Its exports are wheat, barley, maize, timber, wool, sponge, raw silk, wine, sesame seed, tobacco, and staves. Colonial produce and manufactured goods are supplied to this port—the former

from second and third hands—by England and Austria. There is nothing to prevent the United States from participating in the trade in this species of merchandise. Neither Austria nor England could compete with this country in supplying the vast quantities of colonial produce, and the cheap white and printed cottons, which are required for consumption in this market. In addition to the supplies needed for the daily wants of 60,000 to 75,000 inhabitants, Salonica furnishes large quantities of colonial and manufactured goods for the yearly fairs of Parlepi, Lucca, and Seres, where the sales are always made for cash. The high price of French cotton and woollen cloths will always preclude the merchants of France from successful competition in this branch of trade; and the heavy expenses attending the circuitous trade through Marseilles, Smyrna, Constantinople, Trieste, and Venice, would necessarily favor direct exportation from the United States. The prices at Salonica are always from 10 to 12 per cent. higher than at Constantinople or Smyrna.

The gross returns of trade at the port of Salonica for the year ending December 31, 1854, show a considerable increase in the import trade, viz.:

Value of imports in 1854.....	\$3,770,235
“ “ in 1853.....	2,857,765
Increase.....	<u>\$912,470</u>

But the returns exhibit a still more considerable increase in the value of the outward trade, viz. :

Value of exports in 1854.....	\$5,492,980
“ “ in 1853.....	3,476,050
Increase.....	<u>\$2,016,930</u>

This large increase, both in the inward and outward trade with the port of Salonica, may be regarded as an evidence of the improving state of the country.

The navigation returns for the same periods exhibit the following results:

Years.	Inward.	Outward.
	Tons.	Tons.
1853	113,498	111,767
1854	79,845	81,192
Decrease	33,653	30,575

British manufactures and produce imported direct...	\$597,375
" " " " indirect.	521,350

Total imports of British manufac's and products	\$1,118,725
Total exports to Great Britain	27,800

Balance, in 1854, in favor of British manufac's. \$1,090,925

A British authority, referring to this trade, says: "A demand for British cotton manufactures of all descriptions daily increases, and every year there is some new outlet of sufficient importance for the establishment of agencies in the interior by the importers at Salonica; hence the prospect of an increase of the import trade in proportion to the increasing value of the export trade. The Austrian and Saxon manufacturers have again turned their attention to this part of Turkey, and are sending larger parcels of low cotton goods."

The above extract is worthy the attention of those engaged in trade with Turkish ports.

Exports.—Owing mainly to the Hellenic invasion, considerable delay was occasioned in getting in the crops in 1854, and, consequently, the supply of grain at Salonica was not equal to the demand. Little was done in wools and cottons, the prices having averaged too high a rate for European markets. The trade in silk was considerable; but, owing to the rise in the price for labor and fire-wood, several of the silk factors preferred sending the silk-pods to France and to the Italian ports, to drawing the raw silk at Salonica.—*U. S. Com. Relations.*

Salt (Ger. *Salz*; Du. *Zout*; Fr. *Sel*; It. *Sale*; Sp. *Sal*; Russ. *Sol*; Lat. *Sal*; Arab. *Melh*; Chin. *Yen*; Hind. *Nimmuck*; Per. *Nun*), the chlorid of sodium of modern chemists, has been known and in common use as a seasoner and preserver of food from the earliest ages. Immense masses of it are found in this and many other countries, which require only to be dug

out and reduced to powder. In that state it is called rock-salt. The water of the ocean also contains a great deal of salt; to which, indeed, it owes its taste, and the power which it possesses of resisting freezing till cooled down to 28°F . When this water is sufficiently evaporated, the salt precipitates in crystals. This is the common process by which it is obtained in many countries. There are various processes by which it may be obtained quite pure. Common salt usually crystallizes in cubes. Its taste is universally known, and is what is strictly denominated *salt*. Its specific gravity is 2.125. It is soluble in 8.82 times its weight of cold water, and in 2.76 times its weight of boiling water.—*THOMSON'S Chemistry.*

Besides its vast utility in seasoning food, and preserving meat both for domestic consumption and during the longest voyages, and in furnishing muriatic acid and soda, salt forms a glaze for coarse pottery, by being thrown into the oven where it is baked; it improves the whiteness and clearness of glass; it gives hardness to soap; in melting metals it preserves their surface from calcination, by defending them from the air, and is employed with advantage in some assays; it is used as a mordant, and for improving certain colours; and enters more or less into many other processes of the arts. Many contradictory statements have been made as to the use of salt as a manure. Probably it may be advantageous in some situations, and not in others.

Salt Mines, Springs, etc.—The principal salt-mines are at Wielitska in Poland, Catalonia in Spain, Altemonte in Calabria, Loowur in Hungary, in many places in Asia and Africa, and in Cheshire in England. The mines at Wielitska are upon a very large scale; but the statements that have frequently been published, of their containing villages inhabited by colonies of miners who never saw the light, are altogether without foundation. These mines have been wrought for more than 600 years.—*Coxe's Travels in the North of Europe*, vol. i. 149. 8vo ed.

The salt-mines in the neighborhood of Northwich, in Cheshire, England, are very extensive. They have been wrought since 1670; and the quantity of salt obtained from them is greater, probably, than is obtained from any other salt-mines in the world. In its solid form, when dug from the mine, Cheshire salt is not sufficiently pure for use. To purify it, it is dissolved in sea-water, from which it is afterward separated by evaporation and crystallization. The greater part of this salt is exported. Salt springs are met with in several countries. Those in Cheshire and Worcestershire furnish a large proportion of the salt made use of in Great Britain. The brine, being pumped up from very deep wells, is evaporated in wrought-iron pans from 20 to 30 feet square and 10 or 12 inches deep, placed over a furnace. Most of the salt used in Scotland, previous to the repeal of the duty, was obtained by the evaporation of sea-water nearly in the way now mentioned; but most part of the Scotch salt-works have since been relinquished.

In warm countries, salt is obtained by the evaporation of sea-water by the heat of the sun; and the crystals of salt made in this way are more perfect and purer, from the greater slowness of the process. French salt is manufactured in this mode, and it has always been in considerable demand.

Duties on Salt.—In ancient Rome, salt was subjected to a duty (*rectigal salinarum*; see BURNAN, *Dissertation de Vectigalibus Pop. Rom. c. 6*); and it has been heavily taxed in most modern states. The *gabelle*, or code of salt laws, formerly established in France, was most oppressive. From 4000 to 5000 persons are calculated to have been sent annually to prison and the galleys for offenses connected with these laws, the severity of which had no inconsiderable share in bringing about the Revolution.—YOUNG'S *Travels in France*, vol. i. p. 598. In England duties upon salt were imposed in the reign of

William III. In 1798 they amounted to 5s. a bushel; but were subsequently increased to 15s. a bushel, or about *thirty times* the cost of the salt! So exorbitant a duty was productive of the worst effects; and occasioned, by its magnitude, and the regulations for allowing salt duty free to the fisheries a vast deal of smuggling. The opinion of the public and of the House of Commons having been strongly pronounced against the tax, it was finally repealed in 1823.

The duty on salt imported into the United States is 15 per cent. by the act of March 8, 1857.

United States.—The following comprehensive account of the manufacture and consumption of salt in this country was written in answer to a request for the statistical information it contains, for the use of a committee of the British Parliament. Its author is a prominent salt merchant of New York, and thoroughly conversant with the subject:

NEW YORK, April 28, 1857.

DEAR SIR,—I have received your letter of the 20th instant, in which you solicit information respecting the manufacture of salt, the quantity made in the United States at each of the works, the rate of freight to the principal ports, the toll paid on domestic and also on foreign salt on our State canals, etc.

The interest I feel in the salt trade of this country prompts me to take some pains to give you the required information. Yet the short time I have had since the receipt of your letter precludes me from answering your several inquiries with perfect satisfaction to myself in regard to their accuracy.

I will, however, venture to give you the following statistics, which, from the best information I have been able to obtain, I believe to be mainly correct:

ESTIMATED QUANTITY OF SALT MANUFACTURED IN THE UNITED STATES PER ANNUM.

	Bushels.
In the State of Massachusetts (mostly in vats built along the sea-shore).....	46,000
In the State of New York (Onondaga County), about.....	6,000,000
In the State of Pennsylvania (Alleghany and Kiskiminetas Rivers).....	900,000
In the State of Virginia (Kanawha and Kings Works).....	8,500,000
In the State of Kentucky (Goose Creek).....	250,000
In the State of Ohio (Muskingum, Hocking River).....	500,000
In the State of Ohio (Pomeroy and West Columbia).....	1,000,000
In the State of Illinois.....	50,000
In the State of Michigan.....	10,000
In the State of Texas.....	20,000
In the State of Florida.....	100,000
Total.....	12,376,000

There are salt lakes in the United States territories—one in the southwesterly part of Texas and one or more in Utah—where salt of good quality is found in great abundance. Nearly all of the salt manufactured in the United States is made by boiling, excepting what is made in Massachusetts, Florida, and the Solar Works at Onondaga. The amount of salt manufactured at the Solar Works of Onondaga in 1856 was 709,891 bushels. The amount of salt manufactured in kettles in Onondaga in 1856 was 5,258,419 bushels. When the works (at Onondaga) are generally running, they require 3,000,000 gallons of brine daily, and the supply is not less than 2,000,000 gallons per day for six months. The annual report of V. W. Smith, Esq., the State Superintendent of the Onondaga salt springs, which I herewith hand you, furnishes valuable information in regard to the manufacture of salt, the saline deposits within our State, and such other general information pertaining to this necessary article of animal subsistence, as to render it one of the most accurate and interesting public documents published in our country.

The wells in the Virginia salt springs are about 900 feet deep. The wells at Pomeroy and West Columbia are from 1000 to 1200 feet deep. The estimated quantity of foreign salt consumed in the United States and territories is about 13,500,000 bushels per annum. The amount of salt consumed in the United States (for va-

rious uses) is about sixty pounds to each inhabitant. The consumption in France is estimated at 21½ pounds; in Great Britain at 25 pounds for each inhabitant. The cost of manufacturing salt by boiling in Onondaga, as per estimate, during five consecutive years, averages about \$1 per barrel of 280 pounds. The freight charged on our canals on domestic salt, in barrels of 280 pounds each, from Onondaga to Buffalo, 198 miles, is about 15 cents per barrel over the toll paid to the State, which is one mill on 1000 pounds per mile in the canals. To Oswego, 35 miles, the freight is about six cents per barrel over the toll.

The freight on foreign and domestic salt from Albany to Buffalo, 364 miles, is about \$3 per ton (of 2000 pounds) over the toll. Freight from Albany to Oswego, about 209 miles, is \$2 per ton over toll. The freight from New York city to Oswego and Buffalo *via* Albany is precisely the same as though shipped at Albany, although 148 miles farther.

The toll on foreign salt on our State canals is five mills on 1000 pounds per mile. The freight on a barrel of salt from Oswego to the principal ports on Lake Erie (average distance about 450 miles) is 12 cents per barrel. The freight to the principal ports on Lake Michigan, distance about 1000 miles, is 25 cents per barrel. The freight from ports on Lake Erie (say Cleveland and Toledo) to the Ohio River and Cincinnati is 50 cents per barrel. The freight from Chicago to the Mississippi River and St. Louis is 50 cents per barrel. The minimum price of salt at the Onondaga works in 1849, '50, and '51 was from 70 to 90 cents per barrel; in 1852, \$1 per barrel; in 1853, \$1 12; in 1854, \$1 25; in 1855, \$1 30; and in 1856, \$1 40 per barrel. The solar salt costs about the same price to manufacturers as boiled salt. The solar salt weighs about 70 pounds to the bushel (measure). The boiled salt weighs about 56 pounds to the bushel, varying, however, according to the position of the kettles, to a weight considerably above and also considerably below this standard. The duty paid to the State of New York on salt manufactured at Onondaga is always reckoned on 56 pounds (the statute bushel), and covers the expense incurred by the State for pumping up the water and delivering it to the premises of the manufacturers.

A salt block at Onondaga, of the largest size, is made of brick about 12 to 15 feet wide, four to five feet high, and forming two parallel arches, extending the whole length of the block. Over and within the top of these arches are placed common cast-iron kettles, holding about 50 to 70 gallons of brine, placed close together in two rows the whole length of the arches. A fire built in the mouth of the arches passes under each kettle into a chimney, built generally 50 to 150 feet high, averaging from 50 to 70 kettles in each block. A single block with one row of kettles is about half of this width. The quantity of salt made in one of these double blocks in the year (say eight months) averages 20,000 to 25,000 bushels of 56 pounds. The cost of a bushel of salt produced at Kanawha is about 17½ cents. The price of freight on a sack of Liverpool salt from New Orleans to Louisville averages about 85 cents per sack. A good portion of the coarse, hard salt imported into the United States from the most southerly islands of the West India group is kiln-dried, cleansed, ground very fine, and put in small packages for culinary or dairy use. The amount of coarse and fine salt imported into the United States from foreign countries for the year ending June 30, 1856, was 15,405,864 bushels. The amount of domestic salt exported during the year ending June 30, 1856, was 698,458 bushels. The amount of foreign salt exported during the year ending June 30, 1856, was 126,427 bushels.

Yours, truly, SAMUEL HOTALING.

Patents were issued by the United States Patent Office in 1856—1. For improvement in apparatus for evaporating salt. 2. Improvement in apparatus for solar salt evaporation. 3. Improvement in salt evaporators.

STATISTICS OF THE SALT MANUFACTURES IN THE UNITED STATES FOR THE YEAR ENDING JUNE 1, 1850.

States.	Number.	Capital.	Raw Material.	Hands employed.		Average yearly wages paid.		Annual Product in Bushels.	Value.
				Male.	Female.	Male.	Female.		
Connecticut....	1	\$4,000	\$4,000	1	1	\$360	\$144	40,000	\$5,600
Florida.....	1	19,000	....	6	2	1,440	288	....	6,000
Illinois.....	1	2,500	2,000	3	..	720	....	20,000	6,000
Kentucky.....	12	121,450	17,050	153	9	16,806	432	246,500	57,825
Maine.....	3	3,100	7,225	4	..	1,080	....	....	9,700
Massachusetts..	9	40,400	60,000	28	7	8,088	1002	....	93,850
New York.....	192	819,950	631,955	873	..	299,376	....	4,500,000	998,315
Ohio.....	32	188,750	35,633	167	..	42,036	....	550,850	132,293
Pennsylvania..	47	168,360	57,189	219	..	55,020	....	919,100	206,796
Texas.....	2	3,475	1,750	15	1	2,280	72	8,000	5,900
Virginia.....	40	1,269,900	234,623	1230	67	317,136	7764	3,479,890	700,466
Total.....	340	\$2,640,885	\$1,051,425	2609	87	\$744,432	\$9792	9,763,840	\$2,222,745

EXPORTS OF DOMESTIC SALT FROM THE UNITED STATES.

To	Year ending June 30,					
	1853.		1854.		1855.	
	Bushels.	Value.	Bushels.	Value.	Bushels.	Value.
Canada.....	508,285	\$115,666	530,560	\$152,371	529,003	\$152,516
Other places.....	7,572	4,063	17,625	6,155	7,078	3,563
Total.....	515,857	\$119,729	548,185	\$159,026	536,073	\$156,079

IMPORTS OF SALT INTO THE UNITED STATES IN THE YEARS 1853, 1854, 1855.

From	Year ending June 30,					
	1853.		1854.		1855.	
	Bushels.	Value.	Bushels.	Value.	Bushels.	Value.
England.....	6,613,204	\$773,712	7,080,979	\$1,000,192	8,884,219	\$1,205,268
British West Indies.....	1,734,864	170,796	1,863,166	207,345	1,187,775	274,386
Other places.....	1,718,913	100,924	1,214,231	103,398	2,854,240	239,326
Total.....	10,066,981	\$1,059,432	10,158,376	\$1,310,935	12,926,234	\$1,718,980

EXPORTS OF SALT OF DOMESTIC PRODUCTION FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Bushels.	Value.
Asiatic Russia.....	912	\$91
Danish West Indies.....	1,304	652
Canada.....	509,504	171,006
Other British N. American Poss..	9,154	2,249
British West Indies.....	410	215
British Australia.....	12,000	4,950
French Guiana.....	7	4
Cuba.....	30,050	8,591
New Granada.....	125	50
Chili.....	6,900	1,563
Sandwich Islands.....	5,625	1,323
Total.....	576,151	\$190,609

IMPORTS OF SALT INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported	Bushels.	Value.
Danish West Indies.....	2,624	\$554
Bremen.....	70	15
Dutch West Indies.....	174,862	31,790
England.....	12,890,863	1,564,854
Ireland.....	74,955	7,743
Malta.....	14,562	1,586
Canada.....	191,298	36,900
Other British N. Amer. Poss..	9,904	1,806
British West Indies.....	1,033,601	153,909
British Honduras.....	1,640	271
British Guiana.....	6,422	1,022
France on the Atlantic.....	14,130	2,758
France on the Mediterranean..	181,914	10,053
French West Indies.....	40,126	2,068
Spain on the Atlantic.....	1,004,714	79,541
Spain on the Mediterranean...	354,977	23,965
Porto Rico.....	1,368	241
Portugal.....	93,143	14,017
Cape de Verd Islands.....	18,925	1,435
Azores.....	5,700	918
Sardinia.....	183,550	17,076
Two Sicilies.....	773,002	55,188
Ports in Africa.....	23,800	1,068
Mexico.....	76,770	15,819
Venezuela.....	5,537	1,279
Sandwich Islands.....	10,356	4,732
China.....	26,207	1,571
Total.....	17,165,704	\$2,032,583

The whole amount of salt inspected on the Onondaga salt springs during the year 1856 was 5,968,810 bushels. This is about 120,000 bushels short of the inspection of 1855, but exceeds, however, that of any previous year, being 160,000 more bushels than were returned in 1854. In the ordinary course of events, considering the increase of population in the Western markets for Onondaga salt, and the additional facilities of

transportation constantly brought into use, the inspection for 1856, according to the official Reports, ought to have reached 6,500,000 bushels. The two principal causes producing the deficiency may be found in a more stringent state of the money market during the whole season, and in the enhancement of the price of salt at the works—\$1 40 per barrel in 1856 against \$1 30 in 1855. The amount of salt actually manufactured in 1856, and either sold and shipped or remaining in original hands, is considerably in excess of the manufacture of any former year. The inspection indicates very accurately the amount of sales, as no more is inspected during the manufacturing season than what is required to fill orders. The arrivals of Onondaga salt at Oswego in 1856 were 3,483,987 bushels, against 3,039,593 in 1855—an increase of 444,394 bushels. The arrivals at Buffalo in 1856 were 1,081,767 bushels, against 1,947,938 in 1855—a decrease of 866,171 bushels. The arrivals at all the lake ports in 1856, compared with those in 1855, show a decrease of 241,778 bushels.

Saltpetre, or Nitrate of Potash (Ger. *Salpeter*; Fr. *Nitre*, *Salpêtre*; It. *Nitro*, *Salmetro*; Sp. *Nitro*, *Salitre*; Russ. *Senitra*; Lat. *Nitrum*; Arab. *Ubkir*; Hind. *Shorah*), a salt well known in commerce, and of great importance. It may be regarded both as a natural and an artificial production; being found on the surface of the soil in many parts of India, Egypt, Italy, etc.; but in these and other places all that is known in commerce is obtained by an artificial process, or by lixiviating earth that has been formed into *nitre* beds. The saltpetre consumed in England is brought from Bengal in an impure state, but crystallized, in bags, each containing 164 lbs. Saltpetre forms the principal ingredient in the manufacture of gunpowder, and is used in various arts. It is also of great utility in the commerce of India, from its furnishing a large amount of dead weight for the shipping engaged in it. Saltpetre possesses considerable antiseptic power. That which is of the best quality and well refined is in long, transparent crystals; its taste is sharp, bitterish, and cooling; it flames much when thrown upon burning coals; it is very brittle; specific gravity, 1.938. It is not altered by exposure to the air.

Beckmann contends, in a long and elaborate dissertation (*Hist. of Invention*), that the ancients were unacquainted with saltpetre, and that their *nitrum* was really an alkaline salt. But as saltpetre is produced

naturally in considerable quantities in Egypt, it is difficult to suppose that they could be entirely ignorant of it, though it would appear that they had confounded it with other things. It has been known in the East from a very early period. Beckmann concurs in opinion with those who believe that gunpowder was invented in India, and brought by the Saracens from Africa to the Europeans, who improved its manufacture, and made it available for warlike purposes.

The Mammoth Cave in Kentucky was used as a place for the manufacture of saltpetre during the war of 1812. The soil in the cave is thoroughly impregnated with saltpetre; but in consequence of the difficulty of transportation, the manufacture has been abandoned.

IMPORTS OF SALTPETRE INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence Imported.	Crude.		Refined, or partly refined.	
	Pounds.	Value.	Pounds.	Value.
England.....	694,041	\$46,680	3116	\$190
British East Indies.....	23,933,708	1,068,207	.....	..
France on the Atlantic.....	149,460	5,992	1826	147
New Granada.....	.....	.....	427	25
Brazil.....	61,308	4,179	.....	..
Chili.....	1,475,920	31,425	.....	..
Total.....	26,314,437	\$1,166,463	4869	\$362

Of this amount there was re-exported the following quantity. There were no exports of saltpetre of domestic production.

FOREIGN EXPORTS OF SALTPETRE FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Crude.		Refined.	
	Pounds.	Value.	Pounds.	Value.
Hamburg.....	1,350,000	\$69,233	394,670	\$27,628
England.....	3,763,000	296,588	1,331,588	99,275
Other places.....	656,008	46,948	105,683	4,802
Total.....	5,769,008	\$412,769	1,831,941	\$131,705

Salvage, as the term is now understood, is an allowance or compensation made to those by whose exertions ships or goods have been saved from the dangers of the seas, fire, pirates, or enemies.

The propriety and justice of making such an allowance must be obvious to every one. It was allowed by the laws of Rhodes, Oleron, and Wisby; and in this respect they have been followed by all modern maritime states. At common law, the party who has saved the goods of another from loss or any imminent peril has a *lien* upon them, and may retain them in his possession till payment of a reasonable salvage.

Salvage upon Losses by Perils of the Sea.—In fixing the rate of salvage, regard is usually had, not only to the labor and peril incurred by the salvors, but also to the situation in which they may happen to stand in respect of the property saved, to the promptitude and alacrity manifested by them, and to the value of the ship and cargo, as well as the degree of danger from which they were rescued. Sometimes as large a proportion as a *half* of the property saved has been allowed as salvage; and in others not more than a *tenth*.

Parties entitled to salvage are all those who have contributed to the safety, either by personal exertions or by summary sacrifice, provided it did not fall within the course of their regular duty to make the exertions or sacrifice. Thus neither the master nor seamen of the ship in danger have any title to it; nor have any passengers for any ordinary assistance they may give; but it is not the duty of passengers to remain on board in time of danger, nor to incur any responsibility by undertaking the management of the ship; and if by doing the one or the other they contribute to the safety of the ship, they may be entitled to salvage.

If, before the service is rendered, a bargain is made for the amount to be paid for the assistance, this amount settles the claim for salvage; so if two ships sail as consorts, as is customary with whaling ships, on the terms of rendering each other mutual assistance, neither can claim salvage for assistance rendered to the other.

All the officers and crew of a British ship are under

obligations to assist ships in distress; they are, nevertheless, to receive salvage for their services, subject to the conditions expressed in the British statutes. The owners, also, of a ship which has saved another are, besides being remunerated for stores or other matters contributed, or injury done to their ship, entitled to salvage for the detention of their ship, the risk of valuating their insurance, etc.—See SHIPPING.

The salvage is to be paid by those who would have borne the loss had there been no assistance, in the proportion to the benefit they have received. If the ship was in the course of earning freight, the freight must contribute. The wearing apparel, etc., of the master and crew are not liable for salvage.

The subject of salvage was largely discussed in our courts in a case of recapture. The District Court of New York allowed as salvage one half the value of the ship. The Circuit Court reversed the decree, and denied all salvage. The Supreme Court of the United States corrected both decrees, and allowed one sixth part of the net value, after deducting the charges. The court in that case admitted the rule to be, that a neutral vessel, captured by a belligerent, was entitled to be discharged without paying salvage, on the ground that no beneficial service was thereby rendered, as the neutral, acting properly, would of course be discharged by the courts of the sovereign of the captor; and they admitted likewise the exception to the rule when belligerent captors and courts were notorious for their unprincipled rapacity. This rule and the exception have been frequently declared in the English admiralty. The rule of British jurisprudence in respect to recaptured property of British subjects to allies, until it appears that they act upon a less liberal principle, and then the allies are treated according to their own measure of justice. The same rule has been adopted by statute in this country, and is founded on the immovable basis of reciprocal justice. Though the contract of seamen be not dissolved by shipwreck, and it be their duty to remain and labor to preserve the wreck and fragments of the ship and cargo, yet they may be entitled to recompense, by way of salvage, for their peculiar services. The wages recovered in the case of shipwreck are in the nature of salvage, and form a lien on the property saved. The character of seamen creates no incapacity to assume that of salvors; and were it otherwise, it would be mischievous to the interests of commerce, inconsistent with natural equity, and would be tempting the unfortunate mariner to obtain by plunder and embezzlement, in a common calamity, what he ought to possess upon principles of justice. The allowance of salvage in such cases is and ought to be liberal; not less, in any case, than the wages would have amounted to; and even an additional recompense should be made in cases of extraordinary danger and distinguished gallantry, when the service was much enhanced by the preservation of life, and the great value of the property at stake.—KENT'S *Commentaries*, vol. iii.—See INSURANCE.

Sample, a small quantity of a commodity exhibited at public or private sales, as a specimen. Sugars, wool, spirits, wine, coffee, and indeed most species of merchandise, are sold by sample. If an article be not, at an average, equal to the sample by which it is sold, the buyer may cancel the contract, and return the article to the seller.

Sandal-wood, the wood of a tree (*Santalum album*, Linn.) having somewhat the appearance of a large myrtle. It is of a deep yellow color, and yields an agreeable perfume. The tree, when cut down, is usually about nine inches in diameter at the root, but sometimes considerably more. After being felled, it is barked, cut into billets, and buried in a dry place for about a couple of months, during which time the white ants eat off the outer wood, without touching the heart, which is the sandal. It is then taken up and sorted, according to the size of the billets. The deeper the

color, and the nearer the root, the higher is the perfume. Reject such pieces as are of a pale color, small, decayed, or have white wood about them; and take especial care that it be not mixed with wood resembling sandal, but without its perfume. — *MILBURN'S Orient. Commerce.*

Sandal-wood is extensively employed by the Hindoos as a perfume in their funeral ceremonies. But the Chinese are its principal consumers. They manufacture it into fans, and small articles of furniture, and use it, when ground into powder, as a cosmetic. During the year ending the 31st of December, 1848, there were imported by British vessels into Canton 20,732 piculs of sandal-wood, valued at \$207,400; and the imports in some years are more than twice this amount. The average importation into Calcutta is about 200 tons a year. It grows principally in Malabar, in the mountainous country at a little distance from the low sea-coast; in Timor; and in the Feejee Islands in the South Sea. Calcutta is principally supplied from Malabar, while China derives the larger portion of her supplies from Timor and the other islands. It is seldom brought to Europe, except by individuals for their own use, or as presents for their friends. — *BELL'S External Comm. of Bengal; CRAWFORD'S Indian Archipelago.*

Sandals, a species of slippers worn by the ancient Jews, Greeks, and Romans. They consisted of a sole with a hollow part at one extreme, to embrace the ankle and leave the upper part of the foot bare. Originally sandals were made of leather; but they afterward became articles of great luxury, being made of gold, silver, or other precious stuff, and most beautifully ornamented.

Sandarach, a resinous substance, commonly met with in loose granules a little larger than a pea, of a whitish yellow color, brittle, inflammable, of a resinous smell, and acrid, aromatic taste. It exudes, it is said, in warm climates, from cracks and incisions in the common juniper bush. It is used as a varnish, dissolved in spirits of wine. — *AINSLIE'S Mat. Indica.*

San Domingo. The old Spanish part of the island of San Domingo, or the Dominican Republic, embraces the territory as settled by the treaty of limits between Spain and France in 1777. According to those limits, its area would comprise about two-thirds of the whole island, or over 18,000 square miles. The population of the republic reaches about 126,500 souls, composed of Spaniards, creoles, and blacks. The population, however, is stated by some authorities to exceed 250,000; but this is probably too large. The natural productions of the republic are all kinds of valuable wood, copper, iron, salt, coal, &c. Its soil is very fertile, but its climate is unhealthy, and at certain seasons exceedingly fatal to foreigners. The chief staples of the republic are mahogany, lignum-vita, dye-woods, tobacco, honey, and hides. The imports from the United States consist of assorted cargoes, flour, &c.; but most usually our vessels enter the ports of the republic in ballast.

The tariff of duties is based upon a fixed value assigned to each class of merchandise, on which a duty of 25 per cent. is levied. The general scope of these duties may be illustrated by selecting from the latest tariff the article of flour. The tariff valuation of this article is \$5 per barrel of from 175 to 200 lbs.; the duty on which, at 25 per cent., would be \$1 25. These duties are permanent (so long as the tariff continues unaltered), and are in no manner dependent on the fluctuation of prices. The tonnage duty on American vessels is \$1 per ton in port, and 50 cents per ton for the coast, being 50 per cent. more than is charged on the vessels of such nations as have recognized the independence of the republic, or have entered into treaties with its government. The effect of this, as well as of other discriminations against the American flag, has been to give to the flags of treaty nations, especially to that of Great Britain, a large share of the carrying

trade between the United States and the Dominican Republic. In 1854 a treaty of amity, commerce, and navigation was agreed upon and executed by plenipotentiaries of the two governments duly appointed for that purpose; but, objections being made to some of its stipulations by the Dominican Legislature, it was not confirmed. An amendment, defining the rights of Dominican citizens in the United States, was proposed, to which the commissioner of the United States objected, and thus the matter is understood to stand at the present time. The following tabular statements exhibit the trade and navigation of the Dominican Republic during a period of four years, ending with 1852, together with an analysis of the trade and navigation of each of the ports, San Domingo and Porto Plata, during the year last designated:

TRADE AND NAVIGATION OF THE DOMINICAN REPUBLIC.

Years.	Vessels entered.	Tons.	Vessels cleared.	Tons.	Imports.	Exports.
1849	248	90,082	216	16,139	\$266,960	\$637,360
1850	272	92,408	268	23,290	762,370	1,047,055
1851	279	94,449	261	21,776	1,190,470	1,284,285
1852	324	90,055	298	29,014	1,212,340	1,620,660

STATEMENT EXHIBITING THE SHARE ASSIGNED TO EACH OF THE TWO PORTS OF SAN DOMINGO AND PORTO PLATA IN THE ABOVE GENERAL TABLE.

ARRIVALS.

Years.	Port of San Domingo.			Porto Plata		
	No. of Vessels.	Tonnage.	Values.	No. of Vessels.	Tonnage.	Values.
1849 ...	180	12,428	\$140,885	118	7,654	\$126,075
1850	147	15,278	439,680	125	7,130	331,080
1851	128	14,272	592,780	151	10,177	606,690
1852	162	19,375	662,685	162	10,680	549,655

DEPARTURES.

Years.	Port of San Domingo.			Porto Plata.		
	No. of Vessels.	Tonnage.	Values.	No. of Vessels.	Tonnage.	Values.
1849 ...	115	9,863	\$270,625	101	6,276	\$366,735
1850	143	16,447	524,185	120	6,943	522,870
1851	119	12,912	394,965	142	8,864	839,320
1852	140	18,468	705,285	163	11,446	915,375

FOREIGN TRADE OF SAN DOMINGO, 1852.

Nationality.	Arrivals.			Departures.		
	No. of Vessels.	Tonnage.	Invoice values of Cargoes.	No. of Vessels.	Tonnage.	Invoice values of Cargoes.
British	38	5,375	\$75,840	38	5,375	\$321,925
Dominican ...	27	767	195,000	6	359	3,250
French	30	5,727	25,506	30	5,660	180,300
Danish	20	1,653	201,500	15	1,713	49,510
Dutch	20	1,168	59,450	24	1,820	40,400
American ...	15	2,266	65,300	14	2,050	57,000
Italian	4	1,009	13,390	3	635	18,450
Hamburg ...	2	352	6,950	2	352	10,000
Prussian ...	2	536	20,855	2	536	13,710
Venezuelan ..	2	96	845	1	22	350
Spanish	1	154	50	1	134	2,390
Swedish	1	312	....	1	312	8,000
Total	162	19,375	\$662,685	140	18,468	\$705,285

FOREIGN TRADE OF PORTO PLATA, 1852.

Nationality.	Arrivals.			Departures.		
	No. of Vessels.	Tonnage.	Invoice values of Cargoes.	No. of Vessels.	Tonnage.	Invoice values of Cargoes.
British	82	3,247	\$129,510	80	3,140	\$719,610
Danish	24	1,805	166,210	24	1,909	136,125
Bremen	9	1,564	119,000	11	2,032	306,445
American ...	8	1,121	31,500	11	1,448	41,145
Dutch	7	744	27,150	6	513	17,425
Hamburg ...	7	1,040	26,150	6	826	108,600
Oldenburg ...	2	190	40,000	3	316	54,425
Sardinian ...	1	207	45,000	2	458	25,500
Hanoverian ..	1	78	....	1	78	19,500
Swedish	1	198	5,000	2	447	65,375
French	1	148	....	1	148	20,850
Portuguese ...	1	140	....	...	...	....
Spanish	1	45	....	1	56	....
Dominican ...	16	141	885	10	86	475
Total	163	10,680	\$589,965	153	11,44	\$915,475

The following is a summary of the trade between the United States and the port of San Domingo during the last six months of 1854, viz.:

Number of vessels entered and cleared 28, with an

aggregate of 2529 tons; of these, four entered in ballast, and ten with assorted cargoes. The homeward cargoes consisted of mahogany, lignum-vitæ, hides, and honey, and amounted in value to \$26,270. During the same period there entered six vessels under British colors, measuring in all 518 tons: one French vessel of 139 tons; one Danish of 125 tons, and one Dominican of 68 tons; total number of foreign vessels (exclusive of American) nine, with an aggregate tonnage of 850 tons. During the first six months of 1855 there entered and cleared 40 vessels from the United States (under the American flag), measuring in the aggregate 3375 tons; of these, 13 entered in ballast, and 7 with assorted cargoes, including one laden in part with flour. Value of cargoes, inward, \$27,650; value of cargoes, homeward, \$44,664. Homeward cargoes consisted of mahogany, lignum-vitæ, satin-wood, fustic, hides, and honey.

The commerce of San Domingo with the United States for the year 1857 was as follows:

Exports to San Domingo	\$44,549
Imports from San Domingo	109,874
Tonnage cleared from United States—American	1920
Foreign	918
Total	2838

The latest revision of the Dominican tariff bears date 18th June, 1853. The valuation of several articles, including domestic cottons, boys' shoes, etc., has been reduced; while in a few others, including women's shoes, there is an increase—on the latter article from \$7 to \$8 per dozen, which will raise the duty from \$1 75 to \$2 per dozen. The financial and political difficulties now experienced in the Dominican Republic can hardly fail to be felt in the general movements of its foreign commerce.

The reader is referred to the *article HAYTI* for the comparative statement of the commerce of the United States with the island of San Domingo—embracing the empire of Hayti and the Dominican Republic—exhibiting the value of exports to and imports from each country, and the tonnage of American and foreign vessels arriving from and departing to each country, during the years designated.

A Dominican vessel arriving in the United States from a port in the Dominican Republic is liable to a tonnage duty of \$1 per ton, that being the duty imposed on the tonnage of vessels of the United States arriving in said republic; but the cargo is not liable to a discriminating duty of 10 per cent., no such duty being levied by the Dominican Republic on the cargoes of United States vessels arriving in the ports of that republic. — See *HAYTI*. For Political Relations of England with San Domingo, see *FRASER'S Mag.* xlii. 133; same article, *Living Age*, xxvii. 126; *Edinburgh Review*, xvii. 372.

Sandwich Islands. A group of eleven islands in the Pacific Ocean. They were discovered by Captain Cook in 1778. Many voyagers report that the natural capacity of the natives seems in no respect below the common standard of mankind. It was in one of these islands that this illustrious circumnavigator fell a victim to the sudden resentment of the natives, Feb. 14, 1779. Tamehameha, chief of Hawaii, becomes king of the group, 1800. Rihoriho, his son, succeeds him, 1819. Idolatry abolished, 1819. Rihoriho and his queen died in England, 1824. Kanikeaouli, 20 years of age, king, 1824. Mission established by the American Board, 1820. In 1832 there were 900 schools and 50,000 pupils in the islands. Treaty with the French, made with admiral Dupetit-Thouars, 1837. Another, enforcing the introduction of Catholic missionaries, etc., 1839. Tamehameha III. becomes king, Dr. G. P. Judd, an American, prime minister. In 1831 there were 14 ships, 2630 tons, belonging to the islands—which are important to the United States as a whaling station.

This remote but interesting group is situated in the

midst of the Pacific Ocean, in about lat. 21° N., and long. 157° W. It comprises eight inhabited and four uninhabited islands, Owhyhee, where Captain Cook was killed, being the most considerable. They are of volcanic formation, and mountainous, some of the peaks rising in Owhyhee to between 13,000 and 14,000 feet in height! The population in 1847 is said to have amounted to above 112,000, of which nearly 40,000 belonged to Owhyhee. But it is a curious fact that the native population has been rapidly decreasing for some years past, and does not now probably exceed a third part of its amount at the epoch of their discovery. The islanders are honorably distinguished among the Polynesian nations by the advances they have made in civilization; and particularly by their progress in manufactures, navigation, and commerce. Christianity was introduced by the American missionaries in 1820, and is now the religion of the state; schools have been established, churches have been built, and the forms of religion are pretty well observed. European usages have become fashionable; and the costume of the better classes, women as well as men, closely resembles that of the Americans.

The following table exhibits the population of the principal islands, according to the census of December, 1853:

Islands.	Natives.	Foreigners.	Total.
Hawaii	24,193	250	24,452
Mauī	17,420	244	17,664
Molokai	8,565	42	3,607
Lanai	599	....	599
Oahu	17,815	1311	19,126
Kauai	6,726	264	6,990
Niihau	790	....	790
Total	71,108	2120	73,228

The staple exports of the islands are: Sugar, molasses, sirup, coffee, goat-skins, sweet potatoes, wool, hides, salt, tallow, beef, pulu,* and arrow-root. Agriculture has made but little progress, and will never, probably, occupy the natives to any great extent. There are many excellent tracts suitable for the production of coffee, wheat, vines, etc.; but the means of subsistence are so easily procured, that the inhabitants have but few inducements, even did they not lack the industry and enterprise, to become extensive agriculturists.

There are large tracts of good grazing land scattered throughout the island, and the growth of cattle is a leading, perhaps the most profitable, branch of agricultural industry. There are also numerous sheep ranges, on which are tended about 12,000 sheep; but the business is not encouraging.

The eminently advantageous position of the Sandwich Islands, lying on the great route between America and China, invited at an early period the enterprise and capital of several European and American settlers, and led to the establishment of a somewhat active trade. They constitute a common centre between the three principal whaling grounds of the Northern Pacific—one on the equator, the other near Japan, and the third toward the Behring Sea.

The principal port is Honolulu, on the south side of the island of Woahoo, in lat. 21° 18' 3" N., long. 157° 55' W. Population about 8500, of whom about 1200 are Englishmen, Americans, and other foreigners. The harbor, to which the place owes all its importance, has a narrow entrance, but it is easy of access at all times of the tide to vessels not drawing more than 18 feet water. The bar at its mouth being narrow, and composed of soft coral, it might easily be made accessible even for line-of-battle ships.

Commercial relations between the United States and the Sandwich Islands had existed for many years before the treaty of 1849. As far back as 1832, when the native population of the islands amounted to 130,315 (nearly double its present number), it appears that the

* A native production used for beds and pillows.

United States imported thence produce to the value of \$920. In 1833 it amounted to \$1094; in 1837 to \$6601; in 1840 to \$16,293; and in 1841 to \$47,630. The tonnage employed was, in 1835, 682 tons; in 1836, 1418 tons; in 1837, 1574 tons; in 1841, 1943 tons; in 1842, 1809 tons; in 1843, 1813 tons; and in 1844, 3217 tons—all American.

It is only within a few years, however, that the trade of the Sandwich Islands with the United States has assumed any considerable importance. The great wealth and rapidly increasing trade of California, together with the facilities which this group, from its geographical position, has always, as already intimated, been enabled to afford to whaling ships, both as a recruiting station and as regards the general supplies which such vessels require during their long cruises in distant latitudes, have recently given to these islands a commercial importance which, under other circumstances, might not have been reached for a century to come. The staples of the island have now a market in California, close at hand, and the communications with the Atlantic coast have become regular and frequent.

Owing to the prevalence of the small-pox, which first made its appearance in the month of May, 1853, and spread with such fatal malignity throughout the group as to carry off nearly 8000 victims, the trade of that year was languid; the markets were overstocked, and prices were, consequently, low and unremunerative.

The retail trade, especially, shared in this general stagnation. The whaling fleet of 1853 was about equal to that of 1852, though, generally, the results of the latter year were not equal to those of the former. The average catch of the Ochotsk fleet was over 1600 barrels, while in the Arctic seas the yield did not average more than 580 barrels. Freights also ruled low, and the demands for the productions of the islands for the markets of California were small, owing chiefly to the fact that the almost nominal difference in prices between the two places precluded all hope of realizing any profits after the payment of duties.

The following summary of the recent commerce of the Sandwich Islands has been compiled from the latest and most authentic sources:

The total amount of imports for 1853 exceeded those of 1852 by \$522,082 64. From the United States they amounted to \$954,919 93, being more than three-fourths of the whole amount imported. The imports for four years, from 1850 to 1853, both inclusive, were as follows:

1850.....	\$1,035,059 70
1851.....	1,828,821 68
1852.....	759,865 54
1853.....	1,231,951 18

Giving an average for the four years of \$1,225,175 02. The amount of imports for 1853 exceeded the average of the past four years by \$56,776 16.

COMPARISON FOR FOUR YEARS.

FOREIGN EXPORTS.

1850.....	\$46,529 72
1851.....	581,402 55
1852.....	581,149 51
1853.....	191,397 66

DOMESTIC EXPORTS.

1850.....	\$596,522 63
1851.....	309,828 94
1852.....	257,251 69
1853.....	275,974 17

The revenue derived from imports was as follows:

In 1850.....	\$121,506 73
In 1851.....	160,002 19
In 1852.....	113,091 93
In 1853.....	155,040 17

The arrivals were as follows:

In 1850... Merchant vessels, 440	Whale ships, 237
In 1851... " 440	" 135
In 1852... " 235	" 519
In 1853... " 194	" 535

The following summary exhibits the general commerce of the Sandwich Islands during the year 1854, as condensed from the report of the collector general of customs:

Total value of imports.....	\$1,306,786 24
" " exports.....	555,122 67
Excess of imports over exports.....	811,663 57

Of the imports, there were from

The United States, Atlantic side.....	\$503,506 39
" " Pacific side.....	348,915 55
Germany.....	198,458 57
Great Britain.....	68,578 73
Australia.....	56,635 19
China.....	53,412 11
Sea.....	22,050 07
Vancouver's Island.....	8,167 50
Tahiti.....	4,407 60
Callao.....	192 00

Imported free of duty.....	\$1,265,022 71
Goods entered in bond.....	55,938 69
Goods withdrawn from bond for consumption.....	25,688 56
Imports at Lahaina.....	\$42,277 79
" Hilo.....	6,253 49
" Kawaihae.....	912 16
" Kealahakua.....	687 84
Total.....	50,136 23

Total..... \$1,306,786 24

ANALYSIS OF EXPORTS.

Value of foreign goods exported.....	\$311,092 97
" domestic products, \$121,054 70	
Value furnished as supplies, 152,975 00	
Total.....	274,029 70

Total..... \$585,122 67

STATEMENT SHOWING THE PRINCIPAL EXPORTS IN 1854 COMPARED WITH THOSE OF 1853.

Exports	1853	1854	Increase.	Decrease.
Sugar.....pounds	634,955	581,777	.....	53,178
Sirup.....gallons	13,244	25,513	10,269	.....
Molasses....."	58,448	41,879	.....	16,569
Salt.....barrels	3,509	5,041	1,532	.....
Coffee.....pounds	50,506	91,090	40,584	.....
Hides.....pieces	1,741	3,006	1,265	.....
Goat skins....."	5,000	16,890	11,290	.....
Tallow.....pounds	16,452	15,405	.....	1,047
Arrow-root....."	.....	6,166	6,166	.....

STATEMENT OF THE QUANTITIES OF OIL AND BONE TRANSHIPMENT IN 1854.

To what Country.	Season.	Sperm Oil.	Whale Oil.	Bone.
United States..	Spring...	49,361	257,350	28,765
" "	Fall.....	60,449	1,268,365	752,339
" "	".....	46,674	104,760	654,241
Bremen.....	".....	.....	10,244	26,288
Havre.....	".....	.....	25,172	46,510
Total.....		156,484	1,665,921	1,508,443

The total number of vessels of war at Honolulu during 1854 was 25, carrying an aggregate of 675 guns; of which number 6 were American, 9 British, and 7 French.

Of merchant vessels at the Hawaiian Islands during the year 1854, the total number was 148, measuring in the aggregate 47,288 tons; of which there were,

American, 103—measuring.....	33,442 tons.
British, 17.....	4,788 "

The total number of whaling vessels at the ports of the Hawaiian Islands during 1854 was 565; of which there were American 534, Bremen 8, and French 22.

The returns from the port of Hilo for the year 1854 exhibit the following commercial movement:

Total value of imports.....	\$11,491 53
Value of exports, domestic produce.....	\$8,323 31
Furnished as supplies to 82 whalers at an overcharge of \$2 25 each.....	18,450 00
Total.....	22,273 81

The transshipments from the port of Hilo during the year were as follows:

Sperm oil.....	20,806 gallons.
Whale oil.....	114,263 "
Whalebone.....	92,974 pounds.

Whaling vessels at the port of Hilo in 1854:

American, 80 vessels—measuring.....	29,898 tons.
French, 2 ".....	1,014 "
Total.. 82 ".....	30,912 "

The following condensed tabular statement, made up from reliable sources, exhibits the general trade of the Sandwich Islands from 1852 to 1855, distinguishing imports from the United States from those from other countries:

Years.	Value of Imports.		Value of Exports.
	From all Countries.	From United States.	
1852.....	\$750,869	\$411,488	\$638,395
1853.....	1,281,951	954,919	466,772
1854.....	1,806,787	1,023,851	585,123
1855.....	1,806,356	799,574	572,602
Annual average....	\$1,186,241	\$797,458	\$565,728

According to the returns made to the United States Treasury Department, the total value of exports to the Sandwich Islands for the year ending June 30, 1855, was \$1,125,622, of which \$929,671 was for domestic products, and only \$195,951 for foreign products. From the same authority it appears that the imports into the United States from the Sandwich Islands for the same year amounted to \$442,899. The carrying trade between the two countries is almost exclusively in the hands of American shippers. Of the total exports of domestic produce as given above (\$929,671), there was borne in United States bottoms \$928,458, while there was only \$1213 carried under all foreign flags. Of the total tonnage that entered the United States from these islands in 1855 (25,009 tons), 24,807 were under the flag of the United States. More than three-fourths of the exports of the Sandwich Islands go to the United States, either on the Atlantic or Pacific side, and the statements already given show the proportion of the imports into the islands from the United States. Of the 468 whalers that touched at the islands in 1855, 436 bore the flag of the United States, 20 were French, and 3 Hawaiian. Of the 158

merchant vessels that entered the Hawaiian ports the same year, 129 were American, while there were only 8 under the British, and 1 under the French flag. Among the latest acts passed by the Hawaiian Legislature relating to commerce, which has been published in the official organ of that government, is one prohibiting the importation and sale of opium.

A considerable trade has sprung up between Washington Territory and the Sandwich Islands. Four vessels have been for some time regularly and constantly engaged in this trade, carrying (especially from Oahu) sugar, coffee, molasses, salt products of the islands, as well as foreign merchandise from the different warehouses; and bringing back, in return, lumber, shingles, ship-timber, spars, salmon, coals, etc.. This trade has had the effect of entirely driving from the market the traffic previously carried on by the Hudson Bay Company between Honolulu and Vancouver's Island; "for, although," says a recent British official report on the Sandwich Islands, "Vancouver's Island possesses superior natural advantages over Washington Territory with respect to her ports and several of her productions, on the other hand, the American settlers, not being bound by any conditions that can not be easily fulfilled, their energy and private enterprise are unshackled."

A steam-mill, having two engines, one of eighty and the other of forty horse power, has been erected at the mouth of Hood's Canal, and head of the Straits of Fuca, opposite Vancouver's Island, for manufacturing lumber, shingles, laths, and planed, grooved, and tongued boards. This mill supplies the Honolulu and the San Francisco markets. Other and similar mills have been put up; and the business continues profitable, though competition is increasing. For an account of the lumber trade *via* San Francisco, see SAN FRANCISCO.

COMPARATIVE STATEMENT OF THE COMMERCE OF THE UNITED STATES WITH THE SANDWICH ISLANDS, EXHIBITING THE VALUE OF EXPORTS TO AND IMPORTS FROM EACH COUNTRY, AND THE TONNAGE OF AMERICAN AND FOREIGN VESSELS ARRIVING FROM AND DEPARTING TO EACH COUNTRY DURING THE YEARS DESIGNATED.

Years.	COMMERCE.				NAVIGATION.			
	Value of Exports.			Value of Imports.	American Tonnage.		Foreign Tonnage.	
	Domestic Produce.	Foreign Produce.	Total.		Entered the United States.	Cleared from the United States.	Entered the United States.	Cleared from the United States.
1845				\$1,566				
1846				243,034	606	1,877	231	
1847				21,039	760	1,978		
1848				6,508	1,478	470		
1849				43,875	3,221	3,066		
1850				64,474	9,267	31,623	4,175	11,970
1851		\$881	\$881	16,852	18,902	36,890	3,215	12,008
1852				5,988	12,814	18,624	5,047	6,673
1853		29,406	29,406	16,575	18,111	20,260	3,914	4,118
1854		55,831	55,831	119,130	22,287	19,835	1,451	1,417
1855	\$929,671	195,951	1,125,622	442,899	24,807	19,311	202	2,200
1856	793,058	126,347	919,405	249,704	17,774	17,550	1,092	1,517
1857	803,094	144,349	947,433	204,416	16,742	16,951	187	187

The proportion which the United States had in the total trade of the islands in 1856 is shown by the following:

	Exports.	Imports.	Total.
Total trade.....	\$670,524	\$1,151,422	\$1,822,246
With the United States	249,704	919,406	1,169,110

From this exhibit we find that in 1856, 80 per cent. of the imports into the Sandwich Islands were from the United States, and that 37 per cent. of the exports were to the United States. The balance of trade in favor of the United States for the same year was \$669,700.

On the whole, the statistics published for 1856 show the trade of the islands in a more favorable and healthy condition than those of any previous year since 1850. The number of merchant and whaling vessels visiting the islands during the year has been less, and the importations into the islands were \$230,000 less, while the exports show an increase of about \$100,000 for the year.

According to the tables published by the Collector General, the importations during 1856 are shown to be \$1,151,422; the exports at only half that amount, or

\$583,544, omitting the sum of \$87,280, which is stated to be the produce of vessels bearing the Hawaiian flag. The total exports appear as \$670,824.

In estimating the "supplies" furnished to whale ships for the year 1855, it is estimated that each whale ship took, on an average, \$275 worth of supplies, or island produce.

In examining the table of domestic exports, it will be observed that the exportation of staple products has not increased rapidly, though the sum total of domestic exports in 1856 is much in advance of previous years, excepting only the "potato year," 1850, which apparent increase is owing somewhat to the different estimates of the supplies furnished to whale ships. We give a comparison of some of our staple exports for four years:

Exports.	1848.	1849.	1855.	1856.
Gals. of molasses and sirup	28,973	41,235	38,304	58,502
Pounds of sugar	499,533	653,820	289,908	554,805
" coffee	58,065	28,251	77,616	63,582
Oranges	.....	50,000	25,000	175,000
Goat skins	.....	31,488	103,700	70,914

The domestic consumption of sugar as well as coffee

in the islands has been greater during the past than in former years. It is supposed that the amount of sugar produced the past year is at least 500 tons, about one half of which has been exported. Of coffee the produce has been not less than 300,000 lbs. Only a small portion appears above as having been exported. But of both sugar and coffee the whaling fleet will yearly require larger supplies, as they leave home with smaller

stocks, owing to the high rates these articles command in the States.

The receipts at the customs for 1856 show a falling off of about \$35,000 from those of 1855, which is accounted for in part by the decrease in the importation of goods (\$230,000) and spirits (3600 galls.), and these items show about the same falling off as the number of whaling and merchant vessels visiting the group.

COMPARATIVE VIEW OF THE COMMERCE OF THE SANDWICH ISLANDS FOR TEN YEARS, FROM THE YEAR 1847 TO THE YEAR 1856, GIVING THE TOTALS FOR EACH YEAR.

Years.	Total Imports.	Total Exports.	Domestic Produce exported	Foreign Produce exported	Total Customs Receipts	Oil and Bone transhipped.			No. of National Vessels.	Merchant Vessels.		No. of entries of Whalers.	Gallons of Spirits consumed.
						Gals. of Sperm.	Gals. of Whale.	Pounds of Bone.		No.	Tonnage.		
1847...	\$710,138	\$264,226	\$209,013	\$55,208	\$48,801	....	....	....	4	75	....	167	3,271
1848...	605,618	300,370	236,819	33,551	55,568	....	....	....	11	90	....	254	3,448
1849...	739,739	477,845	279,743	108,102	83,231	....	....	....	12	180	....	274	5,717
1850...	1,035,063	733,032	536,529	246,529	121,306	....	....	....	12	469	90,304	337	8,252
1851...	1,823,821	601,231	309,328	351,402	160,602	104,362	900,373	901,604	7	446	87,920	220	9,500
1852...	750,868	698,305	257,251	381,142	113,091	173,490	1,132,738	3,150,951	11	235	61,065	519*	14,150
1853...	1,401,075	472,996	281,590	191,397	155,640	175,396	3,787,848	2,020,264	7	211	50,451	535*	15,123
1854...	1,590,537	585,122	274,029	311,092	152,125	156,434	1,638,922	1,470,678	16	125	47,288	525*	17,337
1855...	1,383,169	572,601	274,741	297,859	158,411	109,308	1,436,810	827,954	13	154	51,304	468*	18,313
1856...	1,151,422	670,524	466,278	204,545	123,171	121,294	1,641,879	1,074,942	9	123	42,213	366*	14,779

* These figures give the number of different entries of whalers at the various ports—some of the vessels entering at three, four, and even five ports during the year. The actual number of different whalers during 1856 will not exceed 240.

Ports of Entry.—The following are the only ports of entry in the Sandwich Islands, viz.: for vessels of all descriptions, Honolulu (Oahu), Lahaina (Maui), Hilo, Kealakeakua, and Kawaihae (Hawaii), and Waimea (Kauai); and for whalers, and vessels of war only, Hanalei (Kauai).

Port Charges on Merchant Vessels.—At Honolulu.—Tonnage dues, fifteen cents per ton register; pilotage, one dollar per foot each way; or half-pilotage if no pilot is employed; health certificate, one dollar; buoys, two dollars; harbor-master, three dollars; clearance, one dollar; pilot for anchoring a vessel outside which does not enter the harbor, ten dollars.

At Lahaina.—Tonnage dues the same as at Honolulu; boarding officers, five dollars; lights, one dollar; canal, if used, two dollars; clearance, one dollar.

At Hilo.—Tonnage dues, pilotage, health certificate, and clearance, the same as at Honolulu.

At Kealakeakua.—Tonnage dues the same as at Honolulu; boarding officer, five dollars; clearance, one dollar.

At Kawaihae (Hawaii), and Waimea (Kauai), the same as at Kealakeakua. Any vessel, having paid the tonnage dues at one port, complied with all the port regulations, and obtained a clearance from the collector, may go to either or all of the other ports of entry, without paying any additional tonnage dues during the same voyage.

Privileges to Whale Ships.—Whale ships are allowed to land goods to the value of \$200 free of duty, and \$1000 worth additional, subject to a duty of 5 per cent. *ad valorem*, without being liable to pay any tonnage dues; but if they land more than \$1200 worth (including the \$200 worth free of duty), they are subject to the same charges and liabilities as merchant vessels.—See WHALE FISHERIES.

Penalties, Restrictions, etc.—Any master of a whale ship who shall fail to produce his permit when called for is liable to a fine of not less than \$10, or more than \$50, to be imposed by the collector. Any vessel having cargo on board intended for a foreign port, or spirits in cargo or stores, and touching at a place not a port of entry, without a permit from a collector, is liable to pay double tonnage dues. Oil, whalebone, or any other article of merchandise, landed or transhipped without a permit, is liable to seizure or confiscation. Seamen are not allowed to be discharged at any of the ports of these islands, except Honolulu and Lahaina. It is not lawful to discharge seamen at any of the ports of the islands without the written consent of the governor. Honolulu and Lahaina are the only ports at which native seamen are allowed to be shipped, and at these places only with the consent of the governor.

—See *United States Com. Relations*; STEWART'S *Journal*; HUNT'S *Merchants' Magazine*, xvii. 33, xviii. 316, xxiv. 185; *North American Review*, li. 503, xxvi. 59 (EVARTS), lv. 193 (R. H. DANA); *Christian Examiner*, xix. 244; DE BOW'S *Review*, xiii. 457.

Sandy Hook, Middletown township, Monmouth county, New Jersey, is a sandy beach extending north from Old Shrewsbury Inlet and the south point of the Highlands of Navesink, five miles, and is from half a mile to a mile wide. It incloses Sandy Hook Bay. The lights are on the north part. The Sandy Hook lights consist of the main light, and two beacons placed in position, for ranges of channels. The main light is in lat. 46° 27' 42" N., long. 73° 59' 48" W. from Greenwich, England.

Light-ship.—A light-ship, painted red, of about 950 tons burden, and showing two lights, is anchored off Sandy Hook. The forward light is 30 feet above the deck, and the after one 40 feet. She is also provided with a bell of 800 pounds weight, which will be rung in thick weather. She is placed in 13 fathoms water. Sandy Hook light-house bears from the light-ship west by north, distant 6½ miles; Highland light-house, west-southwest, distant 7 miles.

Highlands of Navesink.—Navesink hills, on which two light-houses are built, extend northwest and southeast, about southwest from Sandy Hook, on the Atlantic Ocean to Raritan Bay. The correct altitudes of the following places, which present themselves to mariners as they approach them, are: Mount Mitchell, the highest point of Navesink, Monmouth county, New Jersey, 282 feet; Tompkins' Hill, on Staten Island, 307 feet; Hempstead Hill, Queen's county, Long Island, 319 feet.

Highland Lights.—On the Highlands of Navesink there are two light-houses bearing north 23° W., and south 23° E., from each other distant 100 yards. The southern light is a revolving one, on the Fresnel plan; it is 248 feet above the level of the sea. The northern light is a fixed light, 246 feet 7 inches above the sea.

Ledge South Sandy Hook.—On this reef there are but 9 feet of water. The northern light on the Highlands, a little open to the eastward of the southern one, leads right on the reef. This ledge is south half east from Sandy Hook light, 7 miles distant, and about 1½ mile from the shore, and on which the ship *William Thompson* struck.

Oil Spot.—East-southeast 1½ mile from Sandy Hook light is the Oil Spot, having only 10 feet of water in one spot at low water. It is of a triangular shape, and about half a mile on each side in extent. The along-shore channel is inside of it.

False Hook.— $\frac{1}{2}$ mile east, a little northerly, from Sandy Hook light, there is a small shoal spot, with only 12 feet water upon it at low water. It is the remains of the old False Hook.

New York Harbor.—There are four channels over New York bar. The first is that along and parallel to the Jersey shore, inside of the Outer Middle. The second is the South Channel, between the Black Can Buoy, No. 1, and the Red Can Buoy, No. 2. The third is the Main Ship-channel, between the Red Can Buoy, No. 2, and the Black Nun Buoy, No. 1. The fourth is Gedney's Channel, between the Black Nun Buoy, No. 1, and the Red Nun Buoy, No. 2. This channel runs west by north, and is used by our largest class ships of war.—*BLUNT'S Coast Pilot.*

During the year 1857 the west beacon at Sandy Hook, the foundation of which had been undermined by the sea, was removed to a secure position by order of the Light-house Board, a new screen erected, and the main light-house fitted with a new lantern and a third order lens. Gedney's Channel into New York Bay having two feet more water than the old channels, was unknown until a few years since. The knowledge of this channel is owing to the operations of the Coast Survey. Had the true depth of this channel been known in 1778, the French fleet under Count D'Estaing would have passed into the bay and taken the assembled British naval force.—*Coast Survey Report, 1854; Light-house Report, 1857.*

San Francisco, a city and sea-port of the United States, in California, on the south promontory, dividing the great bay of San Francisco from the Pacific, inside the bay, and a short way to the south of its entrance. The latter, now called the Golden Gate, little more than a mile in width, has on its south side an old Spanish fort, or *presidio*, in lat. $37^{\circ} 48' 30''$ N., long. $122^{\circ} 27' 23''$ W. Having passed the fort, the course to the town is nearly east from three to four miles, and then south and west about as much more. The city is situated at the bottom of a bay, skirted by extensive flats, some of which are now being formed into docks. Its growth has been quite extraordinary. In the early part of 1848 it consisted only of a few rude cabins; whereas it has now an exchange, a theatre, a custom-house, sundry churches and other public buildings, with great numbers of private houses, many of which are of wood, but many also of *adobe* (sun-dried) and burned bricks, with a vast number of attached tents and booths. And while such is the metamorphosis on shore, her waters, which were formerly quite deserted, are crowded with ships and steamers from all parts of the world! San Francisco is indebted, as every one knows, for this all but miraculous transformation to the discovery of gold deposits in the beds of the tributaries of the San Joaquin and Sacramento rivers, which fall into her bay, and in the quartz of the contiguous mountains. Such, however, are the advantages of her situation, and the fertility of the adjacent country, that the exhaustion of the gold deposits, though it might check for a while, would not permanently affect the growth of the city, or the extent of her trade. To obviate the shallowness of the water close to the town, a wharf 2800 feet in length has already been projected into the bay, and to it all sorts of vessels are safely moored. The construction of extensive docks has also been commenced; and every effort is being made to provide the accommodation necessary for the rapidly increasing trade of the town.

San Francisco stands on a sandy level; and during the wet season, when it is most crowded, the streets were at first mere puddles, into which carriages sunk to the axles; while in the dry season the annoyance from dust was all but intolerable. But these inconveniences have been to a great extent obviated by flooring the streets, or covering them with stout planks, a process which has been carried to a great extent, and has had the most complete success. The city has suf-

fered much from fires, by which, indeed, it has repeatedly been laid waste. These, however, have been speedily repaired; and in a few weeks no traces are seen of the most destructive conflagrations. According, however, as houses of brick or stone are substituted for those of wood and for tents, fires will become less frequent and less destructive.

The population of San Francisco is the most motley that can be imagined; for, though Americans predominate, a large admixture is to be seen of adventurers from all parts of the world. Gambling is very prevalent; and is, perhaps, carried on to a greater extent here, during the rainy season, than in any other place either of the New or the Old World. But this is the natural result of the circumstances under which the population has been brought together; and the passion will no doubt abate as the circumstances in which it originated change or lose their influence. Lynch-law has been here reduced to a system, and carried to a greater extent than any where else; and, despite the gross abuses to which it unavoidably leads, it is the general opinion that it could not have been dispensed with. A sense of its necessity has led, not only to its being adopted, but to its being generally approved.

Nowhere in the world is there so great a disparity between the sexes as in San Francisco, there being at least from three to five men for one woman. But this disparity is gradually lessening, and with it some of the worst features in the present condition of the population. The population of the city differs widely at different periods, being crowded in the wet, and comparatively deserted in the dry season. Though by far the largest and most important town in the State, it is not its capital. That distinction has been conferred on San José in consequence of its more central situation.

The Bay of San Francisco, though, as already stated, it has a narrow entrance, expands within into one of the noblest basins that is any where to be met with, having a coast line of about 275 miles. The town has already become the seat of a very extensive trade, and will most likely be the grand emporium of the vast territory belonging to the United States on the Pacific. The trade with China, Australia, the Eastern Archipelago, and the Polynesian Islands, is even now very extensive, and several ships have been fitted out for the whale-fishery. At present, however, the principal trade of the city is with Panama on the one hand, and Oregon on the other; bringing immigrants and all sorts of manufactured goods from the former, and corn and other raw produce from the latter. But she has also an extensive trade with Chili, the eastern portion of the United States, and with Europe by Cape Horn. The importation of many sorts of products has been completely overdone, and some varieties of manufactured goods might, in 1853 and 1854, be bought in San Francisco as cheap as in Liverpool or Havre. This, however, is a species of miscalculation incident to the opening of all new markets, and will speedily correct itself. Gold bullion, with small but increasing quantities of quicksilver, and hides, have hitherto been the all but exclusive articles of export.

The subjoined tabular form gives at a comprehensive glance the amounts of the assessments, together with the rates of taxation of the city and county of San Francisco, for eight fiscal years, since the first organization of the local government, viz.:

Fiscal Years.	Rate of Taxation per Cent.	Amount of Assessments.				
		Real Estate.		Personal Property.		Yearly Total.
		Dls. Cts. Dollars.	Dollars.	Dollars.	Dollars.	
1850-'51	2 00	16,849,054	In pers'al	4,773,160	21,621,214	
1851-'52	4 10	11,141,463	ditto	2,875,440	14,016,903	
1852-'53	4 41	15,676,356	ditto	2,805,381	18,481,737	
1853-'54	3 88 $\frac{1}{2}$	17,389,850	6,158,300	4,862,000	28,900,150	
1854-'55	3 85 $\frac{1}{2}$	19,765,285	9,159,935	5,837,607	34,762,827	
1855-'56	3 85 $\frac{1}{2}$	18,607,800	8,394,925	5,073,847	32,076,572	
1856-'57	2 30	17,827,617	8,345,667	4,194,970	30,368,254	
1857-'58	2 30	16,106,890	7,814,920	15,784,295	39,706,105	

STATEMENT OF THE NUMBER OF PASSENGERS BY SEA ARRIVING AT AND DEPARTING FROM THE PORT OF SAN FRANCISCO DURING THE YEAR 1856.

ARRIVALS, YEAR 1856.

From	Men.	Women.	Children.	Total.
Panama.....	11,265	4026	1942	17,233
San Juan.....	3,144	883	121	4,148
United States ports direct	28	11	99	138
China.....	5,819	19	.....	5,838
Great Britain.....	13	11	24	48
France.....	106	22	3	131
Hamburg.....	130	65	.....	195
Peru.....	7	2	.....	9
Chili.....	46	18	.....	64
Sandwich Islands.....	413	72	4	489
Other Pacific Islands.....	13	.....	.....	13
Australia.....	188	37	.....	225
Mexico.....	161	63	7	231
Russian Poss., N. W. Coast	45	1	1	47
Other ports.....	62	14	3	79
Total.....	20,940	5244	2081	28,265

DEPARTURES, YEAR 1856.

For	Men.	Women.	Children.	Total.
Panama.....	11,266	762	457	12,485
San Juan.....	4,849	263	193	5,310
United States ports direct	10	4	.....	14
Sandwich Islands.....	212	34	8	254
Other Pacific Islands.....	17	8	.....	25
China.....	3,214	9	.....	3,223
Peru.....	129	7	.....	136
Australia.....	412	75	.....	487
Mexico.....	479	121	.....	600
Chili.....	292	60	.....	352
Other ports.....	33	5	.....	38
Total.....	20,909	1348	646	22,903

RECAPITULATION, YEAR 1856.

	Men.	Women.	Children.	Total.
Total arrivals.....	20,940	5244	2081	28,265
Total departures.....	20,903	1348	646	22,903
Excess of arrivals.....	37	3896	1435	5,362

Showing a net gain of population from arrivals by sea, during the year 1856, of 5362 souls. This is a very unfavorable exhibit, and we regret to make it public. During the last six months of the year the departures were 927 souls in excess of the arrivals. It is, however, the class of population that we are losing which is the worst feature. During the last half of 1856, the departures of male adults for the Atlantic States were 2534 in excess of the arrivals.

The population has received a strong reinforcement during the past year by immigration over the plains. Early in the season exaggerated estimates were made of the extent of this immigration, as well as of the quantity of stock that would be driven over; but we do not overestimate the number when we say that fully 8000 persons were added to the permanent population of the State by the overland route during the past year, and that they brought with them 25,000 to 30,000 head of horned cattle. This is the character of population that the State needs, and if Congress would authorize the construction of a wagon road over the plains, we should see 50,000 people annually leaving the Valley of the Mississippi to make their homes on the Pacific slope of the Rocky Mountains. As matters are now, with virtually but one line of communication with the Atlantic coast, we need indulge in no brilliant hopes of the advancement of California in population of the right stamp.—*San Francisco Price Current.*

Since the preceding was written, Congress passed an act under date February 17, 1857, entitled "An Act for the construction of a wagon road from Fort Kearney, via the South Pass of the Rocky Mountains and Great Salt Lake Valley, to the eastern portion of the State of California;" 2. For a road from El Paso, on the Rio Grande, to Fort Yuma, at the mouth of the Gila; 3. For a road from Fort Defiance, in New Mexico, to the Colorado.

The following table will show the excess of arrivals over departures, and also those which have gained during the year 1856, together with the amounts of our gain and loss:

ARRIVALS AT PANAMA.

	Loss.	Gain.
Panama.....	.....	4765
San Juan.....	1162	.....
China.....	.....	2115
Sandwich Islands.....	.....	240
Other Pacific Islands.....	7	.....
Chili.....	283	.....
Mexico.....	309	.....
France.....	.....	131
Hamburg.....	.....	15
Australia.....	262	.....
United States ports direct.....	.....	25
Peru.....	127	.....
Great Britain.....	.....	24
Other ports.....	.....	82
Total.....	2215	7577
Balance in favor of California.....	.....	536

EXPORT OF QUICKSILVER.

	Flasks.
To Mexico.....	5513
To China.....	1151
To New York.....	1500
To Peru.....	1367

Of the exports in 1856, 13,541 flasks were destined to Mexico; 4526 flasks to Peru; 3009 flasks to China; 2414 flasks to New York; and 250 flasks to Australia. The total value exported, according to the custom-house books, was \$883,185.

OPERATIONS OF THE UNITED STATES BRANCH MINT AT SAN FRANCISCO DURING THE YEAR 1856.

	Deposits.
Gold, ounces.....	1,645,665 50
Silver, ".....	62,878 68
Coinage.....	44
Gold coin.....	\$25,146,400 00
Gold bars.....	\$3,047,001 30
Gold bars, refined.....	122,136 65
Silver coin.....	184,000 00
Silver bars.....	25,343 30
Total coinage.....	\$28,524,881 25

Exports of Treasure.—Statement of the amount and destination of treasure exported from San Francisco during the year 1856.

To New York.....	\$89,765,294
To England.....	8,666,289
To China.....	1,308,852
To Panama.....	253,268
To Sandwich Islands.....	241,450
To Manila.....	133,265
To New Orleans.....	130,000
To Peru.....	67,750
To Australia.....	56,515
To Calcutta.....	47,050
To Chili.....	11,395
To Costa Rica.....	9,000
To Society Islands.....	3,300
Total shipments of treasure in 1856.....	\$50,697,434
" " " " 1855.....	45,182,631
Increase in 1856.....	\$5,514,803

GOLD PRODUCT OF CALIFORNIA, 1856.—ACTUAL SHIPMENTS FROM SAN FRANCISCO.

To New York and New Orleans, for Atlantic States.....	\$33,835,264
To England direct.....	8,666,289
To China.....	1,308,852
Less Mexican coin included.....	1,000,000
Other foreign ports.....	308,552
Total manifested.....	824,022
Total manifested.....	\$49,694,434
Atlantic passengers estimated.....	3,783,526
Coin at Branch Mint.....	\$25,146,400
Of which included in shipments.....	17,000,000
Total estimated production of gold.....	8,146,400
	\$61,830,360

COMPARATIVE PRODUCT FOR THREE YEARS.

	1854.	1855.	1856.
To New York.....	\$46,281,640	\$38,730,564	\$31,835,264
England and foreign.....	5,139,452	5,909,526	7,799,170
Atlantic passengers.....	4,628,964	3,878,056	3,831,526
Coin at Branch Mint.....	4,084,207	17,538,300	25,146,400
Total.....	\$60,142,272	\$66,111,446	\$78,830,360
Less Brit. coin shipped.....	2,500,000	8,000,000	17,000,000
Estimated production.....	\$57,742,272	\$58,111,446	\$61,830,360

Of the annual product of the gold mines and placers of the State, it is difficult, also, to speak with any positive degree of accuracy. In the fire of May, 1851, almost the entire records of the custom-house were destroyed, together with a vast quantity of the books and papers of mercantile houses, so that we can only state

	Vessels.	Tons.
American vessels arrived from domestic ports...	1162	287,519
" " " foreign ports...	108	109,919
" " " whaling voyages	12	2,870
Foreign vessels arrived from foreign ports....	113	39,698
Total, 1856	1455	441,015
Total, 1857	1583	427,566

Departures for	No. of Vessels.	Tons.
Pacific domestic ports	860	187,456
China	79	73,784
Peru	59	56,573
Panama	26	50,627
Calcutta	27	25,827
Nicaragua	14	13,052
Manilla	19	17,620
Sandwich Islands	42	15,555
Australia	29	12,558
Mexico	40	8,783
Russian Possessions, Northwest Coast	9	4,797
Atlantic domestic ports	7	6,002
Whaling voyages	18	3,855
Chili	21	8,502
Batavia	3	1,254
Islands in the Pacific	15	1,971
Vancouver's Island	5	698
Costa Rica	2	349
Mauritius	1	255
Singapore	3	1,469
France	1	900
Total	1288	445,867

RECAPITULATION FOR THE YEAR 1856.

	Vessels.	Tons.
American vessels departed for domestic ports ..	866	143,181
“ “ “ “ foreign ports ..	283	255,771
“ “ “ “ whaling voyages ..	13	3,855
Foreign vessels departed for domestic ports ..	3	277
“ “ “ “ foreign ports	115	42,783
Total	1283	445,861

The tonnage arriving during the three years below stated was as follows:

	Vessels.	Tons.
Arrived in 1853.....	1028	558,753
“ 1854.....	620	406,114
“ 1855.....	824	412,086

The tonnage entering from eastern domestic ports in 1853 was 260,045 tons; in 1854 it was 153,313 tons; and in 1855, 144,434 tons. The arrivals of the past year from New York are in the proportion of two tons to one from Boston, the actual figures being 89,951 tons from New York against 45,601 tons from Boston.

The tonnage from all quarters arriving in San Francisco in 1856 comprised 1455 vessels of 440,015 tons against 1520 vessels of 517,919 tons in 1855. The decrease has been in domestic coast and foreign trade, the tonnage entered from domestic Atlantic ports being somewhat larger than in 1855. The following figures illustrate this:

Arrived.	From domestic Atlantic Ports.	From domestic Pacific Ports.	From foreign Ports.
1855	Tons. 147,870	Tons. 181,635	Tons. 177,092
1856	149,370	138,149	144,617
Increase in 1856.	1,500		
Decrease in 1856		51,486	27,475

The tonnage entered from domestic Atlantic ports in 1853 was 260,045 tons; in 1854, 153,313 tons, in 1855, 147,870 tons; and in 1856, 149,370 tons. Thus it appears that the imports from that quarter have hardly decreased since 1854. The great falling off in trade is more apparent than real, as in the tonnage entering in 1855 were included the ocean steamers arriving from Benicia, and in the table of 1856 they are excluded. Undoubtedly, however, the coasting trade has fallen off 20,000 to 30,000 tons, compared with 1855, which is owing to the decreased shipments of lumber from the North.

The imports this past year from Great Britain exhibit a falling off of near 60 per cent. compared with those of 1854. The tonnage entered for four years past was as follows:

1853	35,334 tons.	1855	26,608 tons
1854	22,114 "	1856	11,729 "

From the continent of Europe there entered in 1855, 13,242 tons against 10,434 tons in 1856.

With China the trade shows a considerable increase—the tonnage entered in 1856 being 27,110 tons against 17,296 tons in 1855. The clearances to that country have little connection with trade, and therefore there is no need of making comparisons with previous years.

The exports have been upon a larger scale to Australia in the year 1856 than to any other country. The tonnage movement for three years was as follows:

	1854.	1855	1856.
Entered.....tons	6,854	6,460	3,375
Departed "	10,292	15,712	12,552

With the Sandwich Islands the trade for the years 1854-'56 was as follows:

	1854.	1855	1856
Entered.....tons	8,427	10,361	6,688
Departed....."	8,065	10,948	15,555

The increase noticeable in the tonnage departing for the islands in 1856 was caused by a larger number of clippers than usual going thither to freight oil home.

With the other Pacific Islands trade since 1854 has ranged as follows:

	1854.	1855.	1856.
Entered.....tons	2551	3261	2522
Departed....."	2287	2715	1971

The tonnage movement for the three following years with Mexico was as follows:

	1854.	1855	1856.
Entered.....tons	3977	3,450	5531
Departed....."	8065	15,870	8872

EXPORTS FROM SAN FRANCISCO FOR THE YEAR 1857.

To	Treasure.	Merchandise and Produce.
New York	\$35,287,778	\$2,158,000
England	9,347,748	.....
China	2,993,264	313,896
New Orleans	244,200	.....
Panama	278,000	.....
Manilla	278,000	7,143
Calcutta	34,906	.....
Mexico	41,500	744,555
Sandwich Islands	86,503	25,900
Australia	32,000	314,604
Havana	60,000	.....
Chili	83,479	157,695
Other ports	105,300	5,400
Russian Possessions, America	.....	105,152
Peru	.....	18,700
Society Islands	.....	51,676
Vancouver's Island	.....	30,147
San Salvador	.....	7,086
Total for year	\$48,976,697	\$4,329,758
Treasure	.....	48,976,697
Grand total	.....	\$53,306,455

RECAPITULATION OF THE VALUES OF FREIGHTS TO SAN FRANCISCO FOR THE YEAR 1857.

Freights on cargoes from New York	\$1,300,244
“ “ “ Boston	461,718
“ “ “ Philadelphia.....	22,390
“ “ “ foreign ports.....	1,041,289
Total freights for the year	\$2,842,671

STATEMENT OF THE TONNAGE ENTERING THE PORT OF SAN FRANCISCO DURING THE FOURTH QUARTER OF 1857, AND THE TOTALS FOR THE YEAR 1857.

Arrivals from	No. of Vessels.	Tons.	Vessels.	Tons.
	1867.		1867.	1867.
Atlantic domestic ports	19	21,798	50	10,527
Pacific domestic ports	312	48,048	1288	192,463
Panama	1	8,785	1	40
San Juan del Sur, Nicaragua.	1	.....	2	1,500
Great Britain	1	617	24	164,922
France	4	2,096	18	8,335
Hamburg	1	709	9	3,423
Bremen	1	.....	2	914
Peru	1	.....	2	205
Mexico	12	1,804	42	6,052
Sandwich Islands	1	.....	17	3,100
Society Islands	1	1,059	12	1,617
Whaling voyages	1	146	8	1,564
Rio de Janeiro	1	550	4	1,315
Russian Possessions in Amer.	1	160	8	3,765
Russia in Asia	1	.....	2	287
Manilla	1	1,668	8	3,320
China	1	3,505	31	23,324
Batavia	1	973	4	1,325
Vancouver's Island	1	452	6	919
Siam	1	328	4	1,511
Singapore	1	.....	1	282
Australia	1	1,138	13	4,725
Malaga	1	.....	2	566
Costa Rica	1	.....	3	671
Chili	1	.....	5	1,880
Calcutta	1	409	11	1,060
Lombock, Dutch East Indies	1	.....	1	428
Total	879	98,862	1563	427,558

RECAPITULATION FOR THE YEAR 1857.

	Vessels.	Tons.
American vessels arrived from domestic ports...	1328	291,561
“ “ “ foreign ports...	122	89,833
“ “ “ whaling voyages	8	1,564
Foreign vessels cleared for foreign ports.....	125	44,608
Total	1683	427,566

CLEARANCES FROM SAN FRANCISCO FOR THE LAST QUARTER AND FOR THE YEAR 1857.

Clearances for	No. of Vessels.	Tons.	Vessels. 1857.	Tons. 1857.
Atlantic domestic ports.....	2	2,933	12	16,814
Pacific domestic ports.....	37	8,256	504	92,244
Peru.....	10	6,602	55	51,947
China.....	12	10,364	45	38,313
Whaling voyages.....	2	123	9	1,833
Panama.....	5	10,429	23	46,373
San Juan del Sur, Nicaragua..	.....	.....	4	4,430
Mexico.....	13	9,576	63	28,977
Chili.....	3	1,076	24	12,466
Sandwich Islands.....	4	930	21	6,970
Society Islands.....	2	313	13	2,116
Manilla.....	.....	.....	12	8,889
East Indies.....	1	1,149	12	12,176
Australia.....	7	3,959	23	10,188
Russian Possessions in Amer..	2	532	8	3,103
Russia in Asia.....	.....	.....	2	755
Vancover's Island.....	4	1,075	10	2,032
Costa Rica.....	.....	.....	2	713
Batavia.....	.....	.....	4	2,346
San Salvador.....	.....	.....	1	361
Tehuantepec.....	1	118	1	118
Total	105	57,473	848	337,022

RECAPITULATION FOR THE YEAR 1857.

	Vessels.	Tons.
American vessels clearing for domestic ports.....	516	168,538
“ “ “ foreign ports.....	194	182,008
“ “ “ whaling voyages.....	9	1,833
Foreign vessels clearing for foreign ports.....	129	45,143
Total	848	337,022

The great discrepancy between the tonnage arriving from and clearing for domestic Pacific ports needs explanation. During the last half of the year the departures of that class of tonnage in the table above comprise only the small number of vessels which it was necessary to clear at the custom-house, on account of there being foreign goods on board exceeding \$400 in value. The arrivals, which are correctly stated, are the true index of the domestic coast trade.

The declared exports of treasure, however, do not by any means comprise the whole amount of the precious metals which annually leave California. Since the great bank failures in 1855, miners who are going to the East prefer carrying their money on their persons to trusting to bills of exchange. Incidents connected with the loss of the *Central America* demonstrated that her passengers had with them a very large amount of gold; and those leaving here by every steamer for Panama take away in the aggregate heavy sums, of which no account can be got. But, at a low calculation, ten millions of dollars leave the State annually in the hands of passengers by steam and sailing vessels. The entire product yearly of our gold mines can be ascertained only approximately. Persons who are qualified by position and observation to give the most correct opinion upon the subject place the amount at seventy millions, and this amount is probably rather under than over the mark.

We are gratified to state that the value of our exports other than treasure, in 1857, shows an increase, although small, over that of the preceding year—the figures being \$4,329,758 in 1857 against \$4,270,515 in 1856. The great increase is in the exports to New York, which have doubled in value, and the greatest decrease to Australia, in which the falling off is \$809,000.

The exports of quicksilver in 1857 were as follows:

To Mexico.....	flasks 14,334
To New York.....	“ 8,374
To China.....	“ 3,554
To Chili.....	“ 1,000
Total.....	“ 27,262

The exports in the four preceding years were:

In 1853.....	flasks 13,500	In 1855.....	flasks 27,165
In 1854.....	“ 20,963	In 1856.....	“ 23,740

Tonnage Movement of the Port of San Francisco.—

The arrivals from all quarters during the years 1855-'57 have been as follows:

	Vessels.	Tons.
1855.....	1520	517,319
1856.....	1456	444,015
1857.....	1593	427,566

The tonnage arriving from domestic Atlantic ports during the past year exhibits a large falling off when compared with that of 1856—that from domestic coast ports an equally large increase, and that from foreign ports a falling off of about 10 per cent. compared with 1856. The following are the figures:

Arrived, Years.	From domestic Atlantic Ports. Tons.	From domestic Coast Ports. Tons.	From foreign Ports. Tons.
1856.....	141,370	138,149	14,617
1857.....	103,525	182,036	134,441
Decrease in 1857..	39,845	.....	15,176
Increase in 1857..	.....	43,887	.....

The tonnage from home Atlantic ports in 1853 was 260,045 tons, being more than two and a half times larger than in 1857; the arrivals of 1854, '55, and '56 averaged about 150,000 tons. From Great Britain the tonnage arriving in 1857 was 16,992 tons against 11,729 tons in 1856, exhibiting an increase of nearly 50 per cent., but a decrease compared with preceding years. From the continent of Europe there entered in 1857, 12,681 tons against 10,434 tons in 1856. With China the import trade shows a slight falling off compared with 1856, the totals being 23,324 tons against 27,110 tons. The trade with Australia, as indicated by the tonnage arriving and departing for the past four years at San Francisco, has been as follows:

	1854.	1855.	1856.	1857.
Entered.....	6,854	6,460	3,375	4,729
Departed.....	10,292	15,712	12,558	10,188

The arrivals from the Sandwich Islands are the best index of the direct trade with that country (a number of the clearances thence being vessels to freight oil to the Eastern States), and for the last four years have been as follows:

1854.....	tons 3,427	1856.....	tons 6,638
1855.....	“ 10,361	1857.....	“ 5,900

It will thus be seen that the trade with the islands since 1855 has fallen off nearly two-thirds. In like manner as with the Sandwich Islands, the arrivals from the west coast of Mexico indicate the trade proper between the two countries, and for the past four years have been as follows:

1854.....	tons 3977	1856.....	tons 5531
1855.....	“ 3459	1857.....	“ 6052

These figures indicate a healthful and gratifying increase in the trade with Mexico, which is destined in the future to become of very great importance. The tonnage movement during the past year indicates that the imports from the Eastern States and foreign countries were about 18 per cent. less than in 1856, and although making, as a general thing, a nearer approach than ever before to being adapted to the wants of the market, have yet in many important respects been of the most excessive character, and have resulted in heavy losses to those interested in them.

Export Trade of San Francisco.—The prominent item in exports of course is, and will continue to be for many years, the product of the mines. The exports of treasure in 1857, as compared with those of the preceding years of which we have any record stands thus:

In 1851.....	\$34,492,000	In 1856.....	\$45,182,631
In 1852.....	45,779,000	In 1856.....	50,694,434
In 1853.....	54,965,000	In 1857.....	48,389,68
In 1854.....	51,429,000		

The exports in 1857, when compared with those of 1856, show a small falling off compared with those of 1855. There is a large item connected with the exports of last year which in reality has no bearing one way or another on the product of gold in this State.

We refer to the shipments of treasure to China and Manila. In 1857 the exports to those points were \$3,272,164, almost wholly made up of doubloons and dollars received from Mexico. San Francisco imported in 1857 \$3,168,711 in specie, nearly all of which came from Mexico, and went from here to China and the East Indies. More gold every year goes to England direct, and less to New York; the figures for five years past show the change in this respect:

Exported to New York.	Exported to England.
1853.....\$47,916,448	1853.....\$4,975,662
1854.....46,289,649	1854.....3,781,080
1855.....38,730,564	1855.....5,182,156
1856.....39,765,294	1856.....8,666,239
1857.....35,287,778	1857.....9,347,748

The Light-house Board Report for 1857 states that "the steam tender authorized by Congress in 1856, and built at the Philadelphia navy yard, will reach San Francisco probably early in the year 1858. The presence of this vessel will serve the economical purpose of transporting supplies, materials, and workmen for building and repairing the light-houses, and also, in case of incursions of the Indians from the British dominions in the Straits of Fuca and vicinity, to protect the keepers and citizens in that quarter against their attacks. Representations have been made that a light is necessary between the bays of Monterey and San Francisco, and one on Mare Island, in San Francisco Bay. The latter is recommended mainly in consideration of the difficulties at night in approaching the navy yard and Benicia."

Port Charges.—Pilotate outside Farrallones, \$10; inside Farrallones, \$8 per foot; tonnage dues, 4 cents per ton; dockage, 3 to 6 cents per ton per day; stevedore's charges, 75 cents per ton; shipping men, \$5 each; ballast, rough stone, \$2 25 per ton; cobble stone, \$2 75; sand, \$1 50. Water, 1½ cents per gallon. Day labor, \$5. Port-warden, \$30 to \$75.

Exchange.—On Atlantic States, sight, 3 per cent.; England, sight, —d. at 47d. per dollar; France, sight, 4 80 frs.

Money.—Scarce at 2 to 4 per cent. on good security. Doubloons very scarce, and wanted—7 per cent. premium. Mexican dollars, do. do. 7 per cent. premium.

Rate of Interest on Money.—By an act passed March 13, 1850, the rate of interest on money was fixed at 10 per cent. where there was no special contract; but "parties may agree in writing for the payment of any rate of interest whatever on money due, or to become due on any contract. Any judgment rendered on such contract shall conform thereto, and shall bear the interest agreed upon."

San Francisco (Bay of), California. One of the best harbors of the Pacific Ocean. The entrance is very remarkable, bold, and rocky; a mile wide and 4 miles in length, with deep water and no obstructions. It then expands into an extensive bay, in which lie several islands; that of San Angelo is the largest and highest, and covered with vegetation to its very top. The next in size are Yerba Buena and Alcatraz. The Bay of San Francisco is 36 miles in length by an average of 6 in width. A large portion of its southern, eastern, and northern shores is bordered by extensive and wide mud-flats, preventing the landing, at low water, of even a boat; so much so, that the eastern shore may be said to be inaccessible for a distance of 30 miles; and this impediment prevents it from ever becoming useful, except by the construction of extensive artificial works. On the north it is bounded by the Straits of San Pablo, which divide it from the bay of that name. The Bay of San Pablo is nearly circular, about 10 miles in diameter, the largest segment of which is a mud-flat, with but a few feet of water over it. On the east side lies the channel, with a sufficient depth of water for large vessels, leading to the Straits of Marquines, at the mouth of the Sacramento River. On the western side of the Bay of San Francisco, from the Straits of San Pablo, for a distance of 15 miles,

the country is broken and mountainous, and the shores rocky and indented by small bays. These obstructions reduce this extensive bay very much in size, and it becomes still more so when the safety and convenience of vessels is taken into consideration; indeed, with the deep water, cross-tides, and exposed situations, there are but two safe anchorages, viz., San Francisco and Sausalito. The Bay of San Francisco has been celebrated, from the time of its first discovery, as one of the finest in the world, and is justly entitled to that character, even under the seaman's view of a mere harbor.

San Juan, or St. John (sea-port of Porto Rico). Although possessing a magnificent port, considered one of the best on the island, San Juan is not the first commercial place, as the products exported thence are of a very inferior quality. Of the sugar shipped from this port, as well as from the other ports of the island, the United States receives more than two-thirds of the whole. But a small quantity goes to England, and also, though rarely, to France. From the United States are imported codfish and other salt fish; salt meat, boards, lumber, hoops, staves, and butter; from England, boilers for the manufacture of sugar, machinery, small quantities of iron, and heavy supplies of earthen-ware. Spanish vessels take in cargoes at St. Thomas, and discharge at San Juan, thereby avoiding the duty applicable to all vessels from all other adjacent foreign ports, in the ports of Porto Rico. Generally speaking, the whole island of St. Thomas is but a great entrepôt of European and American manufactures destined for the markets of Cuba and Porto Rico—a fact shown by the large amount of importations from St. Thomas into both these islands. The annual exports from San Juan in 1853 consisted of 11,369,304 lbs. of sugar; 5803 hhd. of molasses; 876 hhd. of rum; and 910,966 lbs. of coffee. It is to be regretted that the port of San Juan, one of the best and safest of the island, should be kept in so deplorable a condition. Six or seven years ago, a vessel drawing 16 to 18 feet water could take in a full cargo at the wharf; at present a ship of the same tonnage can receive only three-fourths of her cargo, and is compelled to leave the wharf in order to get into water deep enough to take in the balance.

San Juan de Nicaragua (*pseudo Greytown*), a sea-port town of Nicaragua, Central America, at the mouth of the San Juan, in the Caribbean Sea, lat. 10° 55' N., long. 85° 43' W. It is stated to have the best port on this coast between Cape Gracias à Dios and the Boca del Toro, and to be much more healthy than Chagres. It has an export trade in hides, indigo, and coin, brought down the San Juan in boats from Granada. It was almost entirely destroyed by Captain Hollins, in command of the frigate *Cyane*, July, 1854, to obtain redress for an insult to the American envoy to Central America.—See NICARAGUA.

San Juan del Sul, a port of Nicaragua, Central America, on the Pacific Ocean, 24 miles southwest from Nicaragua, and the maritime harbor nearest to that city. Lat. 11° 15' 37" N., long. 85° 52' 56" W. It has a good (small) harbor, surrounded by high land, except on the southwest by south, where it lies open to the ocean. It is one of the proposed termini of the canal from Lake Nicaragua.

San Salvador. This is the smallest of the Central American states, embracing but 7500 square miles, and is separated from Nicaragua by the Bay of Conchagua. The soil is in many places exceedingly fertile, but the country is generally hilly and mountainous. Indian corn, cotton, coffee, and various kinds of vegetable produce, are cultivated to some extent. The most important article of cultivation, and, indeed, the chief staple of San Salvador, is indigo, which grows in great perfection and abundance. Near the coast, the lands of Acajutla and Libertad produce the article known in commerce as the balsam of Peru, of which

about 20,000 lbs. is the annual yield. The inhabitants display much ingenuity in the manufacture of an article of female dress, called by the natives *rebasas*, which is much used in Central America and Mexico. San Salvador has a coast line along the Pacific of about 150 miles, with the ports of Acajutla and Libertad, and within the Bay of Conchagua the excellent harbor of La Union. Commercial relations between the United States and San Salvador are regulated by treaty of January 2, 1850. This treaty is based upon the principle of the most favored nation, and stipulates for reciprocity of commerce and equality of flag, without any discrimination as respects the origin of cargoes.

Sapan-wood is obtained from a species of the same tree that yields the Brazil-wood (*Cesalpinia Sappan*, Linn.). It is a middle-sized forest tree, indigenous to Siam, Pegu, the Philippine Islands, etc. It has been employed for dyeing in the greater part of Asia for many centuries. It found its way into Europe some time before the discovery of America; and the imports are now very considerable. Its coloring matter differs but little from that of Brazil-wood, but the best sapan-wood does not yield more than half the quantity that may be obtained from an equal weight of Brazil-wood, and the color is not quite so bright.—BANCROFT on Colors, vol. ii. p. 329.

Sapphire (Ger. *Sapphir*; Du. *Saffiersteen*; Fr. *Saphir*; It. *Zaffiro*; Sp. *Safiro*, *Safir*; Russ. *Jachant*; Lat. *Sapphirus*), a precious stone in very high estimation. Colors blue and red; also gray, white, green, and yellow. It occurs in blunt-edged pieces, in roundish pebbles, and crystallized. Varies from transparent to translucent. Refracts double. After diamond, it is the hardest substance in nature. The blue variety, or sapphire, is harder than the ruby, or red variety. Brittle, specific gravity 4 to 4.2. It is found in Bohemia, Saxony, France, etc.; but the red sapphire, or Oriental ruby, is not found in any considerable quantities any where except in Ava. Next to diamond, sapphire is the most valuable of the gems. The white and pale blue varieties, by exposure to heat, become snow-white, and, when cut, exhibit so high a degree of lustre that they are used in place of diamonds. The most highly prized varieties are the crimson and carmine red; these are the Oriental *ruby* of the jeweler; the next is *sapphire*; and last, the yellow or Oriental *topaz*. The *asterias*, or star-stone, is a very beautiful variety, in which the color is generally of a reddish violet, and the form a rhomboid, with truncated apices, which exhibit an opalescent lustre.

Sarcocolla, a sub-viscid, sweetish, and somewhat nauseous gum resin. It is brought from Arabia and Persia in small grains of a pale yellow color: the whitest, as being the freshest, is preferred. It is but seldom imported.—MILBURN'S *Orient. Com.*

Sardines, or Sardinias (Ger. *Sardellen*; Fr. *Sardines*; It. *Sardine*; Sp. *Sardinas*), a species of fish of the herring tribe, but smaller. They are taken in considerable quantities on our coasts, and are exceedingly plentiful on the coasts of Algarve in Portugal, Andalusia and Granada in Spain, and along the shores of Italy. The small sardines caught on the coast of Provence, in France, are esteemed the best. From 1000 to 1200 fishing smacks are engaged in catching these fish on the coast of Brittany, from June to the middle of October. The French frequently cure them in red brine; and, when thus prepared, designate them *anchoisées*, or *anchovied sardines*. These are packed in vessels previously employed for holding wine, and exported to the Levant. When perfectly fresh, sardines are accounted excellent fish; but if kept for any time, they entirely lose their flavor, and become quite insipid.

Consumption of Sardines in the United States.—The importation of sardines into the United States is increasing every year. The fisheries commence about the middle of May, and last until about the middle of October. The quantities consumed are enormous.

Each evening, upon the return of the fishing smacks, they can be bought for a few cents per dozen: they are an important part of the food of the poorer classes. These fish are better, and have a flavor, when put up in oil, which they otherwise have not. They are found in great plenty from the coast of Bretagne to the mouth of the Garonne. La Rochelle is the principal depôt for the fishery. The quantity exported to the United States in 1852 was 59,840 kilogrammes; in 1853 the quantity was 76,737 kilogrammes; in 1854 the quantity was estimated at 100,000 kilogrammes, and of this more than one half, strange to say, was for California.—*Letter to the Dep. of State.*

Sardinia. The whole area of this kingdom, including Piedmont, Savoy, and Genoa, and the island of Sardinia, is estimated at 28,229 square miles, containing a population, in 1862, of over 5,000,000, viz.: the continental states 18,994 square miles, population 4,500,000; and the island of Sardinia 9235 square miles, population 500,000.

The chief staples of this kingdom are raw silk, rice, maize, wheat, chestnuts, wines, olives and olive-oil, figs, oranges, and citrons. In the island of Sardinia the productions are maize, wheat, hemp, silk, beans, and other pulse vegetables. There are several extensive vineyards, though the wines are not in much repute in foreign markets. Piedmont is considered the most productive part of the continental kingdom, and usually exports its surplus produce for the consumption of Genoa, Nice, and the regions along the coast. Silk is one of the most profitable productions.* The olive and vine are extensively cultivated; wheat and Indian corn are also grown; the latter of which, mixed with roasted chestnuts, constitutes the chief food of the rural inhabitants. The minerals of the country are valuable, consisting of iron, copper, lead, manganese, and cobalt; but, owing to bad roads and the lack of capital, they are not worked. The salt springs and mines of alabaster, marble, and slate, receive the protection of the government, and their products constitute some of the chief exports of Sardinia. The exportation of marble alone to the United States amounts annually in value to about \$15,000. The manufactures consist of silks, velvets, and other silk stuffs, stockings, common linens and woollens, and the product of the tanneries; but, with the exception of silks, few of these manufactures are exported. The chief ports are Genoa, Spezzia, and Nice, on the continent, and Cagliari, on the island of Sardinia. Genoa is a free port, in which goods may be warehoused or re-exported free of duty. It is the chief outlet of the Mediterranean for the manufactures of Switzerland, Lombardy, and Piedmont.

In 1815 the republic of Genoa was ceded to the King of Sardinia, with the express stipulation that "the free port of Genoa shall be re-established, with the regulations which existed under the ancient government. Every facility shall be given by the king to the transit through his states of merchandise from that free port, under such restrictions as his majesty shall judge expedient for preventing the said merchandise being illicitly sold or consumed in the interior. It shall be subject only to the usual moderate duty." The commercial relations of the United States with Sardinia are regulated by treaty. Prior to the ratification of this treaty (November 26, 1838), the commerce of the United States with this kingdom was conducted exclusively under foreign flags. Indeed, until within a recent period, the commercial system of the Sardinian government was directly opposed to the principle of free intercourse. The treaty with the United States guarantees entire reciprocity and perfect equality with the Sardinian flag in the direct and indirect trade. The following are the stipulations of this treaty which relate to commerce:

* Piedmont and Lombardy produce more raw silk than all the rest of the world together.

Perfect reciprocity of commerce and navigation between the two countries, inhabitants of the one enjoying in the other all the privileges of subjects or citizens. Vessels in their respective ports to enjoy the same privileges, and to pay no higher duties or charges than national vessels. All commodities and merchandise, the produce of the soil or industry of the United States, or of any other country, which may be legally imported into Sardinian ports in Sardinian vessels, may also be imported by American vessels, and pay no higher duties. Sardinian vessels to enjoy the same privileges in the ports of the United States. The same principle extended to all exports from either country. The vessels of each country may enter the ports of the other with cargoes from any foreign country whatever. Any duty or restriction imposed on the vessels or merchandise of the one country in the other to be extended to the vessels or merchandise of all nations. Coasting trade reserved to national vessels. Special favors to any other nation to be enjoyed by the contracting parties respectively. Vessels of either country forced into the ports of the other by stress of weather to be exempted from port charges.

Article 9 stipulates free transit from the port of Genoa across Piedmont, except for salt, gunpowder, and manufactured tobacco.

Cagliari, the capital of Sardinia, on the northeast shore of a spacious bay on the south coast of the island, lat. $39^{\circ} 12' 13''$ N., long. $9^{\circ} 7' 44''$ E. Population in 1850 estimated at 80,000. The city stands on a rising ground, and has an imposing effect from the sea. The public buildings and churches are numerous, and some of them splendid; but the streets are for the most part narrow, steep, and filthy. The Gulf of Cagliari extends from Pula on the west, to Cape Carbonara on the east, a distance of about twenty-four miles across, and about twelve in depth, with good anchorage every where after getting into soundings. A mole projects from the Pratique office, and ships usually lie about one mile southwest by south from it, in six or eight fathoms water, on an excellent bottom of mud. There is a very convenient pier harbor at the south angle of the tower wall, capable of containing fourteen or sixteen vessels of a tolerable size, besides small craft. Altogether Cagliari is one of the best and safest ports in the Mediterranean. Vessels belonging to Sardinia are admitted by treaty into the ports of the United States on the same terms as American vessels, with the produce or manufactures of their own or any other country.—See CAGLIARI.

Other usual provisions respecting the appointment of consuls, etc., are made; and, in a separate article, his Sardinian majesty continues the differential duties in favor of Sardinian ships on the importation of wheat, olive-oil, and wine, from the ports of the Black Sea, Adriatic, and Mediterranean, as far west as Cape Trafalgar. This separate clause is explained by the fact that the grain, oil, and wine trade, carried on with the ports of the Mediterranean, has always been the chief source of the commercial prosperity of Genoa. On the 12th July, 1850, this differential position was abandoned, and American vessels can now engage in the grain-carrying trade, as well as in all other kinds of commerce, between Genoa and other ports within the Mediterranean and Black seas, on terms of perfect equality with Genoese vessels. The separate article has, therefore, become a dead letter.

Genoa is the only port in Sardinia much frequented by United States vessels. The port charges are: For pilotage, according to draught; anchorage, 30 centimes* per ton; quarantine dues, 8 centimes per ton each day; board of health fees, 40 centimes per ton; measurement charges, according to size of vessel.

The shipping frequenting the port of Cagliari, on the island of Sardinia, has considerably increased dur-

ing the past ten years. This is owing to the shelter and refuge it affords in stormy weather, and to the facilities it offers for obtaining all necessary supplies.

This may be seen from the following statement, showing the number and tonnage of vessels of all nations that have visited this port since 1845:

Years.	No. of Vessels.	Tonnage.
1846.....	472	22,593
1847.....	434	48,545
1848.....	462	54,393
1849.....	601	71,959
1850.....	497	51,592
1851.....	540	56,949
1852.....	567	61,489
1853.....	689	88,785
1854.....	803	96,439

The chief articles of American produce consumed in Sardinia are cotton and tobacco. The former is free, and on the latter the duty is "reserved," it being a government monopoly. Whalebone, refined sugar, rum, paints, and other minor articles, are also exported from the United States to Sardinia, but to no considerable amount.

The following table exhibits the quantity and value of cotton and tobacco exported from the United States to Sardinia from 1850 to 1855, both years inclusive:

Years.	Cotton.	Values.	Tobacco.	Values.
	Pounds		Hhds.	
1850.....	1,566,720	\$152,910	107	\$9,293
1851.....	2,136,100	251,838	8	515
1852.....	5,568,823	416,182	3414	\$41,170
1853.....	1,629,025	156,422	112	21,900
1854.....	1,645,372	147,462	85	10,500
1855.....	14,777,765	1,288,387	3311	\$352,245

Imports into the United States from Sardinia consist chiefly of flax, olive-oil, rags, silk, piece goods, red wines, wool (unmanufactured), marble, and manufactures of wool. Marble is the most valuable article received, amounting annually to upward of \$30,000.

Almost all the trade of Sardinia is carried on by strangers; and even the fish on its coast and in its harbors are caught by Sicilians, Neapolitans, Tuscans, and Genoese. Grain is the principal article of export. In good years, the exports from the whole island may amount to 400,000 starelli, or about 500,000 bushels of wheat, 200,000 starelli of barley, 6000 starelli of maize, 100,000 starelli of beans, 200,000 starelli of peas, and 1000 starelli of lentils. The culture of vines is gradually becoming of more importance; and about 3500 Catalan pipes are exported, principally from Alghero and Oghastaro. Cheese is an important object in the rural economy of Sardinia, and considerable quantities are exported. Salt is a royal monopoly, and affords a considerable revenue. Until recently, Sweden drew almost all her supplies of this important necessary from Sardinia, and it continues to be exported in considerable quantities. Flax, linseed, hides, oil, saffron, rags, alquifoux, etc., are among the articles of export. The tunny and coral fisheries employ a good many hands; but, as already observed, they are almost wholly managed by foreigners.

ACCOUNT OF THE QUANTITIES OF THE PRINCIPAL ARTICLES EXPORTED FROM THE ISLAND OF SARDINIA TO FOREIGN COUNTRIES IN 1849, 1850, AND 1851.

Articles.	Quantities.		
	1849.	1850.	1851.
Barilla.....cwt.s.	862	427	2
Bones....."	8,636	9,253	5,855
Bullocks.....No.	2,753	1,430	211
Calves....."	70	93	19
Cheese.....cwt.s.	20,880	25,606	24,986
Cork-wood....."	2,158	6,782	3,119
Cows, steers, and bulls.No.	674	456	304
Fire-wood.....cwt.s.	3,788	1,508	577
Fruit, fresh....."	732	858	79
Goats, sheep, and lambs.No.	232	594	237
Grain.....cwt.s.	1,723	507	2,494
Lead ore....."	8,701	4,296	16,497
Olive-oil.....imp. galls.	5,390	49	.....
Skins....."	17,664	41,097	1,530
Timber, oak.....val. lire	10,220	668	67,712
Tunny fish.....cwt.s.	2,339	2,547	2,839
Wine.....imp. galls.	47,761	269,402	19,743

* 100 centimes are equivalent to 19-6 cents.

Almost every article of dress, whether for the gentry or the peasantry, is imported. Soap, stationery, glass, earthen-ware, and furniture, as well as sugar, coffee, drugs, etc., are also supplied by foreigners; and notwithstanding the Sards possess many rich mines, several of which were successfully wrought in antiquity, they import all their iron and steel. The only manufactures carried on in the island are those of gunpowder, salt, tobacco, and woolen caps. But salt, of which the export may be estimated at 14,000 or 15,000 tons a year, is excluded from the preceding table, on which, indeed, but little reliance can be placed.

These statements sufficiently show that the commerce of Sardinia is very far from being what might naturally be expected from her extent, fertility, admirable situation, and the excellence of her many harbors. The following summary presents a general view of the foreign commerce of Sardinia:

1850.—Imports	111,870,000 francs.
Exports	93,866,000 "
Total foreign trade in 1850....	205,736,000 "
1851.—Imports	129,790,000 francs.
Exports	73,133,000 "
Total foreign trade in 1851....	202,923,000 "
Navigation in 1850. . Vessels, 2420—Tonnage, 277,717	
" 1851. " 2538 " 256,230	
" 1852. " 3250 " 368,400	

Of these there were under the American flag:

In 1850.....Vessels, 27—Tonnage.....	6,176
In 1851....." 19 ".....	7,577
In 1852....." 38 ".....	10,024

The trade of the kingdom in 1853 amounted in value to 333,942,000 francs (\$63,448,980) imports; and 220,630,000 francs (\$41,919,700) exports. In 1852 the direct trade between the United States and Sardinia amounted to 7,725,362 francs (\$1,477,818 78). In 1853 it reached as high as 13,891,561 francs (2,639,396), showing an increase of nearly 100 per cent.

The entire trade, compared with that of 1852, shows an increase of 21,500,000 francs on imports, and of 5,500,000 francs on exports. The imports comprise in values (in round numbers) as follows: Cotton, 34,000,000 francs; colonial or trans-Atlantic produce, 25,000,000; corn, 22,000,000; silks, 20,000,000; woolens, 18,000,000, etc. The exports comprise: Silks, 43,000,000 francs; wine and oil, 10,000,000 francs; rice, 8,000,000; cattle, 4,000,000, etc.

The countries with which Piedmont carries on the largest trade are as follows:

IMPORTS.		EXPORTS.	
	Francs.		Francs.
France	43,000,000	France	40,000,000
England	39,000,000	England	3,500,000
Switzerland	14,500,000	Switzerland	13,000,000
Austria	10,000,000	Austria	16,000,000
Russia	17,000,000	Russia	163,000
United States....	13,000,000	United States	531,000

The customs' revenue amounted in the year 1853 to \$3,464,472.

Sardinian official returns show an importation of raw cotton, direct from the United States, for 1853, of about \$2,000,000 in value; and it is supposed that while of the remainder some undoubtedly came from Algeria, the greater part came indirectly from the United States, through England, Holland, etc. If, however, these Sardinian returns are compared with those prepared by the United States Treasury Department, it will appear that the direct importation of cotton from the United States must be, as it unquestionably is, largely over-estimated; while the indirect importation from English, Dutch, and other European ports is much below the actual quantities given. Thus the value of cotton exported from the United States to Sardinia in 1853, as per United States Report on Commerce and Navigation, was only \$156,422; and in 1852, \$416,982; making for both years the sum of \$573,404, or a little more than one-fourth of the value given in the Sardinian returns for 1853 alone. The following summary presents as accurate a statement of the cotton trade of Sardinia as can be derived from a comparison of the official reports of the European countries whence cotton is re-exported, and of the United States, with the official returns of the Sardinian government. The countries given are not the only, but the principal countries, whence Sardinia imports cotton:

POUNDS OF COTTON IMPORTED INTO SARDINIA FOR THE FOUR YEARS ENDING 1854 FROM THE COUNTRIES DESIGNATED.

Years.	Great Britain.	France.	United States.	Total.
1851.....	3,742,320	No data.	2,136,100	4,878,420
1852.....	2,238,208	3,497,389	5,568,823	11,304,420
1853.....	3,860,864	1,431,320	1,629,025	6,979,218
1854.....	3,821,323	1,107,341	1,645,372	6,574,041
Average	3,165,680	2,031,519	2,744,830	7,434,150

The railroad facilities afforded at the port of Genoa for the transmission of merchandise to the interior of Italy, Switzerland, etc., have already produced a marked effect on the cotton trade of that port. It has been shown that the total quantity of cotton exported from the United States to Sardinia was, in 1851, 2,136,000 lbs.; in 1852, 5,568,823 lbs.; in 1853, 1,629,025 lbs.; in 1854, 1,645,372 lbs. In 1855 the exportation reached 14,777,765 lbs., of which the port of Genoa received 10,035,600 lbs.; and an official document received from Genoa gives the quantity received at this port from the United States, in American vessels alone, the first six months of 1856, at 12,164,000 lbs.—C. D.

Money, Weights, and Measures.—Accounts are kept in lire, reali, and soldi. 5 soldi = 1 real = 4½ d.; 4 reali = 1 lira = 1s. 6d.; 10 reali = 1 scudo = 3s. 9d. The paper money consists of notes for 5, 10, and 20 scudi. Farm produce and the coarser metals are weighed by the *pesi di ferro*: 12 Sardinian oz. = 1 lb. = 14 oz. 5 dr. avoirdupois; 26 lbs. = 1 rubbo; 4 rubbi = 1 cantaro = 93 lbs. 8 dr. avoirdupois. The starello or corn measure is equivalent to 1 bushel 1½ peck English. The palm = 10½ English inches.

COMMERCE OF THE UNITED STATES WITH SARDINIA FROM OCTOBER 1, 1840, TO JULY 1, 1856.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1841.....	\$47,000	....	\$47,000	....	....	....	....	....
1842.....	40,208	....	40,208	....	....	....	1,153	776
9 mos., 1843.....	108,091	....	108,091	....	....	....	1,951	260
June 30, 1844.....	92,522	....	92,522	....	....	....	4,395	1,531
1845.....	162,827	\$32,970	195,797	\$19,850	....	\$1,200	4,332	1,411
1846.....	283,283	976	284,259	....	....	....	9,805	1,191
1847.....	630,232	16,870	647,102	287	....	....	10,235	3,313
1848.....	175,583	18,389	193,972	....	....	....	9,162	1,988
1849.....	460,950	21,414	482,364	42,538	....	42,270	12,397	4,843
1850.....	170,764	86,136	256,900	205	....	....	7,791	6,300
Total....	\$2,171,400	\$176,755	\$2,348,215	\$62,889	....	\$43,470	61,231	21,663
June 30, 1851.....	\$310,838	\$19,401	\$330,239	\$2,802	....	....	6,741	8,479
1852.....	769,209	42,286	811,495	74,901	....	....	13,443	6,609
1853.....	195,330	27,996	223,326	171,533	....	....	11,321	7,013
1854.....	188,305	2,020	190,325	86,676	....	....	10,638	2,246
1855.....	1,888,186	143,844	1,932,030	217,232	....	\$2,000	16,754	4,597
1856.....	2,143,977	60,961	2,204,938	317,179	....	....	17,938	3,501

* Nine months to June 30, and the fiscal year from this time begins July 1.

Sardonyx, a precious stone, a variety of chalcedony. The ancients selected this substance to engrave upon, no doubt, for its possessing two peculiar and necessary qualities: viz., hardness and tenacity, by which it is capable of receiving the finest touch or stroke of the tool without chipping, and showing the art of the engraver to the highest perfection.—*MAWE on Diamonds*.

Sarsaparilla (Ger. *Sarsaparille*; Fr. *Salsepareille*; It. *Salsapargilla*; Sp. *Zarzaparilla*), the root of the *Smilax Sarsaparilla*, a plant growing in South America and the West Indies. It is imported in bales. It is known in the London market by the names of Lisbon, Honduras, and Vera Cruz, but it is also brought from Jamaica. The Lisbon root, which is the produce of Brazil, has a reddish or dark brown cuticle, is internally farinaceous, and more free from fibre than the other kinds: the Honduras has a dirty brown, and sometimes whitish, cuticle; it is more fibrous, and has more ligneous matter than the Lisbon and Vera Cruz. It is in long, slender twigs, covered with a wrinkled brown cuticle, and has a small, woody heart. The Jamaica differs from the others, in having a deep red cuticle of a close texture, and the red color partially diffused through the ligneous part. The root is inodorous, and has a mucilaginous, very slightly bitter taste: the bark is the only useful part of the plant; the ligneous part being tasteless, inert, woody fibre.—*THOMSON'S Dispensatory*.

Sassafras (Ger. and Fr. *Sassafras*; It. *Sassafras*; so; Sp. *Sassafras*), a species of laurel (*Laurus Sassafras*, Linn.), a native of the southern parts of North America, Cochinchina, and several of the Indian islands. Sassafras wood, root, and bark have a fragrant odor, and a sweetish aromatic taste. The wood is of a brownish white color; and the bark ferruginous within, spongy, and divisible into layers. Their sensible qualities and virtues depend on an essential oil, which may be obtained separate by distilling the chips or the bark with water. It is very fragrant, hot, and penetrating to the taste, of a pale yellow color, and heavier than water. It is used only in the materia medica.—*THOMSON'S Dispensatory*.

Satin (Eng., Fr., and Germ.) is the name of a silk stuff first imported from China, which is distinguished by its very smooth, polished, and glossy surface. It is woven upon a loom with at least five-leaved healds or heddles, and as many corresponding treddles. These are so mounted as to rise and fall four at a time, raising and depressing alternately four yarns of the warp, across the whole of which the weft is thrown by the shuttle, so as to produce a uniform smooth texture, instead of the checkered work resulting from intermediate decussations, as in common webs. Satins are woven with the glossy or right side undermost, because the four-fifths of the warp, which are always left there during the action of the healds, serve to support the shuttle in its race. Were they woven in the reverse way, the scanty fifth part of the warp threads could either not support, or would be too much worn by the shuttle.

Saunders (Red) (Arab. *Sundal-ahmer*; Hind. *Ruckut-chundum*), the wood of a lofty tree (*Pterocarpus santalinus*) indigenous to various parts of India, Ceylon, Timor, etc. The wood is brought to Europe in billets, which are very heavy, and sink in water. It is extremely hard, of a fine grain, and a bright garnet red color, which brightens on exposure to the air. It is employed to dye lasting reddish brown colors on wool. It yields its coloring matter to ether and alcohol, but not to water.—*THOMSON'S Dispensatory*; *BANCROFT on Colors*, vol. ii. p. 236.

Savannah, city, port of entry, and capital of Chatham county, Georgia, is situated on the right bank of the Savannah River, 17 miles from its mouth. It is in 32° 4' 56" N. lat., and 81° 8' 18" W. long. from Greenwich, and 4° 10' W. from Washington. It is

118 miles southwest from Charleston, 123 miles southeast from Augusta, 158 miles east-southeast from Milledgeville, 662 miles south by west from Washington. The population in 1810 was 5195; in 1820, 7523; in 1830, 7776; in 1840, 11,214; in 1850, 15,312; in 1854, 19,000. This city was founded in 1733 by General James Oglethorpe and others. It was taken by the British in 1778, but they abandoned it in 1782. On the 10th of January, 1820, 463 buildings were burned, occasioning a loss of property amounting to \$4,000,000; but it has been rebuilt with additional beauty. There are in Savannah eight banks, aggregate capital \$4,900,000; four printing-offices, issuing three daily and one weekly newspaper. Capital employed in manufactures, 1850, \$130,550; value of manufactured articles, \$256,250. Savannah is the port for an extensive region, rich in agricultural and mineral wealth, and by the immense extent of railroad converging to this point (about 1200 miles) will undoubtedly be the port of the Southern Atlantic coast. The cotton shipped from Savannah for the years 1856-'57 amounted to 327,658 bales.—*See GEORGIA*.

The recent construction of railroads from Savannah westwardly has an important bearing, present and prospective, upon the commerce of Savannah. Those in operation in 1857 are as follows:

Georgia Rail-road	232 miles.
Central, Savannah to Macon	191 "
Southwestern and Muscogee	178 "
Macon and Western (to Atlanta)	101 "
Western, to Chattanoga	138 "
Atlanta and Lagrange	87 "
Total	927 "

These roads connect either directly or indirectly with 800 miles of railroad in Tennessee.

Saxe-Meiningen (one of the Zoll-Verein). The general trade between this duchy and the United States is increasing. Her manufactures are deservedly in high repute, and are chiefly destined for the American market. They consist of leather, woolen and cotton stuffs, musical instruments, toys of every description, china, glass, iron, stone, and willow wares, slate pencils, marbles, nails, drugs, colors, wooden wares, etc.

This duchy is rich in mineral productions, and mining is pursued with considerable activity. Iron, copper, coal, alum, vitriol, marble, and salt are extensively produced, and enter largely into the exports of the duchy. Exports for the United States are transported either to Bremen, Hamburg, Antwerp, Rotterdam, or Havre.

The following statement exhibits the value of exports, the produce and manufacture of Saxe-Meiningen, to the United States, during a period of five years, from 1851 to 1855, both inclusive, specifying the countries through which said exports were shipped for the United States:

Years.	Via			Total.
	Hamburg.	Bremen.	France.	
1851 .....	...	\$20,456	...	\$20,456
1852	\$743	39,665	\$2823	43,230
1853	5319	40,962	260	46,540
1854	247	10,368	...	10,615
1855 .....	...	6,171	...	6,171

The exports from the United States to this duchy consist of tobacco, rice, breadstuffs, cotton, and manufactures of India-rubber, etc. The soil, owing to the vast forests and mountains which cover so much of its surface, is not favorable to agricultural pursuits; hence breadstuffs form a large item of imports from foreign countries.

Saxony (one of the Zoll-Verein). This kingdom lies in the centre of Germany, and though the soil is generally fertile in grain, and is cultivated with the greatest care, the quantity raised, even in the best harvests, is not more than sufficient for the consumption of the inhabitants. Wheat, rye, oats, barley, and potatoes are the general crops.

Saxony is rich in mines of iron, lead, copper, cobalt,

bismuth, antimony, and coal; consequently we find that mining and manufactures occupy the principal portion of its nearly 2,000,000 inhabitants. There are upward of 500 mines in active operation, the centre of which is at Freiburg. Fruit is extensively cultivated, and excellent wine is produced from the vineyards of the Elbe. The forests, which cover one-fourth of the surface, furnish fine timber, which is floated down the Elbe to Hamburg. The chief manufactures of Saxony are those of cotton, in the spinning of which the latest improvements have been introduced.* The other chief branches of manufacturing industry are linen and woolen weaving, stocking-making, and the fine porcelain of Meissen, known in commerce as Dresden china. Dresden and Leipsic are the commercial

marts of Saxony. Annual fairs are held in these cities, which are attended by vast concourses of people from most of the countries of Europe and Western Asia. Leipsic is the great emporium of the book trade of Germany; and in both these cities manufactures, particularly in silk and woolen fabrics, jewelry, musical and scientific instruments, artificial flowers, etc., are carried to the very highest state of perfection. Leipsic communicates by railroad with Dresden, and the trade of the latter is conducted up and down the Elbe.

The following statement exhibits the value of exports, the produce and manufactures of Saxony, to the United States, during a period of five years, from 1851 to 1855, both inclusive, specifying the countries through which said exports were shipped for the United States:

Years.	Via						Total
	Hamburg.	Bremen.	Holland.	France.	Belgium.	England.	
1851	\$115,259	\$593,008	....	\$82,361	\$8,533	\$56,755	\$855,916†
1852	351,364	1,650,333	\$4220	151,916	12,131	143,906	2,313,584
1853	375,406	1,657,396	2104	131,539	9,942	156,214	2,392,651
1854	281,655	945,352	9137	143,414	11,345	170,395	1,511,798†
1855	351,281	2,013,910	6437	114,745	25,303	168,915	2,710,591

† These figures are for the port of New York only, and for six months. No returns are at hand for the general trade.

Scammony (Ger. *Skammonien*; Fr. *Scammonée*; It. *Scammonea*; Sp. *Escamonea*), a gum-resin, the produce of a species of convolvulus, or creeper plant, which grows abundantly in Syria. When an incision is made into the roots, they yield a milky juice, which being kept, grows hard, and is the scammony of the shops. It is imported from Aleppo in what are called drums, weighing from 75 to 125 lbs. each; and from Smyrna in cakes like wax, packed in chests. The former is light and friable, and is considered the best; that from Smyrna is more compact and ponderous, less friable, and fuller of impurities. It has a peculiar heavy odor, not unlike that of old cheese, and a bitterish, slightly acrid taste. The color is blackish or bluish gray, changing to dirty white, or lathering when the surface is rubbed with a wet finger. Its specific gravity is 1.235. It is very liable to be adulterated; and when of a dark color, heavy, and splintery, it ought to be rejected. It is used only in medicine.—*Thomson's Dispensatory*.

Schooner, in *Nautical language*, a small vessel with two masts, whose mainsail and foresail are suspended from gaffs, reaching from the mast toward the stern, and stretched out below by booms, and whose foremost ends are hooked to an iron, which clasps the mast so as to turn therein as upon an axis, when the after ends are swung from one side of the vessel to the other.

Scotland, the northern portion of Great Britain, extends in its main land from lat. 54° 38' to 58° 41' N., and long. 1° 45' to 6° 14' W., and, including its islands, to lat. 60° 50' N., and long. 8° 35' W.

Scotland is separated from England by a waving line of the Cheviot Hills in the centre, by the Tweed, which enters the sea at Berwick, on the east, and by the Solway Firth on the west. Its eastern shores are washed by the North Sea, and its western by the Atlantic. It is of an oblong, irregular form, extending longitudinally due north and south 280 miles, and varying in breadth from 175 to 100, 50, and 30 miles. Area, 31,324 square miles, or 20,047,462 acres, 6.9 acre to a person, 92 persons to a square mile. Population in 1801, 1,599,068; in 1841, 2,620,184; in 1851, 2,888,742. For Manufacturing Districts, etc., of Scotland, see *BLACKWOOD'S Magazine*, l. 659, lxxv. 162; *London Quarterly Review*, lxxxii. 187. For Scottish Fisheries, see *London Quarterly Review*, lxxix. 226; *North British Review*, i. 326.

The relative commerce of the three leading Scotch ports, compared with the leading ports of England and Ireland, is shown in the following table, showing the

declared value of British and Irish produce and manufactures exported to foreign countries for each year, from 1851 to 1855:

SCOTLAND.			
Years.	Glasgow.	Leith.	Greenock.
1851.....	£3,490,000	£581,230	£471,000
1852.....	3,570,300	491,200	418,600
1853.....	4,968,600	575,000	457,500
1854.....	4,905,500	527,600	554,500
1855.....	3,916,500	536,500	452,300

ENGLAND.			
Years.	London.	Liverpool.	Hull.
1851.....	£14,489,400	£37,913,600	£10,126,400
1852.....	15,802,100	38,469,500	9,894,200
1853.....	22,991,000	47,152,100	10,788,700
1854.....	23,330,200	46,719,100	10,003,100
1855.....	20,915,500	46,333,400	10,679,600

IRELAND.			
Years.	Cork.	Belfast.	Dublin.
1851.....	£109,400	£50,100	£50,000
1852.....	141,000	54,500	75,100
1853.....	129,600	35,900	22,300
1854.....	148,000	28,700	41,400
1855.....	192,600	73,100	28,500

In Scotland there were in 1854-'5 forty-six savings-banks. The progress of these useful institutions is indicated by the following summary of Scotland, and of Great Britain and Ireland:

Years.	No. of Banks.	No. of Accounts.	Amount of Deposits.	Savings
			Scotland.	United Kingdom.
1850-'51....	43	105,161	£1,488,777	£30,277,054
1851-'52....	43	111,299	1,645,205	31,754,281
1852-'53....	45	116,113	1,897,103	33,382,260
1853-'54....	46	118,602	1,931,998	33,736,080
1854-'55....	46	....	2,011,473	34,201,721

Railways.—The progress of the railway system in Scotland has not been rapid. The following table exhibits the number of miles, capital raised per mile, and number of passengers per mile:

Years.	No. of Miles.	Capital raised per Mile.	Receipts per Mile per Annum.	
			From Passengers.	From Goods.
1849.....	795	£27,654	£690	£818
1850.....	902	27,612	664	799
1851.....	957	29,001	649	850
1852.....	970	29,476	663	953
1853.....	987	29,564	713	1075
1854.....	1019	29,792	742	1219
1855.....	1069	29,530	726	1277

—See articles GREAT BRITAIN and GLASGOW for an extended account of the trade and finances of Scotland. On the following page there is presented a tabular statement of the foreign commerce of the United States with Scotland for a series of twenty-seven years, showing the exports, foreign and domestic, the imports, and the tonnage cleared.

* The export of cotton tissues from the Zoll-Verein in 1853 amounted in value to \$2,394,437 84, of which amount Saxony sent from her factories \$2,075,299 68.

COMMERCE OF THE UNITED STATES WITH SCOTLAND, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	\$1,405,445	\$13,683	\$1,419,131	\$1,220,032	....	....	4,015	6,220
1822.....	1,619,566	10,987	1,626,552	1,831,316	....	\$2,100	7,207	5,479
1823.....	1,158,498	10,104	1,168,599	1,086,133	....	3,000	4,547	8,220
1824.....	1,194,219	14,632	1,210,851	1,008,520	....	....	3,175	5,836
1825.....	1,699,526	7,657	1,707,183	1,524,464	....	1,700	7,253	2,432
1826.....	572,894	2,952	575,846	1,036,772	....	....	2,850	2,752
1827.....	1,336,169	....	1,336,169	1,063,101	....	500	7,236	7,521
1828.....	959,560	7,927	967,487	1,193,081	....	....	2,429	8,002
1829.....	829,315	19,493	914,808	1,024,215	....	....	2,609	7,699
1830.....	1,465,211	3,488	1,468,699	1,382,841	....	....	6,913	7,707
Total.....	\$12,304,402	\$90,925	\$12,395,325	\$12,805,535	....	\$7,300	48,264	62,008
Sept. 30, 1831.....	\$1,185,142	\$5,567	\$1,190,709	\$1,977,830	....	....	6,312	9,102
1832.....	1,125,895	20,864	1,146,762	1,580,812	....	....	3,432	9,410
1833.....	1,180,460	21,058	1,207,527	1,025,229	....	\$500	2,523	9,860
1834.....	2,344,785	26,789	2,373,574	1,402,030	....	3,900	6,655	13,484
1835.....	2,830,079	10,850	2,840,929	1,689,648	....	16,800	6,800	9,386
1836.....	2,340,550	744	2,350,294	2,375,849	....	3,360	4,530	10,593
1837.....	3,441,211	12,596	3,453,807	1,188,410	....	4,000	12,641	7,924
1838.....	1,685,203	10,776	1,695,979	594,665	....	....	9,457	6,887
1839.....	1,025,832	1,256	1,027,088	450,183	....	....	2,321	5,403
1840.....	2,022,636	23,304	2,050,940	525,217	....	3,000	10,799	10,433
Total.....	\$19,196,805	\$140,804	\$19,337,609	\$13,259,923	....	\$81,560	66,060	91,982
Sept. 30, 1841.....	\$1,920,506	\$15,813	\$1,935,824	\$850,887	....	\$1,312	7,414	8,717
1842.....	1,522,735	80,279	1,603,014	655,050	....	....	6,390	10,645
9 mos., 1843*.....	2,363,354	14,657	2,378,011	128,846	....	....	12,764	19,849
June 30, 1844.....	1,936,591	16,882	1,953,473	527,239	....	7,200	7,849	18,418
1845.....	2,611,374	54,998	2,666,810	708,187	....	....	14,732	20,810
1846.....	1,642,330	45,416	1,687,746	1,290,056	....	....	9,547	13,788
1847.....	3,645,460	169,013	3,807,473	1,837,014	....	69,565	25,315	15,630
1848.....	2,455,426	38,413	2,493,844	1,666,604	....	7,210	14,175	17,096
1849.....	3,549,960	58,472	3,608,432	1,959,320	....	....	21,032	24,440
1850.....	3,021,740	183,679	3,205,419	2,746,670	....	....	19,759	17,276
Total.....	\$24,669,976	\$670,070	\$25,340,046	\$12,309,993	....	\$85,347	134,997	160,563
June 30, 1851.....	\$3,811,003	\$261,937	\$4,072,940	\$2,999,710	....	....	18,508	22,987
1852.....	2,441,148	230,635	2,671,783	2,355,947	....	....	19,556	22,288
1853.....	4,480,825	154,739	4,641,564	4,337,990	....	....	27,734	32,612
1854.....	3,097,662	190,336	3,287,998	5,820,469	....	....	22,013	23,003
1855.....	2,306,751	114,489	2,421,240	3,554,594	....	....	18,674	13,103
1856.....	3,880,376	26,166	3,906,542	4,131,506	....	....	20,235	24,975
1857.....	4,671,837	32,181	4,704,018	7,216,111	....	....	33,982	49,422

* Nine months to June 30, and the fiscal year from this time begins July 1.

Scud, the name given by seamen to, loose, vapory clouds driven swiftly along by the winds. To *scud*, signifies to run directly before the wind in a gale. As the object is to keep before the sea, the foresail or fore topsail is set; the latter or the main topsail is often necessary, as the foresail is often becalmed from the height of the waves.

Scudo. See COINS.

Scull, an oar, so short that one can work a pair. It most generally implies an oar placed over the stern of a boat, and worked from side to side; the blade, which is turned diagonally, being always in the water. In China, where the method is well understood, large boats are impelled by a single scull with considerable velocity.

Sculptures, figures cut in stone, metal, or other solid substance, representing or describing some real or imaginary object. The art of the sculptor, or statuary, was carried to the highest pitch of excellence in ancient Greece. Fortunately, several of the works of the Grecian sculptors have been preserved, and serve at once to stimulate and direct the genius of modern artists. *Models* are casts or representations of sculptures.

Scuppers are pipes of lead inserted in openings bored from the deck through the sides of a ship, to carry the water off from the deck to the sea. To avoid the inconvenience of having the scuppers broken by the working of the ship, each is formed of two pipes, one of which is passed upward to the deck through the opening in the ship's side, and having its lower end nailed on the outside planking; the other, which is of smaller diameter, after being woolded on the outside with flannel dipped in tallow, is passed downward into the lower pipe, through the opening in the deck, and its upper end secured on the plank of the deck. In order to prevent the entrance of water by these scup-

pers when the ship is inclined, valves of metal are placed over the external outer ends, which close with the pressure of the external water. In merchant vessels, leather pipes, called scupper-hoses, are sometimes nailed round the opening for the same purpose. Sometimes scuppers are only leaden pipes passed through the ship's side, and turned and fastened at each end.

Scuttles, in a ship, holes in the decks, either for air or as passages to the store-rooms; also openings in a ship's side for the admission of air. If, in order to sink a ship, a hole be cut in her bottom, she is said, in *Nautical language*, to be scuttled.

Sea. The jurisdiction over the seas has long been a question of difficulty and of doubtful right. Grotius published his *Mare Liberum* against the Portuguese claim to an exclusive trade to the Indies through the South Atlantic and Indian oceans, and he proves the sea is not capable of private dominion. He vindicates the free navigation of the seas, and the right of commerce, and exposes the absurdity of the Portuguese claim. Selden's *Mare Clausum* was written in answer to the doctrine of Grotius, and he undertook to prove, by the laws, usages, and opinions of all nations, ancient and modern, that the sea was capable of private dominion. He asserted that the English had long claimed and enjoyed a supremacy over the surrounding and narrow seas. Bynkershoek concedes to Selden much of his argument, and admits that private dominion may be exercised over adjoining seas; but denies the right of the English on the ground of a want of uninterrupted possession.

The claim of dominion to close or narrow seas is still subject to discussion. As far as a nation can conveniently occupy, and that occupancy is acquired by prior possession or treaty, the jurisdiction is exclusive. Navigable rivers which flow through a territory, and the sea-coast adjoining it, and the navigable waters

included in bays, and between headlands and arms of the sea, belong to the people of the adjoining territory, as being necessary to the safety of the nation, and to the undisturbed use of the neighboring shores. The open sea is not capable of being possessed as private property. The free use of the ocean for navigation and fishing is common to all mankind, and the public jurists generally and explicitly deny the main ocean can ever be appropriated. The subjects of all nations meet there, in time of peace, on a footing of entire equality and independence. No nation has any right or jurisdiction at sea, except it be over the persons of its own subjects, in its own private and public vessels; and so far territorial jurisdiction may be considered or preserved as portions of its territory, and persons on board are protected and governed by the law of the country to which the vessels belong. They may be punished for offenses against the municipal laws of the State, committed on board of its public and private vessels at sea, and on board of its public vessels in foreign ports. This jurisdiction is confined to the ship; and no ship has a right to prohibit the approach of another at sea, or to draw round her a line of territorial jurisdiction, within which no other is at liberty to intrude. Every vessel has a right, in time of peace, to consult its own safety and convenience, and to pursue its own course and business without being disturbed, when it does not violate the rights of others. As to narrow seas and waters approaching the land, there have been many and sharp controversies among European nations concerning the claim of exclusive dominion. The questions arising on this claim are not very clearly defined and settled, and extravagant pretensions are occasionally put forward. * * * Puffendorf admits that in a narrow sea the dominion of it may belong to the sovereigns of the adjoining shores. Vattel, also, lays down the position that the various uses to which the sea contiguous to the coast may be applied, render it justly the subject of property. * * * Chitty, in his work on Commercial Law, has entered into an elaborate vindication of the British title to the four seas surrounding the British Islands, and known by the name of British Seas, and, consequently, to the exclusive right of fishing and of controlling the navigation of foreigners therein. * * * On the other hand, Sir William Scott did not treat the claim of territory to contiguous portions of the sea with much indulgence. He said the general inclination of the law was against it; for in the sea, out of the reach of cannon shot, universal law was presumed, in like manner as a common use in rivers flowing through conterminous states was presumed; and yet in both cases there might exist a peculiar property excluding the universal or common use.—KENT'S *Com.* vol. i.

The United States have recognized the general limitation of a marine league, or a cannon-shot distance; but considering the contour of our coast, the law of nations would justify, and it would not be unreasonable for us to claim, the control of the waters from Cape Ann to Cape Cod, and from Nantucket to Montauk Point, and from that point to the Capes of the Delaware, and from the South Cape of Florida to some point on our coast west of the mouth of the Mississippi.

Seal (Lat. *Sigillum*), a stone, piece of metal, or other solid substance, generally round or elliptical, on which is engraved the arms, crest, name, device, etc., of some state, prince, public body, or private individual. It is employed as a stamp to make an impression on sealing-wax, thereby authenticating public acts, deeds, etc., or to close letters or packets. Seals were very early invented, and much learning has been employed in tracing their history, and explaining the figures upon them. See particularly the work of HORKINCK, *De Sigillorum Prisco et Novo Jure*, 4to, 1642.

Seal-fishery. The seal, an amphibious animal, of which there are many varieties, is found in vast numbers in the seas round Spitzbergen, and on the

coasts of Labrador and Newfoundland. Seals are principally hunted for their oil and skins. When taken in the spring of the year, when they are fattest, a full-grown seal will yield from 8 to 12 gallons of oil, and a small one from 4 to 5 gallons. The oil, when extracted before putrefaction has commenced, is beautifully transparent, free from smell, and not unpleasant in its taste. The skin, when tanned, is extensively employed in the making of shoes; and, when dressed with the hair on, serves for the covering of trunks, etc.—For an account of the imports of seal skins, see *article* FURS.

To the Esquimaux the seal is of as much importance as bread to a European. Its flesh forms their most usual food; the fat is partly dressed for eating, and partly consumed in their lamps; the liver, when fried, is esteemed, even among sailors, as an agreeable dish. The skin, which the Esquimaux dress by processes peculiar to themselves, is made water-proof. With the hair off, it is used as coverings, instead of planks, for their boats, and as outer garments for themselves; shielded with which, they can invert themselves and canoes in the water, without getting their bodies wet. It serves also for coverings for their tents, and for various other purposes. The jackets and trowsers made of seal skin by the Esquimaux are in great request among the whale-fishers for preserving them from oil and wet.—SCORESBY'S *Arctic Regions*, vol. i. p. 510. Seals in fine weather prefer the ice to the water, and vast herds of them are frequently found lying on the field ice; the places where they are met with being thence called "seal meadows." The seal hunters endeavor to surprise them while sleeping, and to intercept their retreat to the water. They attack them with muskets and bludgeons, but principally the latter, they being easily dispatched by a blow on the nose. The seal-fishery has long been prosecuted to a considerable extent in the Northern seas by ships from the Elbe and the Weser. But very few ships have been sent out for sealing only from England, though occasionally some of the whale-ships have taken large quantities of seals. Latterly, however, the seal-fishery has been prosecuted on a large scale, and with extraordinary success, by vessels of from 60 to 120 tons each, having crews of from 16 to 30 men, fitted out from the ports of Newfoundland, Nova Scotia, etc. The business is attended with a good deal of risk, and instances frequently occur of the vessels being crushed to pieces by the collision of the fields of ice. We borrow the following details from Mr. Bliss's tract on the *Trade, Statistics, etc., of Canada and North American Possessions*:

"There is another department of the colonial fishery which has originated within no distant period, and is now of great extent and importance. The large fields of ice which, in the months of March and April, drift southward from the Polar seas, are accompanied by many herds of seals; these are found sleeping in what are called the seal meadows of the ice, and are there attacked and slaughtered in vast numbers. For this purpose the fishers of Newfoundland, from which island these voyages are principally made, without waiting till the return of spring shall have opened their harbors, saw channels through the ice for their vessels, and set sail in quest of those drifting fields, through the openings of which they work a passage, attended with great difficulties and dangers, till they encounter their prey on the seal meadows. This bold and hazardous enterprise seems well compensated by its success. The number of seals thus taken is almost incredible, and is greatly on the increase" (p. 70).—*Living Age*, xxvii. 186. See *articles* FISHERIES, OILS, NEWFOUNDLAND, and LABRADOR; see also M'GREGOR'S *British America*, 2d edit., and SABINE'S *American Fisheries*. There is a good account of the seal in LAING'S *Voyage to Spitzbergen*.

Sealing-wax (Ger. *Siegellack*; Fr. *Cire d'Espagne*, *Cire à cacheter*; It. *Cera Lacca*, *Cera di Spagna*; Sp. *Lacre*; Russ. *Surgutsch*), the wax used for sealing

letters, legal instruments, etc. It is a composition of gum-lac, melted and incorporated with resin, and afterward colored with some pigment, as vermilion, verditer, ivory black, etc.

The Hindoos from time immemorial have possessed the resin lac, and were long accustomed to use it for sealing manuscripts before it was known in Europe. It was first imported from the East into Venice, and then into Spain; in which country sealing-wax became the object of a considerable commerce, under the name of Spanish wax.

If shell-lac be compounded into sealing-wax immediately after it has been separated by fusion from the palest qualities of stick or seed lac, it then forms a better and less brittle article than when the shell-lac is fused a second time. Hence sealing-wax rightly prepared in the East Indies, deserves a preference over what can be made in other countries, where the lac is not indigenous. Shell-lac can be restored in some degree, however, to a plastic and tenacious state by melting it with a very small portion of turpentine. The palest shell-lac is to be selected for bright-colored sealing-wax, the dark kind being reserved for black.

Seamen, the individuals engaged in navigating ships, barges, etc., upon the high seas. Those employed for this purpose upon rivers, lakes, or canals are denominated watermen.

Of the Rights and Duties of Seamen.—The seamen employed in the merchant service are made subject to special regulations prescribed by acts of Congress. Shipping articles are contracts in writing or in print, declaring the voyage and the term of time for which the seamen are shipped, and when they are to render themselves on board; and the articles are to be signed by every seaman or mariner on all voyages from the United States to a foreign port; and, in certain cases, to a port in another State other than an adjoining one. If there be no such contract, the master is bound to pay every seaman who performs the voyage the highest wages given at the port for a similar voyage within the next three preceding months, besides forfeiting for every seaman a penalty of twenty dollars.

The seamen are made subject to forfeitures if they do not render themselves on board to the contract, or if they desert the service; and they are liable to summary imprisonment for desertion, and to be detained until the ship be ready to sail. If the mate and a majority of the crew, after the voyage is begun, but before the vessel has left the land, deem the vessel unsafe, or not duly provided, and shall require an examination of the ship, the master must proceed to, or stop at, the nearest or most convenient port, where an inquiry is to be made, and the master and crew must conform to the judgment of the experienced persons selected by the district judge, or a justice of the peace. If the complaint shall appear to have been without foundation, the expenses and reasonable damages to have been ascertained by the judge or justice are to be deducted from the wages of the seamen. But if the vessel be found or made seaworthy, and the seamen shall refuse to proceed on the voyage, they are subjected to imprisonment until they pay double the advance made to them on the shipping contract. Fishermen engaged in the fisheries are liable to like penalties for desertion; and the fishing contract must be in writing signed by the shipper and the fishermen, and countersigned by the owner.

The articles do not determine exclusively who are the owners, and the seamen may prove by other documents the real and responsible owners. The object of the articles is to place the crew of a fishing vessel upon a footing with seamen in the merchant service, and to make them liable to the same restrictions, and entitled to the same remedies. Provision is made for the prompt recovery of seamen's wages, of which one-third is due at every port at which the vessel shall unload and deliver her cargo before the voyage be ended;

and at the end of the voyage the seamen may proceed in the District Court by admiralty process against the ship, if the wages be not paid within ten days after they are discharged. The seamen having like cause of complaint, may all join in one suit, and they may proceed against the vessel within the ten days, if she be about to proceed to sea; but this remedy in *rem* does not deprive the seamen of their remedy at common law for the recovery of their wages.

Every ship belonging to a citizen of the United States, of the burden of 150 tons or upward, and navigated by six or more persons, and bound from any port in the United States to any port in the West Indies, shall be provided with a medicine-chest, properly supplied with fresh and sound medicines; and, if bound on a voyage across the Atlantic Ocean, with requisite stores of water, and salted meat, and wholesome ship-bread, well secured under deck. A fund shall be raised out of the mariners' wages earned on board of any vessel of the United States, and be paid by the master to the collector of the port, on entry from a foreign port, at the rate of twenty cents per month for every seaman. The like assessment is to be made and paid on the new enrollment and license for carrying on the coasting trade, and also by persons navigating boats and rafts on the Mississippi. The moneys so raised are to be expended for the temporary relief of sick and disabled seamen in hospitals and other proper institutions established for such purpose; and the surplus moneys, when sufficiently accumulated, shall be applied to the erection of marine hospitals for the accommodation of sick and disabled seamen. The hospitals, as far as it can be done with convenience, are to receive sick foreign seamen on a charge of seventy-five cents per day, to be paid by the master of the foreign vessel.

And to relieve American seamen who may be found destitute in foreign places, it is the duty of the American consuls and commercial agents to provide for those who may be found destitute within their consular districts, and for their passages to some port in the United States, in a reasonable manner, at the expense of the United States; and American vessels are bound to take such seamen on board at the request of the consul, but not exceeding two men to every hundred tons burden of the ship, and transport them to the United States on such terms, not exceeding \$10 for each person, as may be agreed on. So, if an American vessel be sold in a foreign port, and her company discharged, or a seaman be discharged with his consent, the master must pay to the consul or commercial agent three months' pay over and above the wages then due for every such seaman, two-thirds of which is to be paid over to every seaman so discharged, upon his engagement on board of any vessel to return to the United States, and the remaining third to be retained for the purpose of creating a fund for the maintenance and return of destitute American seamen in such foreign ports.

The master is personally responsible in damages for any injury or loss to the ship or cargo by reason of his negligence or misconduct. He has authority to imprison, and also inflict reasonable corporeal punishment, upon a seaman for disobedience to reasonable commands, or for disorderly, riotous, or insolent conduct. If the correction be excessive or unjustifiable, the seaman is sure to receive compensation for damages on his return to port in an action at common law. And it must be an extreme case that will justify a master to confine a seaman in a common jail in a foreign port. He can not do it as a punishment, but only by way of precaution under existing circumstances. The master may also confine a passenger who refuses to submit to the necessary discipline of the ship. The master has also the right to discharge a seaman for just causes, and put him ashore in a foreign country; but the causes must be not slight, but aggravated; such as habitual disobedience, mutinous conduct, theft, or

habitual drunkenness; and he is responsible in damages if he discharge him without just cause. This power of discharge extends to the mate and subordinate officers as well as the seamen. But it would require a case of flagrant disobedience, or gross negligence, or palpable want of skill, to authorize a captain to displace a mate, who is generally chosen with the consent of the owners, and with a view to the better safety of the ship and the security of their property.

The master must receive back a seaman whom he has discharged, if he reports and offers to return to his duty and make satisfaction; and if the master refuses, or the seaman has been unduly discharged, he may follow the ship, and recover his wages for the voyage, and his expenses for his return. The master subjects himself to fine and imprisonment if, without justifiable cause, he maliciously force an officer or mariner on shore while abroad, or leaves him behind in any foreign port or place, or refuses to bring home those whom he took out, and are in a condition and willing to return. The expense of curing a sick seaman in the course of the voyage is a charge upon the ship in the nature of additional wages during sickness.

The act of Congress requires that in seamen's shipping articles the voyage and the term of time for which the seamen may have shipped be specified. The regulation relates to voyages from a port in the United States, and it does not apply to a voyage commencing from a foreign port to the United States. The voyage within the attention of the statute means one having a definite commencement and end. The *terminus a quo* and the *terminus ad quem* must be stated precisely; and in a case of general adventure the term of service must be specified. A voyage from New York to the Curacao and elsewhere means, in shipping articles, a voyage from New York to Curacao, and the word *elsewhere* is rejected as being void for uncertainty. Seamen in the merchant service are usually hired at a certain sum, either by the month or for the voyage. In the fishing trade the seamen usually serve under an engagement to receive a portion of the profits of the adventure. The share or profits of the voyage are a substitute for regular wages, and the act of Congress (19th June, 1813) extends the admiralty jurisdiction to the cognizance of suits for shares in whaling voyages in the same form and manner as in ordinary cases of wages in the merchant service. Every seaman engaged to serve on board a ship is bound, from the nature and terms of the contract, to do his duty in the service to the utmost of his ability; and, therefore, a promise made by the master when the ship is in distress, to pay extra wages as an inducement to extraordinary exertion, is illegal and void. It would be the same if some of the crew had deserted, or were sick, or dead, or peculiar efforts became requisite; for the general engagement of the seamen is to do all they can for the good of the service under all the emergencies of the voyage.

A seaman is entitled to his whole wages for the voyage, even though he be unable to render his service by sickness or bodily injury happening in the course of the voyage, and while he was in the performance of his duty. He will equally be entitled to his wages to the end of his voyage when wrongfully discharged by the master in the course of it. The marine law distinguishes between the cases in which seamen's services are not rendered in consequence of a peril of the sea, and in which they are not rendered by reason of some illegal act, or misconduct, or fraud, of the master or owner interrupting and destroying the voyage. In the latter cases the seamen are entitled to their wages. If a seaman be wrongfully discharged on the voyage, the voyage is then ended with respect to him, and he is entitled to sue for his full wages for the voyage.

Freight is the mother of wages, and if no freight be earned no wages are due; but the freight must not be lost by the fraud or wrongful act of the master. The

rule applies to cases of loss of freight by a peril of the sea. Seamen's wages in trading voyages are due *pro rata itineris*. If the seaman dies on the voyage, it was decided in the Circuit or District Court of the United States in Pennsylvania that the representatives were entitled to full wages to the end of the voyage; and on the other hand, in the District Court of South Carolina and Massachusetts, it was decided that full wages by marine law meant only full wages up to the death of the mariner. As the payment of wages depends, in general, upon the earning of freight, if a ship delivers her outward cargo, and perishes on her return voyage, and the outward freight be earned, the seamen's wages on the outward voyage are consequently due.

By the custom of merchants, seamen's wages are due at every delivering port, and their wages are not affected, without their special agreement, by any stipulation between the owners and the charterers, making the voyages out and home one entire voyage, and the freight to depend on the accomplishment of the entire voyage out and in. The owners may waive or modify their claim to freight as they please, but their acts can not deprive the seamen, without their consent, of the rights belonging to them by the general principles of the marine law. They are entitled to wages not only when the owner earns freight, but when, unless for his own act, he may earn it. The wages are due by an arrival at a port of destination, when no cargo is on board, or when the owner chooses to bring the cargo back again, and when the port of destination be not, in fact, the port of delivery. Even if the ship perishes on the outward voyage, yet, if part of the outward freight has been paid, the seamen are entitled to wages in proportion to the amount of the freight advanced, for there is an inseparable connection between freight and wages. In case of capture, the seamen taken prisoners by the captor and detained are entitled to their wages for the whole voyage, if the same be afterward performed, with a ratable deduction for the expenses of salvage. The same is the case of a vessel captured and afterward ransomed, and enabled to arrive at her port of destination. In the case of shipwreck, if any proportion of freight be paid for the cargo saved, wages of seamen are to be paid in the same proportion.

Mariners are bound to contribute out of their wages for embezzlements of the cargo, or injuries produced by the misconduct of any of the crew. But the circumstances must be such as to fix the wrong upon some of the crew; and then, if the individual be unknown, those of the crew upon whom the presumption of guilt rests stand as sureties for each other, and they must contribute ratably to the loss. Where the embezzlement has arisen from the fault, fraud, connivance, or negligence of any of the crew, they are bound to contribute to the reparation of the loss, in proportion to their wages. Where no reasonable presumption is shown against their innocence, the loss must be borne exclusively by the owner or master.

In case of shipwreck, and there be relics or materials of the ship saved, the seamen by whose exertions part of a vessel had been saved are allowed the payment of their wages, as far as the fragments of the materials would form a fund, although there was no freight earned by the owners. But in such cases where the voyage is broken up by *vis major*, and no freight earned, no wages *eo nomine* are due; and the equitable claim which seamen may have upon the remains of the wreck is rather a claim to salvage than a title to wages. Wages in such cases would be contrary to the principle of marine law—that freight is the mother of wages, and the safety of the ship the mother of freight. If, however, the seamen abandon the wreck of a ship, as being a hopeless case, and without the intention of returning to possess and save it, they lose their lien or privilege for any equitable compensation, whether as wages or salvage—their claim is extinguished; and

though other persons may possess the property which had been derelict, it belongs to the original owner, burdened for their claim for salvage.

By the act of Congress, one-third of seamen's wages is due at the port where the ship unloads and delivers her cargo, unless there be an express stipulation to the contrary; and when the voyage is ended, and the cargo or ballast is fully discharged, the wages are due, and if not paid within ten days thereafter, admiralty process may be instituted. But there is no fixed period of time within which mariners must proceed to enforce lien for wages. It does not, like other liens, depend upon possession. The seamen need not libel the vessel at the intermediate port at which they are discharged. They may disregard bottomry bonds, and pursue their liens for wages afterward, even against a subsequent *bona fide* purchaser. It follows the ship and its proceeds, into whose hands soever they may come by title or purchase. Their demand for wages takes precedence of bottomry bonds, and is preferred to all other demands. Their claim is a sacred lien, and as long as a single plank of the ship remains the sailor is entitled, as against all other persons, to the proceeds as a security for his wages. The seamen's lien exists to the extent of the whole compensation due them. There is no difference between the case of a vessel seized abroad, and restored in specie or in value; the lien re-attaches to the thing, and to whatever is substituted for it. Desertion from the ship without just cause, or the justifiable discharge of a seaman by the master for bad conduct, will work a forfeiture of the wages previously earned. Desertion is accompanied with a forfeiture of all the wages that are due; and whatever unjustifiable conduct will warrant the act of the master in discharging a seaman during the voyage, will equally deprive the seaman of his wages. But the forfeiture is saved if the seaman repents, makes com-

pensation or offer of amends, and is restored to his duty.

The master has power to remit a forfeiture, and the penalty of forfeiture is not applied to slight faults, either of neglect or disobedience. There must either be an *habitual* neglect, or disobedience, or drunkenness, or else a single act of gross dishonesty, or some other act of a heinous and aggravated nature, to justify the discharging a seaman in a foreign port, or the forfeiture of wages; nor will the admiralty courts, except in case of great atrocity, visit the offenses of seamen with the accumulated load of forfeiture of wages and compensation in damages. They stop at the forfeiture of wages antecedently earned; and in the application of forfeiture the advance wages are made a charge on the forfeited wages, but the hospital money is apportioned ratably on the wages for the whole voyage. If the seaman quits the ship involuntarily, or is driven ashore by reason of cruel usage, and for personal safety, the wages are not forfeited. On the other hand, it is the duty of the seamen to abide by the vessel as long as reasonable hope remains; and if they desert the ship under circumstances of danger or distress from perils of the sea, when their presence and exertions might have prevented damage, or restored the ship to safety, they forfeit their wages, and are answerable in damages. And even when a seaman might well have been discharged in the course of the voyage for gross misbehavior, if the master refuses to discharge him, and leaves him in imprisonment abroad, he will in that case be entitled to his wages until his return to the United States, after deducting from the claim his time of imprisonment.—LEONE LEVI'S *Com. Law of the World*, vol. ii. p. 226. See *Mercantile Guide*, London, 8vo; *Am. Whig Rev.*, ii. 230. HOSPITALS FOR SEAMEN, see *New England Review*, iii. 481; *HUNT'S Merchants' Mag.*, xi. 344, xi. 230 (J. H. LANMAN).

STATEMENT OF RECEIPTS AND CLASSIFICATION OF EXPENDITURES OF THE MARINE HOSPITAL FUND OF THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30, 1857.

States.	Seamen admitted.	Seamen discharged.	Board and Nourish.	Medical Services.	Medicine.	Traveling Expenses.	Clothing.	Other Charges.	Funeral Expenditures.	Deaths.	Total Expenditures.	Hospital Money collected.
Maine	410	45	\$8,873	\$2,957	\$478	\$4	...	\$391	\$53	8	\$12,758	\$6,907
New Hampshire	113	112	738	248	12	...	...	10	0	1	1,060	197
Vermont	14	16	185	62	8	...	...	2	...	1	208	176
Massachusetts	554	554	19,094	2,634	1,625	13	...	2,834	54	25	26,316	21,027
Rhode Island	125	125	1,070	837	435	...	...	34	24	3	3,310	1,492
Connecticut	123	145	1,845	343	13	...	...	22	72	11	2,297	3,336
New York	1236	1,805	33,955	996	634	...	...	863	344	58	30,793	50,198
New Jersey	27	31	704	257	50	...	...	10	16	2	1,038	4,749
Pennsylvania	2,2	354	14,476	1,197	404	...	\$574	279	226	30	17,159	9,972
Delaware (no return) .....	...	...	...	...	...	...	...	...	...	...	...	1,183
Maryland	284	251	4,381	0	...	...	...	44	100	20	4,532	7,172
District of Columbia	33	30	682	...	...	...	...	6	12	2	701	400
Virginia	226	227	4,146	2,007	301	...	5	65	83	9	6,610	6,649
North Carolina	316	393	5,767	2,632	575	...	25	199	54	8	9,254	2,300
South Carolina	173	213	3,361	137	...	...	...	41	114	19	3,662	2,225
Georgia	207	284	2,735	1,011	525	84	...	44	114	19	4,515	826
Alabama	134	146	9,355	1,904	74	...	...	636	55	9	12,701	2,756
Mississippi	11	12	5,130	2,222	68	...	...	231	...	...	7,652	324
Florida	285	275	6,882	2,369	914	...	...	1,317	90	11	11,573	1,994
Louisiana	1279	1,254	34,767	3,540	2,330	...	...	407	192	49	41,247	15,111
Texas	114	165	4,986	57	19	...	...	50	30	5	5,143	1,060
Missouri	527	433	9,887	998	448	...	...	970	100	50	12,405	4,482
Arkansas	235	15	6,864	866	449	...	...	...	252	46	8,482	...
Ohio	201	250	13,256	1,217	1,886	...	...	420	121	20	16,415	3,967
Michigan	541	578	2,750	1,741	4	...	...	82	48	8	4,085	2,157
Illinois	558	575	11,625	1,382	841	...	...	8,511	84	15	22,444	3,105
Wisconsin	107	200	2,323	877	124	...	3	74	26	4	3,430	924
Iowa (no return) .....	...	...	...	...	...	...	...	...	...	...	...	102
Indiana .....	...	...	...	...	...	...	...	2,462	...	...	2,462	304
Kentucky	25	23	12,136	2,754	1,048	...	...	1,021	241	...	17,202	1,665
Tennessee	144	111	1,029	...	...	...	...	10	13	3	1,053	732
Oregon Territory .....	...	...	...	...	...	...	...	...	...	...	...	163
California	1247	1,212	38,080	4,166	2,971	...	...	463	574	48	46,856	8,894
Washington Territo. ....	...	...	7	...	...	...	...	...	...	...	7	238
Total	9722	10,006	\$263,635	\$30,512	\$16,485	\$106	\$611	\$21,540	\$3104	392	\$843,944	\$167,350

Relief of Destitute Seamen.—By the fourth section of the act of Congress, 28th February, 1803, it is made the duty of consular officers to provide for the mariners of the United States who may be found destitute within their districts sufficient subsistence and passage to the United States, in the most reasonable manner,

at the expense of the United States, subject to such instruction as the Secretary of State shall give; and the section also provides for the manner in which such mariners are to be transported to the United States. If any seaman happens at a United States consulate, not from discharge from a vessel, but from shipwreck

or otherwise, the same must be stated accordingly, with the time he arrived at the consulate, so that the return will show how and when each relieved seaman happened there. And if no extra wages are received, the reasons why such wages have not been received should appear from the return, or other accompanying papers.

When American seamen are discharged in any port from sickness or any other cause, the three months' extra wages should invariably be exacted as required by the acts of February 28, 1803, and of August 18, 1856. The three months' extra wages are to be credited in consular accounts, and the two-thirds thereof are not to be paid to seamen until they shall have engaged on board some vessel to return to the United States; and then only when no disbursements shall have been made on their account. Expenses incurred for them are first to be paid, and the balance only, if any, to be returned them. On payment of the two months' extra wages to seamen, consular officers will take and forward receipts with their accounts. Whenever a ship or vessel belonging to a citizen of the United States is sold in a foreign country, and her company discharged, or when a seaman or mariner, a citizen of the United States, is with his own consent discharged in a foreign country, it is the duty of the master or commander to produce to the consular officer the certified list of his ship's company, and pay to such consular officer for every seaman or mariner so discharged, being designated on such list as a citizen of the United States, three months' pay, over and above the wages which may then be due to such mariner or seaman; two-thirds thereof to be paid by such consular officer to each seaman or mariner so discharged, upon his engagement on board of any vessel to return to the United States, and the other remaining third to be retained for the purpose of creating a fund for the payment of the passages of seamen or mariners, citizens of the United States, who may be desirous of returning to the United States, and for the maintenance of destitute American seamen.

Whenever any seaman or mariner of any vessel of the United States deserts such vessel, the master or commander of the vessel is required to note the fact and date of the desertion on the list of the crew, and to have the same officially authenticated at the port or place of the consulate or commercial agency first visited by the vessel after such desertion. If the desertion shall have occurred in a foreign country, or if, in such case, the vessel shall not visit any place where there is any consulate or commercial agency before her return to the United States, or if the desertion shall have occurred in the United States, the fact and time of desertion shall be officially authenticated before a notary public immediately at the first port or place where such vessel arrives after the desertion. All wages that may be due to such seaman or mariner, and whatever interest he may have in the cargo of such vessel, shall be forfeited to and become the property of the United States, and paid over for their use to the collector of the port where the crew of such vessel are accounted for as soon as the same can be ascertained, first deducting therefrom any expense which may necessarily have been incurred on account of such vessel in consequence of such desertion. In settling the account of such wages or interest, no allowance or deduction shall be made, except for moneys actually paid, or goods at a fair price supplied, or expenses incurred to or for such seaman or mariner, any receipt or voucher from or arrangement with such seaman or mariner to the contrary notwithstanding.

Upon the application of any seaman or mariner for a discharge, if it shall appear to the consular officer that he is entitled to his discharge under any act of Congress, or according to the general principles or usages of maritime law as recognized in the United States, he is required to discharge such seaman or mariner, and require from the master or commander of

the ship or vessel from which such discharge shall be made the payment of three months' extra wages, as provided by the act approved February 28, 1803; and it shall be the duty of such master or commander to pay the same, and no such payment, or any part thereof, shall be remitted in any case, except such as are mentioned in the preceding section, and in cases of wrecked or stranded ships or vessels, or ships or vessels condemned as unfit for service, when no payment of extra wages shall be required. The extra wages required to be paid by the foregoing clause of this section are applicable to the same purposes and in the same manner as is directed by the act approved February 28, 1803, in regard to the extra wages required to be paid by that act.

If the first officer, or any officer and a majority of the crew, of any vessel make complaint in writing that she is in an unsuitable condition to go to sea, because she is leaky, or insufficiently supplied with sails, rigging, anchors, or any other equipment, or that the crew is insufficient to man her, or that her provisions, stores, and supplies are not, or have not been during the voyage, sufficient and wholesome, thereupon, in any of these or like cases, the consular officer of the port is required to appoint two disinterested competent practical men, acquainted with maritime affairs, to examine into the causes of complaint, who must, in their report, state what defects and deficiencies, if any, they find to be well founded, as well as what, in their judgment, ought to be done to put the vessel in order for the continuance of her voyage.

By the 4th section of the act of February 28, 1803, all masters and commanders of vessels belonging to citizens of the United States, and bound to some port of the same, are required and enjoined to take on board their ships or vessels, at the request of the consular officers, such American seamen as may be found in their districts respectively, and to transport them to the port in the United States to which such ships or vessels may be bound, on such terms, not exceeding ten dollars for each person, as may be agreed upon between the said masters and consular officers. And the said seamen shall, if able, be bound to do duty on board such ships or vessels according to their several abilities. To enable the master of the vessel to obtain the payment specified, the consular officer will give him a certificate, stating the names of the seamen placed on board, and the amount to be paid for their passage; on which, upon the arrival of the vessel in a port of the United States, an indorsement must be made by the collector of the customs at such port, stating that such seamen have arrived in said vessel in his district. When the certificate so indorsed is received at the Treasury Department, the amount will be paid to its holder. No master or captain of any ship or vessel is obliged to take a greater number than two men to every one hundred tons burden of the said ship or vessel on any one voyage.

Wages of Seamen.—The general rule in regard to the wages of seamen is, that such wages on board of merchant ships are payable out of the earnings for freight; and if no freight is earned, by reason of the perils of the sea or capture by the enemy, and not by the fault or neglect of the master or owner, no wages are due. The maxim that "freight is the mother of wages" is a formula which, though it has obtained general currency, is to be carefully scrutinized in its application. A distinction is to be made between those accidents by which the voyage is interrupted and the freight lost, without the fault of the owner or master, and other causes arising from the acts of the owner or master. If the voyage or freight be lost by the negligence, fraud, or misconduct of the owner or master, or voluntarily abandoned by them; if the owner has contracted for freight upon terms or contingencies differing from the general rules of the maritime law; or, if he has chartered his ship to take a freight at a

foreign port, and none is to be earned on the outward voyage—in all these cases the mariner is entitled to wages, notwithstanding no freight has accrued. Where freight is, or *might be*, earned, wages are due for the full period of employment in the ship's service, whether the freight is actually received by the owner or not. No private contract between the owner and the shipper, with regard to freight, can affect the right to wages.

If the vessel and cargo are lost on the outward voyage, before any freight is earned, and no part of either is saved by the crew, the wages of the seamen are also lost, and the original contract therefor is annulled, but the advance wages are not in such case to be returned. If the vessel is lost on the homeward voyage, and freight has been, or might have been, by the general principles of law, earned to an outward port, the wages for the outward voyage to that port are deemed to have been earned. No abatement is to be made from the wages in case of the freight being partially lost or diminished by maritime accidents or perils. If freight is earned, whether it be large or small, the whole wages, which are deemed to have been earned, are to be paid without deduction. When the vessel is lost between intermediate ports, the wages are to be calculated up to the last port of the delivery or receipt of cargo, and for half the time that the ship lies there. Where a voyage is divided by various ports of delivery, a claim for proportional wages attaches at each of such ports of delivery upon safe arrival; and all attempts to evade or invade that title, by renunciations obtained from the mariners without any consideration, by collateral bonds, or by contracts inserted in the body of the shipping articles, not usual, not fully explained to these illiterate and inexperienced persons, are ineffectual and void.

Protection and Care of Seamen.—It is provided by the 16th section of the act of July 20, 1840, that the crew of any vessel shall have the fullest liberty to lay their complaints before the consular officer in any foreign port, and shall in no respect be restrained or hindered therein by the master or any officer, unless some sufficient and valid objection exist against their landing; in which case, if any mariner desire to see the consular officer, it shall be the duty of the master to acquaint him with it forthwith, stating the reason why the mariner is not permitted to land, and that he is desired to come on board; whereupon it shall be the duty of such officer to repair on board and inquire into the causes of the complaint, and proceed therein as the act directs.

Desertion.—In countries with which the United States have stipulations by treaty or convention to authorize it, or where it is permitted by the local authorities, consular officers may apprehend deserters as fugitives from justice, and imprison them until required by their commander.—*Consular Regulations, United States, 1856.*

For further information upon the rights and duties of seamen, see articles AFFREIGHTMENT, CHARTER-PARTY, COMMERCE, INSURANCE, SHIPPING, etc. See also KENT'S *Com.* vol. iii. p. 231; PARSONS'S *Mercantile Law*, p. 845; DUNLAP'S *Digest of the Laws of the U. S.*

Seaworthy, a term applied to a ship, indicating that she is in every respect fit for her voyage. It is provided in all charter-parties that the vessel chartered shall be "tight, stanch, and strong, well appareled, furnished with an adequate number of men and mariners, tackle, provisions, etc." If the ship be insufficient in any of these particulars, the owners, though ignorant of the circumstance, will be liable for whatever damage may, in consequence, be done to the goods of the merchant; and if an insurance have been effected upon her, it will be void. But whether the condition of seaworthiness be expressed in the charter-party or not, it is always implied. "In every contract," said Lord Ellenborough, "between a person holding himself forth as the owner of a lighter or vessel ready to carry goods for hire, and the person putting goods

on board, or employing his vessel or lighter for that purpose, it is a term of the contract on the part of the lighterman or carrier *implied by law*, that his vessel is tight, and fit for the purpose for which he offers and holds it forth to the public; it is the immediate foundation and substratum of the contract that it is so. *The law presumes a promise to that effect on the part of the carrier, without any actual proof*; and every reason of sound policy and public convenience requires that it should be so."

A ship is not seaworthy unless she be provided with all the documents or papers necessary for the manifestation of the ship and cargo. Neither is she seaworthy, if, during war, she be not supplied with the sails required to facilitate her escape from an enemy. "It is not sufficient to defeat the liability of the owner that he did not know that the ship was *not* seaworthy, for he ought to have known that she was so at the time he chartered her. The sufficiency of the ship is the foundation of the contract between the parties, and a ship not capable of conveying the goods in a proper state is a failure of the condition precedent to the whole contract. The seaworthiness of the ship is not a question of fraud or good intention, but it is a positive stipulation that the ship shall be so; and therefore, although the owner may himself have been deceived by the ship-builder, repairer, etc., if the vessel be, in fact, unseaworthy, have an insufficient bottom or unsound timbers, it is a breach of a preliminary condition, and is fatal, as such, to the contract."—*HOLT'S Law of Shipping.* It is only necessary, to guarantee the owners from loss, that the ship should be seaworthy at the time of her departure. She may cease to be so in a few hours, and yet they may not be liable. The question to be decided in such cases always is, whether the ship's disability arose from any defect existing in her *before* her departure, or from a cause which occasioned it *afterward*. But if a ship, within a day or two of her departure, become leaky or founder at sea, or be obliged to put back, without any visible or adequate cause to produce such an effect—such as the starting of a plank or other accident, to which the best ships are liable, and which no human prudence can prevent—the fair presumption is that she was not seaworthy when she sailed; and it will be incumbent on the owners to show that she was seaworthy at that time. They are liable for damage occasioned by every injury arising from any *original defect* in the ship, or from bad stowage; but they are not liable for any injury arising from the act of God, the king's enemies, or the perils of the sea.

It is further to be observed, that how perfect soever a ship may be, yet if, from the nature of her construction, or any other cause, she be incapable of performing the proposed voyage, with the proposed cargo on board, she is not seaworthy. *She must be in all respects fit for the trade in which she is meant to be employed.* And it is a wholesome rule that the owners should be held to a pretty strict proof of this. It has been already observed that any defect in point of seaworthiness invalidates an insurance upon a ship. There is not only an express but an implied warranty in every policy that the ship shall be "tight, stanch, and strong, etc.," and the reason of this is plain. The insurer undertakes to indemnify the insured against the *extraordinary and unforeseen perils of the sea*; and it would be absurd to suppose that any man would insure against those perils, but in confidence that the ship is in a condition to encounter the *ordinary perils* to which every ship must be exposed in the usual course of the proposed voyage.

"In many ports certain equipments would now be considered essential which at an earlier period were not customary on the same voyages. Seaworthiness is to be measured by the standard in the ports of the country to which the vessel belongs, rather than that in the port or country where the insurance was made. * * * A vessel may be seaworthy while lying in port

for the purposes to which she is to be there applied, when she would not be for the voyage, and she may be seaworthy for one voyage and not for another. It is sufficient if she be seaworthy for the voyage when she sails. The general rule is, that the vessel must be seaworthy at the commencement of the risk, whatever that risk may be, in order to make the policy attach and charge the insurer. It was held, in the case of *Wier vs. Aberdeen*, that though a ship be unseaworthy at the commencement of the risk, yet, if the defect be cured before a loss, a subsequent loss is recoverable under the policy. The argument of Lord Tenterden in favor of this doctrine is very weighty, but a doubt seems to have been thrown over its solidity by the Supreme Court of the United States.—See *McLanahan vs. The Universal Insurance Co.*; KENT'S *Com. vol. iii. p. 364.*

For further information upon this subject the reader is referred to the able and excellent work of Chief-justice Abbot (Lord Tenterden) on the *Law of Shipping*, part iii.; HOLT on *Shipping*, part iii.; Mr. SERGEANT MARSHALL on *Insurance*; KENT'S *Comm. vol. iii.*; and PARSONS'S *Mercantile Law*.

Seeds, in *Commerce*, the grains of several species of graminæ. Those of most importance are clover seed, flax or linseed, hemp seed, rape seed, mustard seed, etc.; for which see the respective articles.

Segars, or Cigars. See TOBACCO.

Seizure, in *Commerce*, the arrest of some merchandise, movable, or other matter, either in consequence of some law, or some express order of the sovereign. Contraband goods, those fraudulently entered, or landed without entering at all, or at wrong places, are subject to seizure.

Senegal and Dependencies. Gorée is the only port which foreign vessels are permitted to enter. Vessels of the United States pay a duty of 18½ cents per ton. By decree of January 6, 1855, foreign vessels visiting Gorée are subject to a duty of 50 centimes per ton, about one half of a franc, or 9-3 cents. They are upon an equal footing with those of France in respect to navigation duties. Up to 1831, the exportation of gum Senegal was limited to France. By a royal ordinance of that year it is permitted to be exported to all countries from the port of Gorée only. Merchandise of every kind and of every production (Guineas or India-blue cloths excepted) can be imported into or exported from the island of Gorée by vessels of all nations, free of duty.

The name Senegal is derived from the great river of that name, and includes several small French colonies, embracing a number of little islands, and a strip of the main land between the Senegal and Gambia rivers. It is divided into a northern and a southern arrondissement. The total native population of these settlements amounted in 1836 to upward of 18,000. They are all Mohammedan and blacks. The soil of the islands is very poor. The main land, not near the shore, is fertile, and covered with forests. The climate is sultry, and extremely unhealthy. The rainy season lasts from June to October, and breeds fatal diseases. Gold is found near the sources of the Senegal, but attempts to form settlements there have proved abortive. Salt is quite abundant. The vegetable products are varied and luxuriant. There may be found the gigantic palm, the gum, mimosa, ebony, cotton, indigo, coffee, annatto, olives, hemp, cassia, sweet potatoes, millet, maize, etc. The wild animals are the elephant, lion, hippopotamus, boar, buffalo, tiger-cat, deer, and an immense variety of birds. Oxen, goats, mules, horses, and asses are used for domestic purposes, and sheep and hogs are bred.

The articles of export are raw hides, wax, elephant teeth, gum Senegal, cabinet woods, and gold. The value of the exports, including goods re-exported, is about \$1,300,000; and the value of the imports is about \$2,350,000. The imports are chiefly linen and cotton

goods, ready-made clothing, brandy, liquors, wines, and some provisions.

Senna (Fr. *Séné*; Germ. *Sennablater*; It. *Senna*; Sp. *Sen*; Lat. *Cassia Senna*; Arab. *Suna*). The plant (*Cassia Senna*) which yields the leaves known in commerce and the *materia medica* by the name of senna is an annual, a native of Upper Egypt, and Bernou in Central Africa. The senna, after being collected in Upper Egypt, is packed up in bales and sent to Boullac, where it is mixed with other leaves, some of which are nearly equally good, while others are very inferior. After being mixed, it is repacked in bales at Alexandria, and sent to Europe. A great deal of senna is imported from Calcutta and Bombay, under the name of East India senna; but it is originally brought to them from Arabia.—THOMSON'S *Dispensatory*. Senna is very extensively used in medicine.

Sequin, a gold coin struck at Venice, and in several parts of the Grand Seigneur's dominions. In Turkey it is called *dahob*, or piece of gold, and, according to Volney, is in value about 8s. 6d. sterling. It varies, however, considerably in its value in different countries. At Venice it is equal to about 9s. 2d. sterling.

Sewing Machines, a recent French invention for stitching. The piece of cloth is laid down flat upon a cushion; the seamstress who works the machine sits at a kind of lathe, on which the cushion is laid, and works a treadle with her foot; at each movement of the treadle a needle descends vertically and pierces the cloth, carrying with it a thread; the needle has a small hook or notch on one side, which catches and brings up a thread on its return from the hole; and thus, two or three hundred times in a minute, a thread becomes interlaced in the manner of "chain-stitch," or "tambour work." The machine, which costs twenty or thirty guineas, can embroider as much cloth in an hour as an embroideress can complete in a day. Another French machine, by M. Seneschal, of Paris, is more complex in its construction, and is intended for sewing coarse cloth. Great ingenuity is shown in the arrangement of the several parts; the machine pierces its own holes, inserts its own thread, tightens the thread after insertion, and shifts the cloth as the work advances, at the rate of forty or fifty stitches a minute. Barlow's (English) patent stitching machine for making articles of dress: two distinct threads are used, one at the front and the other at the back of the fabric, so that each stitch forms an independent fastening. Judkins's (English) sewing machine, said to be "suited to sewing either a circle, curve, or straight line, at the rate of 500 stitches per minute." There are racks or toothed arms employed, straight or curved, according to the shape of the work to be done; there are two threads, one in a reel and one in a shuttle; and a needle very ingeniously entangles these threads one in another, through the holes pierced in the cloth. The United States have also contributed to this class of machines. Of Morey's sewing machine, made at Boston, the following character is given: "By a very simple process, straight and curvilinear seams are sewn in cotton, linen, or woollen cloth with great rapidity. With one attendant, it will accomplish the work of five seamstresses; it is easily wrought, is not liable to get out of repair, and is readily applicable to almost every variety of plain stitch. In the large ready-made clothing establishments in the United States it is universally used." Among the most prominent patents now in use in this country are Grover and Baker's, Wheeler and Wilson's, and Singer's.

Sextant (Lat. *sextans*, the sixth part; the limb of the instrument being the sixth part of a complete circle), an instrument for measuring the angular distances of objects by reflection. The sextant is capable of very general application; but it is chiefly used as a nautical instrument for measuring the altitudes of celestial objects, and their apparent angular distances. It is an instrument of the utmost importance in naviga-

tion. The sextant is used in the manner of a quadrant, and contains sixty degrees, or the sixth part of a circle. It is for taking the altitude of the planets, etc. Invented by the celebrated Tycho Brahe, at Augsburg, in 1550.—VINCE'S *Astronomy*. The Arabian astronomers under the califs are said to have had a sextant of fifty-nine feet nine inches radius, about A.D. 995.—ASHE.

Shagreen (Ger. *Schagrin*; It. *Chagrin*; Russ. *Schagrin Schagren*), a kind of grained leather, used for various purposes in the arts. It is extensively manufactured at Astrakhan, in Russia.—See TOOKE'S *Russia*, vol. iii. p. 403.

Shallop, or Sloop, is a light vessel, with only a small mainmast or foremast, and lug-sails to haul up and let down on occasion. Shallops are commonly good sailers, and are therefore often used as tenders upon men-of-war.

Shammy, or Chamois Leather (Ger. *Sämischleder*; Fr. *Chamois*; It. *Camoscio*; Russ. *Smschanui, Koshi*), a kind of leather dressed in oil, or tanned, and much esteemed for its softness, pliancy, and capability of bearing soap without hurt. The real shammy is prepared of the skin of the chamois goat. But leather prepared from the skins of the common goat, kid, and sheep is frequently substituted in its stead.

Shanghai, a city and river port of China, province of Kiang-su, on the Woosung River, 40 miles by water from the sea, and 169 miles east-southeast from Nankin; lat. 31° 12' N., long. 120° 53' E. Population estimated at from 115,000 to 135,000. It stands in a level and well-cultivated plain, producing good crops of cotton, rice, and wheat. Immediately outside the wall by which it is inclosed are several populous suburbs. Streets narrow and filthy. Foundling hospitals, tea-gardens, and vast ice-houses, are the objects most worthy of notice in the city. It has a Mint, with manufactures of silk, vegetable oils, and oil-cake (of which vast quantities are annually sent into the interior), iron ware, glass, paper, ivory ware, etc. This is the most northerly of the five Chinese ports opened to foreigners by the treaty of 1842, and, excepting Canton, it is also the most important. The river, which may be navigated by ships of 450 or 500 tons for a considerable distance above the town, crosses the Grand Canal, so that Shanghai is an entrepôt for all the vast and fertile country traversed by the canal, and by the great rivers, including the Yang-tse-Kiang and the Hoang-Ho, with which it is connected. Hence the present importance of the emporium, and hence, also, the indefinite extension to which its foreign trade will probably attain. Its inland and coasting trades are both very extensive. It is said to be annually visited by from 5000 to 6000 canal and river boats, some from very great distances, and by 1500 or 1600 coasting junks. The province of Kiang-su, in which Shanghai is situated, produces great quantities of silk; and besides supplying most part of the northern provinces of the empire, the shipments of silk to the foreigner are greater from this than from any other port. It is also well situated for the export of both green and black teas. Among the other exports are gold and silver, with oil and oil-cake, camphor, drugs, porcelain, cotton, cassia, alum, gypsum, coal, etc. Of the imports opium is by far the greatest; and at least 20,000 chests of Bombay (Malwa) and Patna opium are now annually disposed of in this market; which, supposing the chest to be worth \$500, will represent an aggregate sum of \$10,000,000, or £2,200,000 sterling, for which payment is almost invariably made in the precious metals! Sugar is extensively imported from Formosa, Canton, the Philippines, etc.; cotton stuffs, woolens, iron, etc., from England; with sandal-wood, birds-nests, *biche de mer*, and other products of the Eastern Archipelago, etc. The inhabitants of Shanghai are much more hospitable and better disposed toward foreigners than those of Canton; and strangers

may travel for miles into the interior all round the city with perfect security. Within the last four or five years, some very fine brick houses have been built by foreign merchants in the suburbs.—*Parl. Reports*, etc.

Commerce with the United States.—The commercial relations of the United States with China are regulated by the stipulations of the treaty of July 3, 1844. A treaty, similar in all its leading provisions, was negotiated with Great Britain in 1842, and a tariff of duties on imports and exports, and duties on tonnage, are made a part of both these treaties. Formerly, foreign intercourse, as already remarked, was confined to Canton, and hither were brought from the distant parts of the empire teas, silks, and other leading staples of China. Trade was invariably conducted through the intervention of *hong* merchants, who were licensed agents of the government, and answerable to it for all duties of import, export, and other charges accruing on the vessel, the affairs of which they managed. This system was adopted as a precautionary measure for securing the duties and other dues levied on foreign vessels; but the treaties referred to containing ample stipulations respecting this subject, the agency of the *hong* merchants has been abolished, and their duties transferred to the consuls of the nations to which the vessels respectively belong. The treaty between the United States and China guarantees the same commercial advantages and privileges to the citizens of the United States that are or shall be conceded to the citizens of any other foreign power. Fees and charges of every kind not comprehended in the treaty are abolished. Trade is permitted to the five ports of Kwang-chow, Amoy, Foo-chow, Ningpo, and Shanghai, and from either of the said ports to any other of them; but it is prohibited to any other ports in the empire, or along the coasts thereof, under a penalty of confiscation of vessel and cargo. Trade is subject to no restrictions as to origin or nature of cargo, or port of departure, with the exception of the article opium, which is declared contraband. Captains, on entering, are required to deposit their papers with the consul of their nation, who will notify the proper local authority of the name and tonnage of the vessel, names of the crew, and nature of cargo. Tonnage duty is fixed at 5 maces (equal to 74 cents) per ton, if the vessel is over 150 tons burden; 150 tons or under, 1 mace (equal to 14.8 cents) per ton. Before cargo can be landed, a permit must be obtained from the local authority, under a penalty of \$500 and forfeiture of goods so landed.

Standards of weights and measures are to be supplied by the Chinese government to the consuls of the different nations, to secure uniformity, and prevent confusion in measures and weights of merchandise. The former limitation of foreign trade to *hong* merchants, appointed by the government, is abolished; and citizens of the United States are permitted to trade with any and all subjects of China, without distinction. The privilege is conceded of re-exporting into any other port any merchandise imported into any one of the five ports, without being subject to any additional duty, provided the full duty was paid when first imported, and the goods remain with their original marks unchanged; but this privilege must be specially applied for through the American consul. The other provisions of the treaty apply mostly to the privileges, and duties, and police regulations, applicable to the consuls, merchants, and citizens of the United States at the five ports. Shipping dues, formerly charged on the measurement of the ship's length and breadth, at so much per *chang*, and all the old charges of measurement, entrance, and port clearance fees, daily and monthly fees, etc., are also abolished by this treaty; and the tonnage duty on the registered tonnage of the vessel, specified in the preceding synopsis, is substituted in lieu thereof. Commercial relations between the United States and China date from a period as early as 1784. In the month of February of that year,

it appears that the *Empress of China*, a ship of 360 tons, sailed from New York for Canton, and returned the following year with a rich and valuable cargo. The success, as well as the novelty of this adventure, attracted no little attention throughout the country. The ensuing year another voyage was made, in a small vessel of only 84 tons burden, with equal success. Merchants were soon induced to engage in an enterprise which promised the most flattering results; and as early as 1789, five years after the American flag had first entered the Chinese seas, fifteen American ships arrived at Canton. Such was the origin of an extensive and profitable trade between the United States and the Celestial empire.

The geographical position, excellent shipping facilities, and proximity to the fertile valley of Yang-tse-Kiang, would seem to point to Shanghai as a port possessing pre-eminent advantages, which, when fully developed, must make it a flourishing and primary station. The following extract in relation to the trade of Shanghai is from an official communication addressed to the Department of State, dated Shanghai, August 7, 1855: "It will be observed that the export trade for the first six months of 1855 has more than doubled any previous one; and, inasmuch as the business season is just opening, it may safely be inferred that the value of exports for this year will be about double that of any previous one. The disorganized state of the rest of the empire, the equal and regular levy duties at this port, and its superior geographical position, are the main causes of the concentration of trade at this point. The imports have been small, because it has required some time to dispose of the enormous quantities which had collected at this port during the period the city was in possession of the rebels. That important branch of our trade will now, I believe, revive; and if our government will but vigorously and prudently nourish the facilities now enjoyed at this port, a commerce may be developed rivaling Calcutta in importance, and superior to any other port in the East. The great valley of the Yang-tse-Kiang is the commercial field, and this port is the entrepôt. The greatest privileges conceivable might be obtained at all the other ports, and yet one half of such facilities at this port would be productive of more advantage than could by any possibility be derived from all the other ports combined. Foo-chow will in time be a port of some importance for the purchase of a few black teas, but no more. Amoy and Ningpo never have furnished any thing worthy of notice; and Canton was only a port of trade, because the Chinese had been in the habit of going there to trade with foreigners when there were no other ports open. But the difficulty created by the rebellion has diverted the great mass of the trade from its ancient and out-of-the-way channel, and concentrated it here. And now that the Chinese find Shanghai to be nearer to their tea and silk districts than Canton, and that they can often get better prices, and always as good as at Canton, they will abandon their old and long route to a port of sale, and will continue to concentrate at Shanghai. This they have done last year, as well as the present; and already they have made contracts on next year's produce, deliverable at this port."

In another and later communication, it is stated that property in houses and lands, to the value of a million of dollars, is owned by American citizens in Shanghai.

Navigation and Trade.—The number and tonnage of American vessels, inward and outward, at the port of Shanghai, for the years designated, were as follows:

Years.	Inward.		Outward.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
1849	24	9,826	24	9,877
1850	37	13,308	34	14,464
1851	54	27,634	53	26,697
1852	66	39,760	70	40,592

The number of American vessels entered at Shang-

hai during the first six months of 1855 was 28, with an aggregate tonnage of 27,480.

The cargoes inward consisted of stone coal, sugar, drills, general merchandise, and assorted cargoes, suitable for the Chinese markets, valued at \$266,997. The cargoes outward were chiefly silk and tea, valued at \$4,480,193. Of the vessels inward, there were from the Atlantic ports direct, 2, with an aggregate of 1235 tons; and from the Pacific ports 13, with an aggregate of 13,839 tons. The following is a summary of the navigation and trade of the port of Shanghai with the United States during the last six months of 1855:

Number of American vessels entered, 57; measuring 27,262 tons. Number of American vessels entered from Atlantic ports, 4; measuring 1589 tons. Number of American vessels entered from Pacific ports, 10; measuring 10,632 tons. Number of American vessels entered from foreign ports, 36; measuring 13,000 tons. The returns do not give the ports of departure of seven of the American vessels entered. The number of American vessels cleared from the port of Shanghai during the same period was 57; aggregate tonnage, 30,542 tons. Of these, 13 vessels, all freighted with tea and silk, proceeded direct to New York, and the remainder to foreign ports.

During the same period, the duties paid by the American flag to the authorities at Shanghai were:

* Taels. Mace. C. C.			
Imports	19,224	6 9 6	= in U. S. currency \$28,452
Exports	456,048	7 7 1	" " " " 674,952
Tonnage dues. 13,539	8 0 0	" " " "	" " " " 20,088
Total duties of import, export, and tonnage....			
\$723,442			

The following statement exhibits the total tonnage of vessels at the port of Shanghai during the last six months of 1855:

British.....	42,865 tons.	Swedish.....	833 tons.
United States. 27,262	"	Spanish.....	1,163 "
Danish.....	1,395 "	Portuguese....	1,126 "
Hamburg.....	1,828 "	Siamese.....	1,345 "
Dutch.....	3,827 "	Peruvian.....	764 "
Bremen.....	554 "	Total.....	82,462 "

The following is a summary statement showing the quantity of teas exported from Shanghai to the United States during the last six months of 1855:

Black tea.....	239,442 pounds.
Green tea.....	14,511,354 "
Total.....	14,800,796 "

All exported in 16 American vessels.

The following is a summary statement showing the quantities of teas exported from Shanghai to all countries during the last six months of 1855:

To Great Britain, in 31 vessels..	21,513,927 pounds.
To United States " 16 "	14,800,796 "
To Australia " 7 "	1,639,674 "
To Hamburg " 1 "	323,536 "
Grand total.....	38,277,938 "

SUMMARY STATEMENT SHOWING THE QUANTITIES OF RAW SILK, SILK PIECE GOODS, ETC., EXPORTED FROM SHANGHAI TO THE UNITED STATES (NEW YORK) DURING THE LAST SIX MONTHS OF 1855.

Articles.	Cases.	Piecls.	Catties.
Raw silk.....	720	526	92
Silk piece goods.....	1286	...	..
Nankeens.....	40	...	..
Straw braid.....	25	...	..
Rhubarb.....	629	379	57
Fans.....	10	...	..

QUANTITIES OF RAW SILK EXPORTED FROM THE PORT OF SHANGHAI DURING THE LAST SIX MONTHS OF 1855.

	Raw.	Thrown.	Coarse.	Total.
	Bales.	Bales.	Bales.	Bales.
To London.....	20,332	1848	519	22,699
Liverpool.....	1,376	333	3	1,712
Hong Kong.....	3,278	2495	23	5,796
Total.....	24,986	4676	545	30,207

* Tael = 10 mace = 100 candareens = 1000 cash = \$1 43 United States currency.

The total trade of Shanghai during the period designated in the foregoing statements was thus distributed.

Vessels	Imports.	Exports.
British.....	141	132
American.....	51	55
Bremen.....	2	1
Danish.....	6	7
Dutch.....	8	11
Hamburg.....	11	11
Peruvian.....	■	8
Portuguese.....	■	5
Siamese.....	4	3
Spanish.....	5	■
Swedish.....	9	9
Total.....	245	243

Total value of the trade of Shanghai during the last six months of 1855: Imports, \$2,812,019; exports, \$501,786. Total trade, \$3,313,805. During the last six months of 1855 great improvements were made in the navigation of the River Woosung, on which the port of Shanghai is situated, and, from having been one of the most dangerous of access in the Pacific, it has been made one of the safest and easiest. The expense of the work (\$20,000) was defrayed by the Chinese authorities. A system of pilot regulations, agreed upon by the consuls of the United States, Great Britain, and France, was ratified by the superintendent of customs, and is as follows:

Pilot Regulations.—The following rules and regulations for the government of pilots, native and foreign, at the port of Shanghai are hereby issued and made binding by his excellency Chaou, superintendent of customs, in communication with the consuls of the three treaty powers:

1st. A board shall be appointed by the three consuls, sanctioned by his excellency Chaou, consisting of not less than three, nor more than five shipmasters, with whom a naval officer shall be associated, if required, before whom all persons wishing to become pilots shall appear for examination.

2d. A certificate of competency from a majority of said board being deposited at his consulate, shall entitle the person therein named to a license as a pilot. In all cases where the nationality of the applicant is other than one of those nations in treaty with China, his certificate from the board of examiners must be deposited with the senior consul, who will obtain for him the necessary license.

3d. Every pilot-boat is to hoist a red and white flag horizontal, on which the number of his boat shall appear in black.

4th. The rates of pilotage shall be by the water the ship draws, viz.: from Gutzlaff, \$5 per foot; from beacon-ship, \$4 per foot; from any point outside Woosung, but inside beacon-ship, \$3 50 per foot; from Woosung to Shanghai, \$3 per foot. The same rates of pilotage are allowed for vessels outward bound.

5th. Every pilot, on boarding a ship, shall produce, for the inspection of the master, his license as a pilot.

6th. All persons acting as pilots without a license, as hereinbefore prescribed, shall have no claim for services rendered, and shall be dealt with by their own consuls, according to law, for violating these regulations; and all such cases not coming within the jurisdiction of the three treaty consuls are to be referred to the local Chinese authorities.

7th. Pilots shall be responsible for the faithful and complete discharge of their duty; and any misconduct, either from ignorance, incapacity, willful neglect, or otherwise, being known, shall entail a forfeiture of the offender's license, in addition to any other liability he may have incurred by the laws of his own country.

8th. The foregoing regulations to take effect on and after the 10th day of December, 1855.

General Regulations.—The general regulations under which foreign trade is conducted at the five ports of Canton, Amoy, Foo-chow-foo, Ningpo, and Shanghai, are such as are usually prescribed in all well-regulated

ports, and are subject to such modifications, under the treaties, as the consuls of the three nations, viz.: England, France, and the United States, may from time to time fix and determine. These regulations provide amply for all the wants of foreign commerce, and guard against extortion, unnecessary delay, or capricious embarrassments, either on the part of Chinese officials, or the captains or other officers of vessels trading at any of the five ports. To give proper sanction to, and enforce the due observance of these regulations, the consuls of the three nations, in Chinese ports, are invested with judicial as well as with the ordinary consular powers, by virtue of which they are enabled to exact strict conformity to such provisions and regulations as they may deem necessary in the maintenance of good order and the faithful fulfillment of treaty obligations. Prior to 1843, as before noted, it was the custom, when foreign vessels entered the port of Canton, that a Chinese hong merchant stood security for her, and that all duties and charges were paid through such security merchant. But the several treaties having provided for the abolition of this security system, the consuls of the different treaty nations are now substituted as security for the vessels of their respective nations entering any of the five ports. Hence one of the reasons why the powers of consuls in China should be ample, and these officers invested with full powers to control the shipping of their respective nations.

During the recent troubles in China, foreign commerce at the port of Shanghai was considerably interrupted, and the custom-house at this port was abandoned by the Chinese officials, who organized in lieu thereof two other custom-houses in the interior. An arrangement was subsequently entered into between the consuls of the three treaty powers and the Chinese authorities, by virtue of which these custom-houses were suppressed, and foreign commerce was again conducted under the usual regulations.

It may be here observed that the five ports pertain to different provincial jurisdictions, having different local administrations, and not unfrequently different commercial regulations. It is by no means rare to see, notwithstanding the treaties apply to all in common, privileges enjoyed at one which are strictly interdicted at another—perhaps at the other four. Thus, in 1855, it is stated that rice was exported to the amount of 30,000 piculs (each 133½ lbs.) to a vessel, free, too, of all export or other duty, save a *douceur* of 200 or 300 dollars to some subordinate; while the exportation of this article is not only forbidden at Shanghai, but the death-penalty is inflicted on such of the Chinese as are detected in violating the prohibition. The same observation applies to the emigration of coolies, which is tolerated at Amoy, but strictly forbidden at the other ports. So the importation of opium, as already stated, though illegal, is openly tolerated by Chinese officials.

The state of the currency at this port has for some time attracted attention.

A letter from the United States consul at Shanghai, under date of June 25, 1855, states as follows:

"The rate of exchange here has exceeded that of Canton from 25 to 30 per cent., although the distance between the two is but 800 miles, and of easy and certain communication. Under ordinary financial rules, the difference of exchange between the two places is regulated by the cost of transportation, the insurance, and a slight per cent. for brokerage. While 24 per cent. would be a liberal allowance on these items between this port and Canton, and Hong Kong, yet exchange has varied from 25 to 30 per cent. against this port.

"China has no currency but copper cash—one of which is equal to the sixteen-hundredth part of a dollar. All large transactions, therefore, are made in pure silver, denominated by the Chinese *syces*, which is measured in taels, or a weight equivalent, when at par, to \$1 38 per tael. When the foreign trade became important in China, foreign dollars were introduced; and, on account of their superior qualities as a circulating medium over the ponderous *syces*, became quite popular, and were universally adopted. The Carolus dollar was the first adopted; afterward the Bolivian, Peruvian, Chilean, and Mexican; but the Carolus having been first introduced, the Chinese formed a prejudice in its favor to the extent

of a discount of 10 per cent. on all others. When this port was first opened, the Chinese received the Mexican at a premium over the Carolus, and the rupee at a premium over both; but the native brokers from Canton instilled into the traders here the same prejudice which existed where they came from, and the Carolus gradually rose in value, and the other dollars sank, until the difference has become 25 or 30 per cent., which is equivalent almost to an entire exclusion from circulation. This result was chiefly brought about by the native brokers, in conjunction with a few foreign commercial houses at this port, who have obtained the exclusive control of all the Carolus dollars that are made. The Spanish government have long since discontinued their issue, but they are made at Canton, in India, and in Mexico, though not as pure as the original dollar.

"Thus this prejudice in favor of the Carolus has been fostered by a few commercial houses, until the evil consequent upon a limited currency, and one which is becoming less and less every year, is almost beyond a remedy. The longer it is permitted to exist, the more vexatious will its remedy become. The Carolus dollar is carried into the interior to pay for teas and silks, and never returns; thus each year renders the amount of circulating medium less and less. The Carolus dollar is the standard, and, therefore, as it decreases in quantity, exchange rises. The same houses which have the control of the Carolus dollar also discount all bills of exchange, and thus hold the entire commercial machinery of this port at their control. They discount bills of exchange at whatever rates they please to fix at Canton and all the other ports in China. The foreign dollars at present circulate, according to treaty, with reference to their purity in silver as compared with sycee; but here a distinction is kept up in favor of the Carolus far above its relative value in pure silver, and against all other dollars far below theirs. Thus exchange at this port rules from 25 to 30 per cent. above any other port in China.

"The United States are great consumers of green tea, and this port supplies it. The consumer pays this extraordinary exchange on the price of tea, and thus the agent here, and the importer at home, can feel no interest in ameliorating the condition of the exchanges, as it is not their loss; but, on the contrary, as they now have control of all the circulating medium, it is to their advantage and interest to let it remain so.

"I have thus briefly endeavored to show, first, that the enormous difference of exchange at this port over any other in China is produced by a combination of native and foreign merchants; and, second, that as the United States take nearly all the green teas exported from the empire, which are all purchased at this port, and as the consumer must in the end pay all charges on the imported article, therefore the consumers of the United States are the sufferers to the full extent of this exorbitant exchange. Entertaining the conviction that it is the duty of an officer to guard and protect the interests of those whom he has the honor to represent, especially when those interests are guaranteed by the laws and treaties of the land, and not to permit the advantages of a select few to be developed at the expense of the many, I will now proceed to lay before the honorable Secretary of State the course I have pursued in giving full effect to the treaty of the United States with China in the matter of the currency. To remedy the great evil which exists at this port in relation to the currency, there appeared to be but two ways: First, a combination among the merchants that they would pay and receive all dollars alike, so far as their intrinsic value should be the same. Second, the enactment of regulations by the Chinese authorities, which would place all dollars on an equality, by their agreeing to receive them alike for all government dues. The first was impossible in a community where all are merchants possessed of as many different interests, and therefore to the second I gave my attention. The manner in which I presented this subject, and carried it through to an actual assay of the various dollars, may be fully examined by reference to the entire correspondence, which I have the honor herewith to inclose. The assay as made here differs but slightly from that made at Canton; and as there is an allowance of $1\frac{1}{2}$ per cent. for difference of scales, it is more than made up.

"The whole examination of the subject proved most satisfactory to his excellency the Imperial collector of customs, and his excellency has asked for twenty days to refer the matter to his superiors, prior to carrying it into practical operation. I have therefore given notice to his excellency that on and after the 12th of July next American merchants shall be allowed to discharge all their treaty obligations at this port in foreign money, at the rates as ascertained by actual assay on the 4th instant. Great results will inevitably follow the adoption of this measure. Exchange will decline 25 or 30 per cent.—that, too, just at the opening of the business season—and will assimilate with that at Canton, plus the cost of transportation, etc., etc. The circulating medium will be in the greatest abundance. The importer in the United States will, through his agent here, realize more money on his bills of exchange, consequently he can purchase more teas and silks; and, finally, as the consumers participate alike in the advantages and disadvantages, they will be enabled to purchase teas and silks subject to the same reduction in price which the importer has enjoyed."

Currency.—The only legal coin of China is the copper cash, worth the fifteenth part of a cent; though by

stipulations of the treaty of 1844 the sycee is received in payment of duties. The sycee fluctuates in price with the value of silver. The sycee is worth about seventy dollars. In 1853 the American merchants residing at Shanghai addressed a memorial to the United States commissioner in China, setting forth the great inconvenience to which mercantile interests in China were subjected by the absence of an adequate circulating medium between the two extremes above named, and invoking the commissioner's aid in establishing a national Mint in that empire. To the success of such a measure the sanction and co-operation of the Chinese government are indispensable. The treaty of 1844 provides that, should experience show that any modifications hereafter become requisite in those parts which relate to commerce and navigation, the two governments will, at the expiration of twelve years from the date thereof, treat amicably concerning the same, by the means of suitable persons appointed to conduct such negotiation. The time designated will soon arrive; and should such modifications as the treaty contemplates become a subject of negotiation, the question of a national Mint, and of the currency generally, will, doubtless, demand the attention of the United States Commissioner. At Shanghai an attempt has been made by the foreign consuls to cause an official substitution of the Mexican for the Carolus dollar as the money of account.—*Com. Rel. U. S.*

From official tables it is shown, 1st. That, until the year 1850, Canton was the principal port for tea, but in that year Shanghai exported 50 per cent.; and of silk, three-fourths of the whole export was from Shanghai. 2d. That the trade of Shanghai continued to increase over that of Canton, and even Foo-chow, which derives all its trade from this emporium, until the year 1855, when Shanghai exported in tea about 30 per cent. more than both Canton and Foo-chow, and in silk almost the entire amount was furnished at Shanghai. 3d. That the grand increase of the foreign trade for twelve years is an average per annum of about 3 per cent. 4th. That the increase of silk for exportation has been, on the grand aggregate, at the rate of $3\frac{1}{2}$ per cent. per annum for the past eleven years.

It appears also, 1st. That the trade of the United States in China has increased in the last ten years $1\frac{1}{2}$ per cent. per annum. 2d. That since the year 1848 the ports of Canton and Shanghai have changed commercial positions, the latter having exported more tea the last year to the United States than the whole trade amounted to when Canton was the only port opened. 3d. That Foo-chow is now a port of more commerce with the United States than Canton, and ranks next to the most important, Shanghai. 4th. That the trade in silk to the United States has developed immensely; and as this port is the great emporium for that commodity, it will probably furnish more trade than all the others combined. 5th. That for the past year the port of Shanghai has furnished more than three-fourths of the American trade in tea, and all the silk.

Up to the year 1853, exchange was steady at from 15 to 21 per cent., but the change which followed, and the variableness which is marked, arose from the fact that the city of Shanghai being taken by the rebels on the 7th September, 1853, many large losses were incurred by the wealthy Chinese, which, creating embarrassment, engendered a lack of confidence and trust, so that money became scarce and exchange began to rise. About this time foreigners began to impose the belief on the native Chinese that the Carolus dollar was the most valuable, and at the same time secured the monopoly of all obtainable over the world, and have since been having the Mexican restamped with the Carolus dies. This latter coin does not pass well, as it is too new to the Chinese; but the old and genuine Carolus dollars are almost exhausted, and, indeed, are becoming less and less every year, while just in proportion to the supply or demand exchange rises or falls.

EXPORTS OF TEA TO ALL NATIONS FROM CHINA, FROM JUNE 30, 1850, TO JUNE 30, 1851, NOT INCLUDING THE UNITED STATES.

Exported from	Years.	Pounds.
Canton	1850-'51	42,244,000
Shanghai	1850-'51	21,816,100
Canton	1851-'52	35,617,200
Shanghai	1851-'52	29,520,000
Canton	1852-'53	32,327,600
Shanghai	1852-'53	40,578,500
Canton	1853-'54	45,131,200
Foo-chow	1853-'54	6,143,000
Shanghai	1853-'54	25,943,700
Canton	1854-'55	16,123,800
Foo-chow	1854-'55	19,512,800
Shanghai	1854-'55	50,872,400

EXPORTS OF TEA AND SILK TO THE UNITED STATES FROM CHINA, WITH THE PROPORTION FROM SHANGHAI, FOR A PERIOD OF TEN YEARS.

Year ending June 30.	Total Amount of Tea from China.	Tea exported from Shanghai alone.	Silk exported from Shanghai.
	Pounds.	Pounds.	Bales.
1845	20,762,568	3,115	...
1846	18,502,283	...	...
1847	18,171,625	...	...
1848	19,328,640	1,740,787	...
1849	18,672,300	2,986,332	35
1850	21,737,800	5,623,703	415
1851	28,760,800	11,065,540	250
1852	34,334,000	18,000,000	298
1853	40,974,500	22,900,300	584
1854	27,867,500	16,702,400	1074

STATEMENT OF IMPORTS INTO CHINA FROM THE UNITED STATES IN THE YEAR 1852.

Merchandise.	Canton.	Shanghai.	Total.
American drill...pieces.	232,246	342,115	574,361
American sheeting " "	42,095	38,015	130,110
American jeans " "	40,116	64,250	104,366
Cochineal...parcels.	23,986	...	23,986
Silver...dollars.	122,300	...	122,300
Spelter...parcels.	90,424	840	90,424
Lead... " "	1,125,421	17,843	1,125,421
Ginseng... " "	209,272	...	117,843
Flour...barrels.	3,053	...	209,272
Beef... " "	200	...	3,153
Pork... " "	200	...	200
Cloaks...pieces.	114	...	200
Boards...feet.	...	18,627	114
Tobacco...pounds.	5,942	...	18,627
Gold...ounces.	4500	...	5,942
Cheese...pounds.	13,800	...	4500
Glassware...boxes.	1,000	...	13,800
Sperm candles...pounds.	203	...	1,000

* Pounds. † Piculs. ‡ Coins.

STATEMENT OF EXPORTS FROM CHINA TO THE UNITED STATES IN THE YEAR 1852.

Merchandise.	Canton.	Shanghai.	Total.
Green teas...pounds.	8,115,472	19,509,400	27,922,872
Black teas " "	9,924,334	3,033,000	12,957,334
Silk piece goods...pieces.	84,708	40,863	125,576
Crape shawls " "	505,203	...	505,203
Grass cloth " "	4,127	...	4,127
Nankeens...boxes.	100	...	100
Pearl buttons " "	39	...	39
Camphor " "	1,644	...	1,644
Vermilion " "	131	...	131
Oil, cassia " "	402	...	402
Oil, anise " "	9,190	200	9,390
Sweetmeats " "	2,000	...	2,000
China ware " "	209,553	19,999	229,552
Fire-crackers " "	9,407	2,195	11,602
Cassia...parcels.	60,046	...	60,046
Matting...rolls.	9,948	...	9,948
Fans and screens...boxes.	4,867	...	4,867
Split ratans...bundles.	7,887	486	1,185
Raw silk...parcels.	317	...	317
Rhubarb...boxes.	937	...	937
Lacquered ware " "	842	...	842
Tin...parcels.	87	...	87

The commerce of China is conducted on the basis of imports, opium, and credits on London. The imports are a trifle; opium is about 30 per cent., and the difference is made up by a direct drain on Europe in pure silver and some dollars; the former is cast into sycee, or pure silver ingots, and rarely, if ever, leaves the empire, as it is strictly forbidden by the laws.—See CHINA, CANTON.

Sharks' Fins form a regular article of trade to China, and are collected for this purpose in every country from the eastern shore of Africa to New Guinea. In the Canton Price-currents they are as regularly quoted as tea or opium; and the price of late years has been, according to quality, from \$15 to \$18 per picul, equal to from 50s. to 60s. per cwt.

Shawls (Ger. *Schalen*; Fr. *Chals*; *Chales*; It. *Shawli*; Sp. *Schavalos*), articles of fine wool, silk, or wool and silk, manufactured after the fashion of a large handkerchief, used in female dress. The finest shawls are imported from India, where they are highly esteemed, and cost from \$250 to \$1500.

Cashmere Shawls.—The shawl manufacture is believed to have originated in the valley of Cashmere, the ancient Caspira, in the northwest of India, between lat. 34° and 35° N., and long. 73° and 76° E. Though not so flourishing as it once was, the manufacture is still prosecuted in this province to a very considerable extent. The shawls are the very best that are made, possessing unequaled fineness, delicacy, and warmth. They are formed of the inner hair of a variety of the common goat (*Capra hircus*), reared on the cold, dry table-land of Thibet, elevated from 14,000 to 16,000 feet above the level of the sea. The goat thrives sufficiently well in many other countries; but in the sultry plains of Hindostan it has hardly more hair than a greyhound; and though in higher latitudes the hair is more abundant, it is for the most part shaggy and coarse. It is only in the intensely cold and dry climate of Thibet that it yields the peculiarly soft woolly hair that constitutes the material of the Indian shawl. We do not, therefore, suppose that the efforts to naturalize the shawl-goat in France will turn out well. On the contrary, we believe the chances of success would be about equal were an attempt made to breed beavers in a hot country, without water, or camels in a moist country, free from heat and drought. The inner or fine wool is covered over and protected by a quantity of long shaggy hair, which is, of course, carefully separated from it before it is manufactured. The genuine shawl-wool has been imported into Europe, and the finest Edinburgh and Paisley shawls have been produced from it. But it must be admitted that shawls have nowhere been made that can come, as respects quality, into successful competition with those of Cashmere. The manufacture has been established at Delhi and Lahore for some years; but, notwithstanding it is carried on by native Cashmerians, and though the material employed be quite the same, the fabrics are said to want the fineness of those made in Cashmere, and to have a degenerated, coarse appearance. It is difficult to account for this superiority. It has been ascribed to some peculiar quality of the water in the valley of Cashmere; but it is most probably owing to a variety of circumstances, which, though each may appear of little importance, collectively give a character to the manufacture.

The following details as to the manufacture of Cashmere shawls have been extracted from an English paper published at Delhi: "The great mart for the wool of which shawls are made is at Kilghet, which is said to be a dependency of Ladak, and situated 20 days' journey from the northern boundaries of Cashmere. There are two kinds of it: that which can be readily dyed is white; the other sort is of an ashy color, which being with difficulty changed, or, at least, improved by art, is generally woven of its natural hue. About 2 lbs. of either are obtained from a single goat once a year. After the down has been carefully separated from the hairs, it is repeatedly washed with rice starch. This process is reckoned important; and it is to the quality of the water of their valley that the Cashmerians attribute the peculiar and inimitable fineness of the fabrics produced there. At Kilghet the best raw wool is sold for about one rupee a pound. By the preparation and washing referred to, it loses one half, and the remainder being spun, three rupees' weight of

the thread is considered worth one rupee. Shawls are made of various forms, sizes, and borders, which are wrought separately, with the view of adapting them to the different markets. Those sent to Turkey used to be of the softest and most delicate texture. Carpets and counterpanes are fabricated of the hair or coarser part of the wool. From a variety of causes, among others the destruction of the Janizaries, who dressed much in shawls, the loss of royalty in Cabul, and the ruined finances of Lucknow, it is certain that the demand for this elegant commodity has greatly declined of late years. Under the Mogul emperors, Cashmere found work for 30,000 shawl-looms. In the time of the Afghan kings, the number decreased to 18,000. There are now not more than 6000 employed. We should attribute little of this diminution to the sale of English imitations among the Asiatic nations. When these counterfeits first appeared, the pretty patterns and brilliancy of the colors took the fancy of some; but their great inferiority in the softness and warmth which mark the genuine shawl soon caused the new article to be neglected. The average value of shawls exported from Cashmere amounts annually to 1,800,000 rupees. Runjeet Singh took two-thirds in kind as part of the gross revenue of the province, which was about 25 lacs a year. He is said to have sold three-fourths of what he thus received, and to have kept the remainder for his own court. Of those disposed of by him and left for sale in the valley, seven lacs' worth went to Bombay and Western India; three to Hindostan, chiefly Oude; half a lac each to Calcutta, Cabul, Herat, and Balk, whence some were carried to neighboring countries. A curious calculation of the successive exactions, from Cashmere to Bombay inclusive, which magnify the price of shawls, is herewith subjoined.

"ACTUAL COST FOR MATERIALS AND LABOR IN MAKING A PAIR OF REEL SHAWLS.

	Fd. rs.
Four Furrukabad seers of wool	12 8
Cleaning, washing, and spinning	50 0
Dyeing	11 0
Wages to weavers	264 6
Total	337 14
<i>Duties on the same.</i>	
On sale and importation to Cashmere	3 14
On the thread	8 4
While the fabric is in the loom	125 0
Fees to chowdries, brokers, assessors, etc.	35 0
Total amount of duties in Cashmere	171 18
Duties from Cashmere to Amritsir	12 6
" " Amritsir to Bombay	3 6½
" " at Bombay	70 0
Total from Amritsir to Bombay	85 12½
Total from Kilghet to Bombay, 171 18 and 85 12½ =	252 30½
Prime cost	337 14
Proportion of carriage	0 12
Insurance	21 0
Total cost	610 56½

"A pair of such shawls might sell for 500 rupees at Amritsir, and in Bombay for 900. The amount of the imports, and the sums levied by each government, will appear more in relief if stated as they affect a camel-load in its progress. It consists of fourteen and a half cutcha maunds, and contains, at an average, 2000 shawls of different kinds, valued, on reaching Bombay, at 28,500 Furrukabad rupees.

"The government of Lahore exacts Furrukabad rupees, 1564 6; Patialah, 61 0; Bikeneer, 43 0; Joudpore, 121 4; Bhownggur, 20 0; total levied by native princes, 1809 0; Bombay, 10 per cent. (*ad valorem*) 2850 0."

It is not as yet generally known that the Thibet goat, from whose wool the famous Cashmere shawls are made, has been introduced successfully into the United States. This enterprising undertaking was achieved a few years since, after many difficulties, by Dr. J. B. Davis, of Columbia, South Carolina, at that time employed by the Ottoman Porte in experimenting on the growth of cotton in the Sultan's dominions. Dr. Davis succeeded, at vast expense, in securing

eleven of the pure breed, which, on his way home, he exhibited in London and Paris. Since that period, the goat has been introduced from South Carolina into Tennessee, where it is said to thrive. The value of a flock may be estimated from the fact that no real Thibet goat has ever been sold for less than \$1000. This enormous price, moreover, is not a speculative one, for no fleeced animal has wool of such fineness, softness, and durability. The wool of all the Thibet goats in Tennessee, for example, has been engaged at New York this year at \$8 50 per pound, the purchasers designing to send it to Paisley, in Scotland, in order to be manufactured into shawls.

The prices paid for the real Cashmere shawls, or those woven in India, have sometimes been almost fabulous. A full-sized shawl, such as is called in America a "long shawl," ordinarily commands in Paris or London from \$500 to \$5000, according to the quality. Scarfs and square shawls, being smaller, sell for less. It is a mistake, however, to suppose that all these shawls are manufactured in India in the shape in which they are sold here. Generally, indeed, the centres and borders come out separately, and are put together afterward in sizes, and often patterns, to suit purchasers. Moreover, a large portion of the shawls sold as real India ones are actually made in France, for the Thibet goat was introduced into that country more than thirty years ago, and the Cashmere shawls imitated with considerable skill. Judges of the article pretend to say, however, that the real India shawl can be detected by its having a less evenly woven web, as also from its brighter colors. It is likewise said that the border of the genuine Cashmere shawls is invariably woven in small pieces, which are afterward sewed together, as the whole border is subsequently sewn on to the centre. But other authorities deny that the skill of India is insufficient to *broche* a shawl; in other words, to weave the border and centre in one piece, or run the pattern of the former over the latter.

Notwithstanding the successful imitation of these shawls, fashion and luxury still prefer the apparently original. Just as laces, woven by hand, bring a price more than five times as great as the same pattern woven by machinery, so a Cashmere shawl, known to have come from India, will fetch vastly more than the cleverest imitation. Probably, however, this is not all. Persons familiar with both the article and the imitation assert that the former is softer than the latter, and that this softness arises partly from the way the thread is spun, and partly because the Thibet goat, when exported from its native hills, sensibly deteriorates. There is also a shawl popularly known as the French Cashmere, which is an imitation of the imitation; but this has none or very little of the wool of the imported Thibet goat. The animal from which this valuable fleece is taken is a hardy creature, at least in its original locality; and their fine curled wool lies close to the skin, just as the under hair of the common goat lies under the upper hair.

The importation of shawls, manufactured all or in part from wool, into the United States for the year ending June 30, 1857, was as follows:

Whence imported.	Value.
Hanse Towns	\$218,387
England	732,449
Scotland	332,088
France	883,973
China	86,204
Other places	63,160
Total	\$2,246,351

—See CASHMERE, COTTON MANUFACTURES, WOOL.

Sheathing. The covering laid on the ship's bottom to defend it from the worms. Sheets of thin copper nailed on with copper nails constitutes, at present, the sheathing of all the better kinds of vessels. Lead has been used; and large-headed iron nails, called scupper nails, are used still for the same purpose on the bottoms of old hulks, piles, etc. Zinc and different

compositions have been proposed as substitutes for copper; and Sir H. Davy ingeniously suggested the application of pieces of zinc or iron upon different parts of the copper surface, which by the action of the seawater render the latter metal electro-negative, and capable, therefore, of resisting the oxidizing and corrosive agencies of the substances held in solution. The pieces of iron or of zinc so applied have been properly called *protectors*; but by occasioning the precipitation of earthy matters upon the copper, while they effectually protect it, they render its surface favorable to the adhesion of weeds, barnacles, etc., and sometimes to such an extent as to interfere with the passage of the ship through the water: upon such grounds, Sir Humphrey's valuable suggestion has been neglected. When vessels are laid up in dock the protectors are in successful use. Sheathing formerly was composed of thin fir boards. By a recent application of electrotyping, plates of sheet-iron are covered with a surface of copper which effectually protects the iron from oxidation. Iron bolts are also similarly electrotyped.

Sheep (Ger. *Schafe*; Fr. *Brebis*, *Bêtes à laine*, *Moutons*; It. *Pecore*; Sp. *Pecora*, *Ovejas*; Russ. *Ovzū*; Lat. *Oves*). Of the domestic animals belonging to Great Britain, sheep, with the exception of horses, and perhaps cattle, are by far the most important. They can be reared in situations and upon soils where other animals would not live. They afford a large supply of food, and one of the principal materials of clothing. Wool has long been a staple commodity of this country, and its manufacture employs an immense number of people. "The dressed skin," says Mr. Pennant, "forms different parts of our apparel, and is used for covers of books. The entrails, properly prepared and twisted, serve for strings for various musical instruments. The bones, calcined (like other bones, in general), form materials for tests for the refiner. The milk is thicker than that of cows, and consequently yields a greater quantity of butter and cheese; and in some places is so rich, that it will not produce the cheese without a mixture of water to make it part from the whey. The dung is a remarkably rich manure insomuch that the folding of sheep is become too useful a branch of husbandry for the farmer to neglect. To conclude: whether we consider the advantages that result from this animal to individuals in particular, or to these kingdoms in general, we may, with Columella, consider this, in one sense, as the first of the domestic quadrupeds."—PENNANT'S *British Zoology*.

There was between 1840 and 1850 an increase of 2,309,108 in the number of sheep in the United States. It will be useful to observe with some closeness the progress of sheep-breeding in different parts of the country. We perceive that in New England there has occurred a remarkable decrease in their number. There were in that division of the Union in 1840, 3,811,307; in 1850 the number had declined to 2,164,452; being a decrease of 1,646,855, or 45 per cent. In the five Atlantic Middle States, New York, New Jersey, Pennsylvania, Delaware, and Maryland, there was a decrease from 7,402,851 to 5,641,391, equal to 1,761,460, or about 22½ per cent. In Pennsylvania there was a gain, however, during this period, of 155,000 sheep. We see that while there has been a positive diminution of 3,408,000 in the States above named, there has been an augmentation of 5,717,608 in those south of Maryland and west of New York. Ohio has gained most largely, having been returned as pasturing in 1840, 2,028,401; and in 1850, 3,942,929; an increase of 1,914,528, or nearly 100 per cent. In each of the States south and west of the lines above indicated, there has been a very large proportional increase in this kind of stock, and there is reasonable ground for the opinion that the hilly lands of Virginia, North and South Carolina, Tennessee, and the prairies of Illinois, Iowa, and Texas, will prove highly favorable for the rearing of sheep for their wool and pelts.

New Mexico has the extraordinary number of 877,271 sheep—more than six to each inhabitant; proving the soil and climate of that territory to be well adapted to this description of stock, and giving promise of a large addition from that quarter to the supply of wool. The importance of fostering this great branch of national production is shown by the fact, as assumed by an intelligent writer on the subject, that our population annually consumes an amount of wool equal to seven pounds for each person. If this estimate be even an approximation to correctness, we are yet very far short of producing a quantity adequate to the wants of the country; and it is equally clear that we possess an amount of unemployed land adapted to grazing, sufficient to support flocks numerous enough to clothe the people of the world. The kinds of sheep most sought for are the pure-blooded Merinos, the Saxons, the Cotswolds, the Leicestershires, the Oxfordshires, and the South Downs. The *Merinos* (including the Rambouillets), the Cotswolds, the Leicestershires, the Oxfordshires, and the Saxons, are the most highly prized for their wool. The South Downs are particularly esteemed for the excellence of their flesh, and their wool is valuable for many purposes on account of the facility with which it can be wrought.—*U. S. Patent Office Report*. See SHAWLS and WOOL.

Sheer. The curve which the line of ports or of the deck presents to the eye when viewing the side of the ship. When these lines are straight, or the extremities do not rise, as is most usual, the ship is said to have a straight sheer.

Sheer Hulk.—A hulk permanently fitted with sheers for masting and dismasting ships.

Sheers.—Two masts or spars lashed together at or near the head, and raised to a vertical position, for the purpose of lifting the masts into or out of vessels.

Sheet. The rope attached to the aftermost or leewardmost clew or corner of a sail, to extend it to the wind. In the square sails above the courses, the ropes attached to both clews are called *sheets*; in all other cases the weathermost one is called a *tack*.

Sheet Anchor. The third of the four large anchors generally carried by a ship.

Sherry. A Spanish wine made from the grapes of Xeres, in Andalusia. Genuine sherry is a rich, dry wine, containing from 20 to 23 per cent. of alcohol: there are many varieties, and it is extensively imitated and adulterated.—See WINE.

Shilling. An English silver coin, equal to twelve-pence, or the twentieth part of a pound. Freherus derives the Saxon *scilling*, whence our shilling, from a corruption of *siliqua*; proving the derivation by several texts of law, and, among others, by the twenty-sixth law, *De annuis legatis*. Skinner deduces it from the Saxon *scild*, "shield," by reason of the escutcheon of arms which it has upon it. Bishop Hooper derives it from the Arabic *scheele*, signifying a *weight*; but others, with greater probability, deduce it from the Latin *scillicus*, which signified in that language a quarter of an ounce, or the forty-eighth part of a Roman pound. In confirmation of this etymology, it is alleged that the shilling kept its original signification, and bore the same proportion to the Saxon pound as *scillicus* did to the Roman and the Greek, being exactly the forty-eighth part of a Saxon pound.

However, the Saxon law reckons the pound in the round number at fifty shillings, but they really coined out of it only forty-eight. The value of the shilling was five-pence, but it was reduced to four-pence above a century before the Conquest; for several of the Saxon laws, made in Athelstan's reign, oblige us to take this estimate. Thus it continued to the Norman times, as one of the Conqueror's laws sufficiently ascertains; and it seems to have been the common coin by which the English payments were adjusted. After the Conquest, the French *solidus* of twelve-pence, which was in use among the Normans, was called by the English

name of shilling; and the Saxon shilling of four-pence took a Norman name, and was called the *groat*, or great coin, because it was the largest English coin then known in England. It was the opinion of bishops Fleetwood and Gibson, and of the antiquaries in general, that, though the method of reckoning by pounds, marks, and shillings, as well as by pence and farthings, had been in constant use even from the Saxon times, long before the Norman Conquest, there was never such a coin in England as either a pound or a mark, nor any shilling, till the year 1504 or 1505, when a few silver shillings or twelve-pences were coined, which have long since been solely confined to the cabinets of collectors. Mr. Clarke combats this opinion, alleging that some coins mentioned by Mr. Folkes, under Edward the First, were probably Saxon shillings new minted, and that Archbishop Ælfric expressly says that the Saxons had three names for their money—manuces, shillings, and pennies. He also urges the different value of the Saxon shilling at different times, and its uniform proportion to the pound, as an argument that their shilling was a coin; and the testimony of the Saxon Gospels, in which the word we have translated *pieces of silver* is rendered *shillings*, which, he says, they would hardly have done if there had been no such coin as a shilling then in use. Accordingly, the Saxons expressed their shilling in Latin by *solidus* and *argenteus*. He further adds, that the Saxon shilling was never expressed by *solidus* till after the Norman settlements in England; and howsoever it altered during the long period that elapsed from the Conquest to the time of Henry the Seventh, it was the most constant denomination of money in all payments, though it was then only a species of account, or the twentieth part of the pound sterling; and when it was again revived as a coin, it lessened gradually as the pound sterling lessened, from the 28th of Edward the Third to the 43d of Elizabeth.

In the year 1560 there was a peculiar sort of shilling struck in Ireland, of the value of nine-pence English, which passed in Ireland for twelve-pence. The motto on the reverse was, *Posui Deum adiutorem meum*. Eighty-two of these shillings, according to Malynes, went to the pound. They weighed, therefore, twenty grains one fourth each, which is somewhat heavier in proportion than the English shilling of that time, sixty-two of which went to the pound, each weighing ninety-two grains seven-eighths; and the Irish shilling being valued at the Tower at nine-pence English, that is, one fourth part less than the English shilling, it should therefore proportionally weigh one fourth part less, and its full weight be somewhat more than sixty-two grains. But some of them found at this time, though much worn, weighed sixty-nine grains. In 1598 five different pieces of money of this kind were struck in England for the service of the kingdom of Ireland. These were shillings to be current in Ireland at twelve-pence each, half-shillings to be current at six-pence, and quarter-shillings at three-pence. Pennies and half-pennies were also struck of the same kind, and sent over for the payment of the army in Ireland. The money thus coined was of a very base mixture of copper and silver; and two years after there were more pieces of the same kinds struck for the same service, which were still worse; the former being three ounces of silver to nine ounces of copper, and the latter only two ounces eighteen pennyweights to nine ounces two pennyweights of the alloy.

The Dutch, Flemish, and Germans have likewise their shilling, called *schelin*, *schilling*, and *scalin*; but these, not being of the same weight or fineness with the English shilling, are not current at the same value. The English shilling is worth about twenty-three French sols; those of Holland and Germany about eleven sols and a half; those of Flanders about nine. The Dutch shillings are also called *sols de gros*, because equal to twelve groats. The Danes have copper shil-

lings worth about one fourth of a farthing sterling.—E. B. See COINS.

Ship-money was first levied A.D. 1007, and caused great commotions. This impost being illegally levied by Charles the First in 1634, led to the Revolution. He assessed London in seven ships, of 4000 tons and 1560 men; Yorkshire in two ships of 600 tons, or £12,000; Bristol in one ship of 100 tons; Lancashire in one ship of 400 tons. The trial of the patriot Hampden for refusing to pay the tax, which he at first solely opposed, took place in 1638. Ship-money was included in a redress of grievances, in 1641. Hampden received a wound in a skirmish with Prince Rupert, and died June 24, 1643.

Ships. Nautical men apply the term ship to distinguish a vessel having three masts, each consisting of a lower mast, a topmast, and top-gallant mast, with their appropriate rigging. In familiar language, it is usually employed to distinguish any large vessel, however rigged; but it is also frequently used as a general designation for all vessels navigated with sails; and it is in this sense that we now employ it.

Merchant Ships.—It is hardly possible to divide merchant ships into classes, at least with any degree of precision. Their size, shape, the mode of their rigging, etc., depend not merely on the particular trade for which they are destined, but on the varying tastes and fancies of their owners. In the *articles* CHARTER-PARTY, FREIGHT, MASTER, OWNERS, SEAMEN, SEAWORTHY, etc., the law with respect to ships and ship-owners, in their capacity of carriers or public servants, and the reciprocal duties and obligations of the masters and crews, is pretty fully expounded.

Ship-building.—The art is attributed to the Egyptians, as the first inventors, the first ship (probably a galley) being brought from Egypt to Greece, by Danaus, 1485 B.C.—BLAIR. The first double-decked ship was built by the Tyrians, 786 B.C.—LENGLET. The first double-deck vessel built in England was of 1000 tons burden, by order of Henry VII., 1509; it was called the *Great Harry*, and cost £14,000.—STOW. Before this time, 24-gun ships were the largest in the British navy, and these had no port-holes, the guns being on the upper decks only. Port-holes and other improvements were invented by Descharges, a French builder at Brest, in the reign of Louis XII., about 1500. Ship-building was first treated as a science by Hoste, 1696. A 74-gun ship was put upon the stocks at Van Diemen's Land, to be sheathed with India-rubber, 1829.—HAYDN. For articles on ship-building, see *Quarterly Review*, vol. iii. 28, xi. 227, xii. 444; *Anal. Mag.*, i. 263, vi. 450; *Hunt's Merchants' Mag.*, xi. 11, xviii. 172.

State of Shipping Interest.—The complaints which were so frequent some years since in regard to the shipping interest have now wholly ceased. Most probably they never had any very good foundation; but whether that were so or not, this interest has been for some time past in a peculiarly prosperous condition. This has been occasioned partly and principally by the gold discoveries in California and Australia, or rather by the unprecedented stimulus which they have given to emigration and commerce. It is not, therefore, to be supposed that the existing state of things, as respects the shipping interest, can be permanent; for while, on the one hand, the advantages resulting from emigration will gradually diminish, on the other the supply of ships will be augmented in proportion to the greater demand for their services. However, it is all but certain that the commerce of the world is destined to increase for a long time to come; and our mercantile navy will, no doubt, continue to realize a full and fair share of the advantages resulting from this extension of trade.

Some very important changes have been made of late years, and are yet in progress, in the construction of ships. They are now built of a much larger size than formerly, of finer models, and with a power of

sailing of which no just idea could previously have been formed. Ships of 2000 tons burden are now reckoned only of little more than a medium size; and those of 2800 and 2500 tons and upward are every day becoming more and more common. It is probable, indeed, that in this, as in most other things, we shall run from one extreme into another; and that from being too small, our ships for distant voyages will become too large and unwieldy. This, however, is a point which experience only can settle, and to that it may safely be left. Iron ships are also, as previously stated, beginning to be extensively constructed; and ships are now frequently fitted out with screws and steam-engines, to be used only as a subsidiary power in calms, and against contrary winds.

Most sorts of short passage traffic are now carried on by steamers; and it is probable that in the end they will engross the greater part of the coasting trade of most countries, and of the trade between foreign countries adjacent to each other. But the improved class of sailing ships have little to fear from the competition of steamers in all the more distant branches of trade.—For general statistics in regard to the number of ships and amount of tonnage, see articles *STREAM NAVIGATION* and *TONNAGE*.

Shipping, Laws of.—Under the general heads of *AFREIGHTMENT*, *CHARTER-PARTY*, *BILLS OF LADING*, *CARRIERS*, *COLLISION*, *COMMERCE*, *MASTERS*, *MARITIME LAWS*, *REGISTRY*, *SEAMEN*, etc. (see *INDEX*), particular information has been given concerning the laws of shipping. We will, therefore, in this article only give a synopsis of the general laws regulating ships and shipping.

Title to Vessels.—The title of a ship, unless acquired by capture, passes by writing. A bill of sale is the proper record of title to a ship, and one which the maritime courts of all nations will look for and, in their ordinary practice, require. In Scotland, a written conveyance of property in ships has, by custom, become necessary; and in England a statute requires it with regard to British subjects. In this country, possession of a ship and acts of ownership are presumptive evidence without the aid of documentary proof, and will hold good until destroyed by contrary proof, and a sale with delivery of a ship, without a bill of sale or written instrument of any kind, will be good at law. But the presumptive title from possession can easily be destroyed; and the general rule is that no person can convey who has no title, and the fact of possession does not give title. The master of a ship has no authority to sell, unless in a case of necessity. It is generally, though not universally, considered that a sale by order of an admiralty court in a foreign port, by a petition of the master on the ground of unseaworthiness, is valid. The capture by a public enemy divests the title from the original owner after a regular condemnation by a prize court. Upon the sale of a ship in port, delivery of possession is requisite to perfect the title. If the vessel is at sea at the time of sale, possession must take place upon arrival at port.

Liability of Owner.—The owner is personally liable as owner for necessities furnished and repairs made to a ship by order of the master. It has been a disputed question whether the mortgagee of a ship is liable before taking possession. The weight of the American decisions decides that he is not liable for repairs procured on the order of the master, if not upon the credit of the mortgagee, and if the same was not in receipt of the freight. When the vessel is at sea, the liability of the mortgagee for wages, etc., resolves itself into the question of his possession. The liability of the charterer or freighter under similar circumstances also depends upon the question of temporary ownership by their use of the vessel.

Custom-house Documents.—The United States have followed the policy of other commercial nations in giving peculiar privileges upon American-built vessels

owned by our own citizens. This is obtained by a registry of vessels (see article *REGISTRY*), and which provision is intended to encourage our own trade, navigation, and ship-building. The registry of all vessels at the custom-house, and the records of the transfers also, add great security to the titles. No vessel is to be deemed as belonging to the United States, and entitled to the privileges of one, unless registered and wholly owned and commanded by a citizen of the United States.

Part Owners.—The several part owners of a ship are tenants in common, and not partners. Each has his undivided interest, and when one is appointed to manage the concerns of the ship he is called the ship's husband. If there be no definite agreement among the owners as to the employment of the ship, the majority in value may employ the ship, while the admiralty court secures the interests of the minority from injury. This practice is dictated by the common-sense view that "ships were made to plow the ocean, and not to rot by the wall." The court takes a security from the majority to a sum equal to the shares of the minority, either to bring back the ship or pay the minority the value of their shares, and in this case the ship sails wholly at the profit or risk of the majority. The distinction between part owners and partners may be stated thus: Part ownership is but a tenancy in common, and as such a part owner can only sell his undivided right, and can give title only to such; but a partner has implied authority over the joint property. A vessel may be held in partnership, but is not unless by agreement.—See *KENT'S Comm.*, vol. iii.

Carriage of Goods.—When the ship is hired and the cargo laden on board, the duties of the owner, and of his agent, the master, arise in respect to the commencement, progress, and termination of the voyage. When the voyage is ready, the master is bound to sail as soon as the wind and the tide permit, but he ought not to set out in very tempestuous weather. If, by the charter-party, the vessel is to sail by a given day, the master must do it, unless prevented by necessity; and if there be an understanding to sail with convoy, he is bound to go to the place of rendezvous, and place himself under the protection and control of the convoy, and continue, as far as possible, under that protection during his course. He is bound, likewise, to obtain the necessary sailing instructions for the convoy; but these covenants to sail with the first fair wind and with convoy, are not conditions precedent to the recovery of freight, and a breach of them only goes to the question of damages. The master is bound, likewise, to proceed to the port of delivery without delay, and without any unnecessary deviation from the direct and usual course. If he covenants to go to a loading port by a given time, he must do it or abide the forfeiture; and if he be forced by perils out of his regular course, he must regain it with as little delay as possible. Nothing but some just and necessary cause, as to avoid a storm, or pirates, or enemies, or to procure requisite supplies or repairs, or to relieve a ship in distress, will justify a deviation from the regular course of the voyage. If he deviates unnecessarily from the usual course, and the cargo be injured by tempests during the deviation, it is a sufficient proximate cause of the loss to entitle the freighter to recover; though if it could be shown that the same loss not only might but must have happened if there had not been any deviation, the conclusion might be otherwise. Nor has the captain any authority to substitute another voyage in the place of the one agreed between the owner and freighter of the ship. Such a power is altogether beyond the scope of his authority as master. In case of necessity, as where the ship is wrecked, or otherwise disabled in the course of the voyage, and can not be repaired, under the circumstances, without too great delay and expense, the master may procure another competent vessel to carry on the cargo and save his freight. If other means

to forward the cargo can be procured, the master must procure them or lose his freight; and if he offers to do it, and the freighter will not consent, he will then be entitled to his full freight. The master must act in port of necessity for the best interest of all concerned, and he has the power and discretion adequate to the trust, and requisite for the safe delivery of the cargo at the port of destination. If there be another vessel in the same or in a contiguous port which can be had, the duty is clear and imperative upon the master to hire it; but still the master is to exercise a sound discretion adapted to the case. He may transmit the cargo, if he has the means, or let it remain. He may bind it for repairs to the ship. He may sell part, or hypothecate the whole. If he hires another vessel for the completion of the voyage, he may charge the cargo with the increased freight arising from the hire of the new ship. The master may refuse to hire another vessel, and insist on repairing his own; and whether the freighter be bound to wait for the time to repair, or becomes entitled to her goods without any charge of freight, will depend upon circumstances. What may be a reasonable time for the merchant to wait for the repairs can not be defined, and must be governed by the facts applicable to the place and the time, and to the nature and condition of the cargo. A cargo of a perishable nature may be so deteriorated as not to endure the delay for repairs, or to be too unfit and worthless to be carried on. The captain is not bound to go to a distance to procure another vessel, and encounter serious impediments in the way of putting the cargo on board another vessel. His duty is only imperative when another vessel can be had in the same or a contiguous port, or at one within a reasonable distance, and there be no great difficulties in the way of a safe reshipment of the cargo. In the course of the voyage, the master is bound to take all possible care over the cargo; and he is responsible for every injury which might have been prevented by human foresight and prudence, and competent naval skill. He is chargeable with the most exact diligence. If the ship be captured during the voyage, the master is bound to render his exertions to rescue the property from condemnation, by interposing his neutral claims, and exhibiting all the documents in his power for the protection of the cargo.

Of the Delivery of the Goods at the Port of Destination.

—On the arrival of the ship at the place of destination, the cargo is to be delivered to the consignee, or to the order of the shipper, on the production of the bill of lading and payment of the freight. The cargo is bound to the ship as well as the ship to the cargo; but the master can not detain the goods on board the ship until the freight be paid, for the merchant ought to have an opportunity to examine the condition of them previous to payment. Delivery at the wharf (where there are no special directions to the contrary) discharges the master. But there must be a delivery at the wharf to some person authorized to receive the goods, or due previous notice must have been given to the consignee of the time and place of delivery; and the master can not discharge himself by leaving them naked and exposed at the wharf. His responsibility will continue until there is actual delivery, or some act which is equivalent, or a substitute for it, unless the owner of the goods or his agent had previously assumed the charge of the goods; or at least until the consignee has had notice of the place and time of delivery, and the goods have been duly separated and designed for his use. When there are conflicting claims between consigner and consignee, or consigner and the assignee of the consignee, if the consignee has failed, he ought to deliver to the claimant on behalf of the consignee; and if the consignee has assigned the bill of lading, and the rights of the consignee be still interposed and contested, it is safest for the master to deposit the goods with some bailee, until the rights of the claimants are

settled, as they can always be upon a bill of interpleader, in chancery to be filed by the master. Having made a consignment, the consignee or seller has not an unlimited power to vary it at pleasure. He may do it only for the purpose of protecting himself against the insolvency of the buyer or consignee.

Responsibility of the Ship-owner.—The cases that will excuse the owners and masters for the non-delivery of the cargo must be events falling within the meaning of one of the expressions, act of God and public enemies; or they must arise from some event expressly provided for in the charter-party. Water-carriers are liable as common carriers in all the strictness and extent of the common-law rule, unless the loss happens by means of one of the excepted perils. A loss by lightning is within the exception of the act of God; but a loss by fire proceeding from any other cause is chargeable upon the ship-owner. The moment the goods are transferred from the ship or lighter to the warehouse, this extraordinary responsibility ends.

If a rock or a sand-bar be generally known, and the ship be not forced upon it by adverse winds or tempests, the loss is to be imputed to the fault of the master. But if the ship be forced upon such shallow by winds or tempests, or if the bar was occasioned by a recent and sudden collection of sand in a place where ships could before sail with safety, the loss is to be attributed to a peril of the sea. A statute in Massachusetts, passed in 1818, and re-enacted in 1835, limits the responsibility of owners for the acts of the master and mariners to the value of the ship and freight, but otherwise the owner is bound for the whole amount of the injury done by the master or crew.

Duties of the Shippers.—The duties of the charterer are to use the ship in a lawful manner, and for the purpose for which it was let. If the freighter puts on board prohibited or contraband goods, by means whereof the ship is subjected to detention and forfeiture, he must answer to the ship-owner for the consequences of the act. And if the merchant declines to lade the ship according to contract, or to furnish a return cargo, as he had engaged to do, he must render in damages due compensation for the loss.

Payment of Freight.—Freight, in its original and more common acceptation, means the hire which is earned for the transportation of goods, but in its more extensive sense it is applied to all rewards for compensation paid for the use of ships. If the hiring be of the whole ship, or for an entire part of her for the voyage, the merchant must pay the freight though he does not fully lade the ship. But if he agrees to pay in proportion to the amount of the goods put on board, and does not agree to provide a whole cargo, the owner can demand payment for the cargo actually shipped. If the merchant agrees to furnish a return cargo, and he furnishes none, and lets the ship return in ballast, he must make compensation to the amount of the freight.—LEONE LEVI'S *Com. Law of the World*.

Analysis of the General Law of Shipping.—The sale of ships in Great Britain must be made by a bill of sale containing a recital of the certificate of registry. In France, Spain, and Sardinia, it must be made by public deed. In Holland the deed is transferred into a public register. All British subjects are authorized to possess shares in ships in Great Britain. In Spain foreigners not naturalized can not acquire the ownership of ships. In Russia this right is limited to merchants of the first and second guild. Part owners are tenants in common with each other of their respective shares in Great Britain. Each ship's husband may sell his share, but he should give preference to his part owners at equal price, provided they pay the price within three days. Spain, Prussia, Russia, Denmark, and Sweden. The responsibility of ship-owners for the acts of the captain is unlimited in Prussia and Spain, provided it be proved that such expenses turned to the advantage of the vessels. In Great Britain the own-

ers are responsible where the expenditure is for necessities. In Portugal obligations are not binding beyond the value of the ship and freight. In France owners may relieve themselves from such obligations by the abandonment of ship and freight. In Russia the ship's husband is responsible only to the value of the ship. In the Two Sicilies, Sardinia, Holland, Greece, and Hayti, the same restriction is admitted. In the United States the seamen are not paid if the ship and freight have been lost; but their wages are preferred to bottomry bond on the ship and freight preserved.—See OWNERS OF SHIPS. In France the same law prevails.

Ships' Papers, the papers or documents required for the manifestation of the property of the ship and cargo, etc. They are of two sorts; viz., 1st, those required by the law of a particular country—as the certificate of registry, license, charter-party, bills of lading, bill of health, etc. (see these titles), required by the law of England to be on board British ships; and, 2d, those required by the law of nations to be on board neutral ships, to vindicate their title to that character. Mr. Sergeant Marshall, following Hubner (*De la Saisie des Bâtimens Neutres*, i. 241–252), has given the following description of the latter class of documents:

1. *The Passport, Sea Brief, or Sea Letter*.—This is a permission from the neutral state to the captain or master of the ship to proceed on the voyage proposed, and usually contains his name and residence; the name, property, description, tonnage, and destination of the ship; the nature and quantity of the cargo, the place whence it comes, and its destination; with such other matters as the practice of the place requires. This document is indispensably necessary for the safety of every neutral ship. Hubner says that it is the only paper rigorously insisted on by the Barbary corsairs; by the production of which alone their friends are protected from insult.

2. *The Proofs of Property*.—These ought to show that the ship really belongs to the subjects of a neutral state. If she appear to either belligerent to have been built in the enemy's country, proof is generally required that she was purchased by the neutral before, or captured and legally condemned and sold to the neutral after, the declaration of war; and in the latter case the *bill of sale*, properly authenticated, ought to be produced. Hubner admits that these proofs are so essential to every neutral vessel, for the prevention of frauds, that such as sail without them have no reason to complain if they be interrupted in their voyages, and their neutrality disputed.

3. *The Muster-roll*.—This, which the French call *réole d'équipage*, contains the names, ages, quality, place of residence, and, above all, the *place of birth*, of every person of the ship's company. This document is of great use in ascertaining a ship's neutrality. It must naturally excite a strong suspicion, if the majority of the crew be found to consist of foreigners; still more, if they be natives of the enemy's country.—See SEAMEN.

4. *The Charter-party*.—Where the ship is chartered, this instrument serves to authenticate many of the facts on which the truth of her neutrality must rest, and should therefore be always found on board chartered ships.—See AFFREIGHTMENT and CHARTER-PARTY.

5. *The Bills of Lading*.—By these the captain acknowledges the receipt of the goods specified therein, and promises to deliver them to the consignee or his order. Of these there are usually several duplicates; one of which is kept by the captain, one by the shipper of the goods, and one transmitted to the consignee. This instrument, being only the evidence of a private transaction between the owner of the goods and the captain, does not carry with it the same degree of authenticity as the charter-party.—See BILLS OF LADING.

6. *The Invoices*.—These contain the particulars and prices of each parcel of goods, with the amount of the freight, duties, and other charges thereon, which are

usually transmitted from the shippers to their factors or consignees. These invoices prove by whom the goods were shipped, and to whom consigned. They carry with them, however, but little authenticity, being easily fabricated where fraud is intended.

7. *The Log-book, or Ship's Journal*.—This contains a minute account of the ship's course, with a short history of every occurrence during the voyage. If this be faithfully kept, it will throw great light on the question of neutrality; if it be in any respect fabricated, the fraud may in general be easily detected.

8. *The Bill of Health*.—This is a certificate, properly authenticated, that the ship comes from a place where no contagious distemper prevails; and that none of the crew, at the time of her departure, were infected with any such disorder. It is generally found on board ships coming from the Levant, or from the coast of Barbary, where the plague so frequently prevails.

A ship using false or simulated papers is liable to confiscation.—MARSHALL on Insurance.

The reciprocal Duties of Consular Officers and Masters of American Vessels.—By an act of the Congress of the United States, approved February 28, 1803, it is in substance directed that every master of an American vessel shall, on his arrival at a foreign port, deposit his register, sea-letter, and Mediterranean passport, with the consular officer of the United States, if there be one at the port, under a penalty of \$500, which the consular officer may recover in his own name for the use of the United States. Whenever a clearance from the proper officer of the port shall be produced to the consular officer, he shall deliver up all the ship's papers, provided the master shall have complied with the provisions of the above-mentioned act, and those of the 28th section of the act of August 18, 1856. Where vessels merely touch at a foreign port to try the market, or are accidentally driven into such port, and make no formal entry, it does not constitute an "arrival" within the meaning of the act, and the ship's papers can not be required by the consul.

As some doubt has arisen in regard to what constitutes an "arrival," attention is particularly called to the following extract from an opinion of the Supreme Court of the United States: "Our view, then, is, that the term *arrival*, as used in this act, must be construed according to the subject-matter, the object of the provision, and the expressions in other sections of this act, and in other like acts; and that according to all these, a vessel putting into a foreign port to get information, and getting it without going at all to the upper harbor or wharves, and not entering, or repairing, or breaking bulk, or discharging seamen, or being bound homeward, so as to take seamen, or needing the aid of the consul in any respect, but leaving the port in a few hours; not doing any of these, nor being required to, and duly entering and delivering her cargo at a neighboring port, where it had been sold, and there depositing her papers with the vice-consul, can not be said to have arrived at the first port, so as to come within the spirit of the penal provision as to depositing her papers with the consul. So far as regards precedents on this matter, the actual decision of one court and the opinions of two Attorneys General are in favor of our conclusion."

Vessels accidentally driven into a port are not required to deposit their papers with the consular officer, unless formal entry be afterward made, or consular services required. It is stated in the opinion of the Attorney-general of October 17, 1853, that the body of the second section of the act of 1803 contemplates an arrival at a foreign port, with a clearance from the proper officer of the port. It is the production of the clearance to the consular officer which gives to the master the right to demand a return of the ship's papers, and imposes on the consul the duty of returning them. The proviso to the section allows the consular officer, notwithstanding the clearance from the proper

officer of the port, to detain the ship's papers until certain requirements of law shall have been complied with: which are the payment of the fees due the consular officer for his services; the payment to him of three months' pay, additional to wages due, for every discharged seaman who is designated on the certified list of the ship's company as a citizen of the United States; and the taking on board, at the request of the consular officer, of destitute mariners for transportation to the United States.

This right of the consular officer attaches to the register and other papers when they shall have been lawfully deposited with him; but the statute does not compel the deposit for the purpose of giving the right of detention. Neither the section of the act which regards discharged seamen, nor that which provides for distressed seamen, nor the regulation as to consular fees, requires a deposit of the register and other papers, although the former makes it the duty of the master to exhibit to the consul a certified list of the ship's company. And the proviso above cited does not enlarge the scope of the other provisions of law as to the deposit of the papers; it only releases the consul from the duty, which would otherwise be imperative upon him, of returning the papers upon the exhibition of the clearance alone.

By the first section of the act of 1803, it is made the duty of the consular officer, immediately on the arrival of an American vessel, should the master neglect to deliver his ship's papers, as he is directed by law, to inform him of the necessity of so doing, by showing him the law that requires it, and apprising him of the penalty he will incur by refusal or neglect. If he fail to comply, a certificate of the fact, under the consular seal, must be immediately sent to the Department of State, giving a description of the vessel, the port to which she belongs, where bound, and the usual residence of the master. In such a case, it is desirable that the consul should send some other evidence of the arrival and departure of the delinquent master with his vessel besides that of his own certificate, as it has been held that such evidence of any fact is not sufficient, unless expressly or impliedly made so by statute.

Whenever the master shall produce the clearance of his vessel, and shall have complied with the directions of the acts above mentioned, having fulfilled every lawful requisition of the consul and of the local authorities, the consul shall, without delay, deliver up the papers, with a consular certificate, under seal, of the time of such delivery, and make an entry of the like period in his consular record.

Before a clearance is granted to any American vessel bound on a foreign voyage, the master thereof is required to deliver to the collector of the customs a list, containing the names, places of birth and residence, and a description of the persons who compose his ship's company, to which list the oath or affirmation of the captain is to be annexed, that it contains the names of his crew, together with the places of their birth and residence, as far as he can ascertain them; a certified copy, written in a uniform hand, without erasures or interlineations, must be delivered to the master by the collector, for which he is entitled to receive from the master the sum of twenty-five cents. The said master must then enter into bond, with sufficient security, in the sum of \$400 dollars, to exhibit the aforesaid certified copy of the list to the first boarding-officer at the first port in the United States at which he shall arrive on his return thereto, and then and there also to produce the persons named therein to the said boarding-officer, whose duty it is to examine the men with such list, and to report the same to the collector.

By the act of Congress, August 18, 1856, it is made the duty of every master and commander of a ship or vessel of the United States, whenever he shall have occasion for any consular or other official service which any consular officer of the United States shall be au-

thorized by law or usage officially to perform, and for which any fees shall be allowed by the said rates or tariffs of fees as aforesaid, to apply to such one of the said officers to perform the service as may then be officially in charge of the consulate or commercial agen-

SHIP'S DAILY JOURNAL.

In which, on the deposit of the ship's register and papers, shall be recorded, for example, as follows:

SHIP ———, OF ———, TONS, ——— MASTER.					
Date of entry and of service rendered.					
18 6.					
Jan. 2	Arrived ——— day of ———, 18—.				
	From ———.				
	When built, ———, 18—.				
	Where built, ———.				
	Owners, ——— and others.				
	Cargo, inward (here insert where produced or manufact'd), value	\$—	...	...	...
	Cargo, outward (here insert where produced or manufact'd), value	...	...	...	...
	A B, master.				
	C D, mate.				
	E F, 2d mate.				
" 11	G H, boatswain, alias I J, sent to hospital.				
	K L, carpenter, discharged; wages paid, \$50; 3 months' extra wages, at \$20, \$60 .....	...	\$110	00	
" 2	M N, steward, reported to have been lost overboard at sea (or to have died at sea), Dec. 21, 1855, wages paid .....	...	16	00	
" 8	O P, cook, reported to have deserted; amount of wages forfeited to the United States ....	...	50	00	
	Q R, seaman.				
	Etc., etc.				
" 20	Shipped for voyage to ———, ———, boatswain.				
	———, carpenter.				
	———, steward.				
	———, cook.				
" 21	Register and papers delivered to master, bound to ———.				

NOTE.—Should any of the seamen or mariners have died at sea, or have been lost overboard, on the passage, the fact will be reported at once by the master, and a note thereof made opposite to the name of such person so deceased or lost; as, for example, see Steward. Should any seaman or mariner be discharged, or desert, a similar note of the fact must be made opposite to such deserter's or discharged seaman's name; as, for example, see Carpenter and Cook. In case any seaman or mariner has taken the name of any other seaman or mariner, who may have deserted or otherwise absented himself, after the clearing of the vessel, in the United States or elsewhere, such seaman or mariner's correct and proper name must be entered opposite the name of the seaman or mariner so deserting or absenting himself; as, for example, see Boatswain. And in the event of the seaman or mariner's taking the name of another seaman or mariner as aforesaid, entering the hospital, being discharged, or deserting, the order to the hospital, certificate of discharge or desertion, and consular returns must contain the name of said seaman or mariner so taking the place of the absconding seaman; as, for example, see Boatswain.

MARINE NOTE OF PROTEST.

Consulate of the United States of America,
Port of ———.

On this ——— day of ———, in the year of our Lord eighteen hundred and ———, before me, ———, consul of the United States of America for ——— and the dependencies thereof, personally appeared ———, master of the ship or vessel called the ———, of ———, of the burden of ——— tons or thereabout, and declared that on the ——— day of ——— last past, he sailed in and with the said ship from the port of ———, laden with ———, and arrived in the said ship at ———, on (here insert the day and hour); and having experienced boisterous and tempestuous weather on the voyage ———

heroby enters this Note of Protest accordingly, to serve and avail him hereafter if found necessary.

Attested:

A B, Consul.

Master.

SHIP _____
MARINE EXTENDED PROTEST OF _____, MASTER,
_____, 18____.

Consulate of the United States of America,
Port of _____.

By this public instrument of declaration and protest, be it known and made manifest unto all to whom these presents shall come or may concern, that on the _____ day of _____, one thousand eight hundred and _____, before me, _____, consul of the United States of America for _____, and the dependencies thereof, personally came and appeared _____, master of the ship or vessel called the _____, of _____, of the burden of _____ tons, or thereabout, then lying in this port of _____, laden with _____ cargo, who duly noted and entered with me the said consul his protest, for the uses and purposes hereafter mentioned; and now, on this day, to wit, the day of the date hereof, before me, the said consul, again comes the said _____, and requires me to extend this protest; and together with the said _____ also come A B, mate, G H, carpenter, K L and M O, seamen, of and belonging to the said ship, all of whom being by me duly sworn on the Holy Evangelists of Almighty God, did severally voluntarily, freely, and solemnly declare, depose, and state as follows, that is to say: That these appearers, on the _____ day of _____, in their capacities aforesaid, sailed in and with the said _____ from the port of _____, laden with _____, and bound to the port of _____; that the said ship was then tight, staunch, and strong; had her cargo well and sufficiently stowed and secured; had her hatches well calked and secured; was well and sufficiently manned, victualled, and furnished with all things needful and necessary for a vessel in the merchant service, and particularly for the voyage she was about to undertake; that [Here insert narrative of the facts of the voyage as they occurred, with full and minute particulars, with dates, latitude, longitude, etc.]

And these said appearers, upon their oaths aforesaid, do further declare and say: That during the said voyage they, together with the others of the said ship's company, used their utmost endeavors to preserve the said _____ and cargo from all manner of loss, damage, or injury. Wherefore the said _____, master, hath protested, as by these presents I, the said consul, at his special instance and request, do publicly and solemnly protest, against all and every person and persons whom it doth or may concern, and against the winds, and waves, and billows of the seas, and against all and every accident, matter, and thing, had and met with as aforesaid, whereby, and by reason whereof, the said _____ or cargo already has, or hereafter shall appear to have suffered or sustained damage or injury. And do declare that all losses, damages, costs, charges, and expenses that have happened to the said _____ or cargo, or to either, are, and ought to be borne by those to whom the same by right may appertain by way of average or otherwise, the same having occurred as before mentioned, and not by or through the insufficiency of the said _____, her tackle or apparel, or default or neglect of this appearer, his officers, or any of his mariners.

Thus done and protested in the port of _____, this _____ day of _____, in the year of our Lord one thousand eight hundred and _____.

In testimony whereof these appearers have hereunto subscribed their names, and I, the said consul, have granted to the said master this public instrument, under my hand and the seal of this consulate, to serve and avail him and all others whom it doth or may concern, as need and occasion may require.

Master. _____, U. S. Consul.
A B, Mate. _____
G H, Carpenter.
K L, Seaman.
M O, do.

Shipwrecks. See WRECKS.

Shoal, in the *Sea language*, denotes a place where the water is shallow; and likewise a great quantity of fishes, such as a *shoal of herrings*.

Shoes (Du. *Schoenen*; Fr. *Souliers*; Ger. *Schuhe*; It. *Scarpe*; Russ. *Baschmaki*; Sp. *Zapatos*), articles of clothing that are universally worn, and require no

description. The shoe manufacture is of great value and importance.

Boot and Shoe Trade.—The annual value of boots and shoes manufactured in Massachusetts is estimated at \$37,000,000, exceeding any other branch of manufacture. The demand for boots and shoes for years past has been fully equal to the production, and the trade generally of Boston has been quite up to expectation. The high prices of leather and all kinds of stock have induced manufacturers to work very cautiously, and they have turned out no more goods than were actually wanted. The trade opened in January last with a good demand and a firm market, and the purchases generally were at an advance of about 5 per cent. Early in February the trade was materially checked by the ice embargo South and West, which completely closed river and harbor navigation, and prevented the forwarding of goods. The opening of navigation in March led to an active demand, and throughout March and April the business was quite active, buyers from the South and West completely clearing the market of all desirable goods, the Spring trade closing quite satisfactorily.

The high cost of stock the past year has also been quite a check on the production, keeping it within the limits of the demand; and the same policy is likely to control the operations of manufacturers the coming year. For some months past the quantity of goods turned out has been comparatively small, and the supply on the market for Spring sales will not be likely to exceed the actual wants of the trade. The quantity of boots and shoes cleared at the custom-house has been as follows:

Years.	Quantity.	Years.	Quantity.
1847.....	72,424	1852.....	195,120
1848.....	79,113	1853.....	220,138
1849.....	101,371	1854.....	196,411
1850.....	147,769	1855.....	204,601
1851.....	153,912	1856.....	224,322

A large portion of the supplies for the West are forwarded by railroad, and are of course not included in the above statement.

In one county alone of Massachusetts (Essex) the annual product of boots and shoes in 1855, according to the census, was over \$12,000,000. As this is the leading trade of the State, we enumerate the product of each county:

Barnstable.....	\$12,300
Berkshire.....	110,500
Bristol.....	498,000
Dukes.....	8,600
Essex.....	12,192,800
Franklin.....	62,300
Hamden.....	124,100
Middlesex.....	6,502,100
Nantucket.....	10,800
Norfolk.....	4,981,000
Hampshire.....	60,400
Plymouth.....	4,865,700
Suffolk.....	193,900
Worcester.....	7,857,800
Total value of boots and shoes.....	\$37,400,000
Leather, tanned and curried.....	10,934,400
Patent enameled leather.....	1,271,600

In the immediate vicinity of Boston there are manufactures to the extent of at least \$150,000,000 annually, and of this the value added to the raw material by labor can not be less than \$75,000,000. In addition, the foreign dry goods, groceries, drugs, hardware, and a multiplicity of other articles sold there, swell the trade of Boston to nearly or quite a hundred millions more. Of manufactures, the first in importance are domestic cottons; and of about fifty millions manufactured annually, they send to foreign countries less than two millions, or 4 per cent. One half of these go to the west coast of South America, the east coast of South America, and the Central American States, while the West Indies receive less than \$220,000 worth of cotton manufactures from Boston in a year. The trade of Boston with Cuba during the fiscal year ending June

30, 1856, stood as follows: Value of imports, \$3,683,226; exports, \$1,044,359.

EXPORTS OF DOMESTIC BOOTS AND SHOES FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Pairs	Value.
Asiatic Russia.....	696	\$2,460
Russian Possess. in North America.....	480	1,060
Danish West Indies.....	6,238	6,157
Hamburg.....	4,000	8,200
Dutch West Indies.....	880	1,272
Dutch Guiana.....	86	110
England.....	4,600	7,280
Canada.....	226,622	355,944
Other British North American Poss.....	111,838	118,180
British West Indies.....	8,643	11,860
British Honduras.....	9,222	13,420
British Guiana.....	400	271
British Possessions in Africa.....	1,750	1,020
Other ports in Africa.....	7,680	6,409
British Australia.....	66,602	140,465
French North American Possessions.....	24	64
Cuba.....	8,180	10,775
Porto Rico.....	1,715	1,707
Cape de Verd Islands.....	154	192
Haiti.....	7,677	10,685
San Domingo.....	52	266
Mexico.....	1,692	2,763
Central Republic.....	1,340	1,705
New Granada.....	7,123	10,528
Venezuela.....	5,674	8,974
Brazil.....	1,729	1,186
Uruguay, or Cisplatine Republic.....	400	500
Argentine Republic.....	14,600	14,972
Chili.....	10,618	15,545
Peru.....	6,217	6,438
Sandwich Islands.....	40,811	47,000
Other islands in the Pacific.....	1,306	1,422
China.....	400	620
Whale-fisheries.....	1,570	2,145
Total, 1857.....	561,501	\$913,995
Total, 1856.....	683,149	1,060,967
Decrease.....	121,648	\$246,972

IMPORTS OF BOOTS AND SHOES INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Boots and Shoes of Leather.		Boots and Shoes other than Leather.	
	Pairs.	Value.	Pairs.	Value.
Hamburg.....	1,509	\$3,221	3,540	\$1,129
Bremen.....	17,762	14,112	12,256	5,451
Holland.....	42	125	114	90
Belgium.....	25	74	1,172	411
England.....	26,810	62,662	4,110	2,102
Scotland.....	4	12	.....	.....
Canada.....	3,299	2,088	11	27
Other British N. A. Poss.....	605	357	48	148
British West Indies.....	145	355	.....	.....
British East Indies.....	.....	.....	8	20
France on the Atlantic.....	25,554	38,573	19,029	5,223
France on the Mediterra.....	100	199	.....	.....
Cuba.....	13	37	.....	.....
Sardinia.....	.....	.....	31	25
New Granada.....	3,007	5,873	.....	.....
Brazil.....	.....	.....	8,153	3,825
Sandwich Islands.....	30	35	.....	.....
China.....	.....	.....	29,315	12,554
Total.....	78,205	\$127,651	77,787	\$30,525

Shola. There is a singular substance manufactured in India from the cellular, pith-like stems of the *hedysarum lagenarium*. It closely resembles in appearance the Chinese rice-paper, and is considered to be well adapted to various purposes in the arts. The shola is wrought in India into life-buoys, boxes, bottle-cases, hats, and numerous other articles. From its loosely-cellular structure, it is a very bad conductor of heat, and this, together with its lightness, admirably fits it for the manufacture of hats. It is also advantageously fitted for purposes of ornament, as it may readily be made to present all the appearance of ivory.

Shore, a place which is washed by the sea or by some large river. Count Marsigli divides the sea shore into three portions: the first of which is that tract of land which the sea just reaches in storms and high tides, but which it never covers; the second part of the shore is that which is covered in high tides and storms, but is dry at other times; and the third is the descent from this, and is always covered with water. The first part is only a continuation of the continent, and suffers no alteration from the neighborhood of the

sea, except that it is rendered fit for the growth of some plants, and wholly unfit for that of others, by the saline steams and impregnations; and it is scarcely to be conceived by any but those who have observed it how far on land the effects of the sea can reach, so as to make the earth proper for plants which will not grow without this influence; there being several plants frequently found upon high hills and dry places at three, four, and more miles from the sea, which yet would not grow unless in the neighborhood of it, nor will they ever be found elsewhere.

The second part or portion of the shore is much more affected by the sea than the former, being frequently washed and beaten by it. Its productions are rendered salt by the water, and it is covered with sand or with the fragments of shells in the form of sand, and in some places with a tartarous matter deposited from the water. The color of this whole extent of ground is usually dusky and dull, especially where there are rocks and stones covered with a slimy matter.

The third part of the shore is more affected by the sea than either of the others; and it is covered with a uniform crust of the true nature of the bottom of the sea, except that plants and animals have their residence in it; and the decayed parts of these alter it a little.—See GULF STREAM and OCEAN.

Shumac, or Sumach (Ger. *Schmack*, *Sumack*; Fr. *Sumac*, *Roure*, *Roux*; It. *Sommacco*; Sp. *Zumaque*; Russ. *Sumak*). Common shumac (*Rhus coriaria*) is a shrub that grows naturally in Syria, Palestine, Spain, and Portugal. That which is cultivated in Italy, and is improperly called *young fustic*, is the *Rhus cotinus*. It is cultivated with great care: its shoots are cut down every year quite to the root; and, after being dried, they are chipped or reduced to powder by a mill, and thus prepared for the purposes of dyeing and tanning. The shumac cultivated in the neighborhood of Montpellier is called *redoul* or *roudo*. Shumac may be considered of good quality when its odor is strong, color of a lively green, is well ground, and free from stalks. Italian shumac is used in dyeing a full high yellow, approaching to the orange, upon wool or cloth, but the color is fugitive. Common shumac is useful for drab and dove colors in calico-printing, and is also capable of dyeing black.—BANCROFT on Colors.

Siam. This extensive kingdom, in the southeastern part of Asia, occupies the central part of Farther India, and has on its west the British Tassarim provinces and the Bay of Bengal; on the north and northwest, Burmah and the free Laos country; on the east, Anam; and on the south, a coast line of 1470 miles along the Gulf of Siam. Its area has been differently estimated: some authors extending it to 294,720 square miles, of which there are assigned to Siam proper 141,175 square miles; 24,420 to Cambodia; 108,645 to the tributary Laos; and 24,480 to the Malay provinces. Crawford, however, who seems to have enjoyed the most favorable opportunities of correctly estimating the extent of Siam, fixes its area at 190,000 square miles.

The same authority estimates the population at 2,790,500, in 1822; but the American commissioner, who negotiated the commercial treaty with Siam on the part of the United States in 1832, gives an estimate for that period as follows:

Siamese.....	1,600,000
Laos.....	1,200,000
Malays.....	320,000
Chinese.....	500,000
Total.....	3,620,000

All authors concur in representing Siam as one of the most fertile and delightful countries in the East, and capable, when its immense resources are more fully developed, of sustaining an extensive and valuable foreign trade. No other country eastward of the Cape of Good Hope abounds more plentifully in all the productions suited for foreign commerce; and it is found

to be no less distinguished for the great variety of its mineral than it is acknowledged to be for its vegetable productions. The largest-sized vessels are built annually in Siam. Some of the Chinese junks, the construction of which forms an important feature in the trade with China, measure 1000 tons burden. The timbers are of a hard wood, called by the natives *mar-bao*, and the plank are of the finest teak in the world.

Among the large rivers of Siam, through which the internal and foreign trade of the kingdom is conducted, the Menam is the most important, as pervading the greater part of the kingdom, and almost monopolizing its trade and navigation. On this river is situated Bangkok, which has long been the great centre of the commerce of the kingdom, inland, coastwise, and foreign. The principal articles brought down this river from the higher provinces are rice and paddy, cotton, teak-timber, sapan-wood, lac, benzoin, ivory, and beeswax; while the districts east and west of the Menam furnish gamboge, cardamoms, and sugar; and the Malay provinces contribute to the trade of Bangkok tin, zinc, cotton, etc. The foreign trade is conducted chiefly with the southern ports of Anam, Java, Singapore, Pulo-Penang, and occasionally with British India, the United States, and Great Britain. The most extensive foreign trade of Siam is with China; this trade employs from 200 to 300 junks annually, having an aggregate burden of about 25,000 tons, mostly built in Siam by the Chinese. These junks make one voyage annually, leaving the Menam in June, and returning in December. The exports to the United States and to Europe comprise sugar, pepper, lac, benzoin, gamboge, tin, cardamoms, ivory, horns, and hides, with other articles of minor importance. For these they receive all kinds of textile fabrics, shawls, cotton umbrellas, iron and steel goods, steel bars, lead and spelter, earthen and glass ware, all kinds of hardware and cutlery, with fire-arms, musket-flints, etc. Formerly the British trade with Siam was carried on under treaties with the East India Company. Duty was levied on the ship, and amounted to about \$1000 per fathom on the width of the vessel. The length, draught, or tonnage was not regarded; there was no import or export duty; all duties and tolls were merged in the charge on the ship.

On the 24th of March, 1833, a treaty of amity and commerce was concluded between the King of Siam and the United States by Mr. Roberts, who had been sent thither for that purpose; ratifications were exchanged at Bangkok, April 14, 1836, and the proclamation of the President gave it effect in the United States June 24, 1837. By this treaty citizens of the United States are permitted to enter and depart from any port of the kingdom with cargoes of whatever description, and to buy, sell, and exchange, without qualification or restriction, except that they are not to sell munitions of war to any other person than the king, or to import opium or export rice. The only charge to be exacted from American vessels is a measurement duty of 1700 ticals or bats for every fathom of 78 American inches in breadth, upon ships selling merchandise, and of 1500 ticals or bats per fathom on those purchasing cargoes with specie; the measurement to be made in the middle of the vessel, length upon the single deck; or if there be more than one deck, then upon the lower one; but no charge is to be made upon a vessel entering merely to refit, or for freshment, or to inquire the state of the market. In case of a reduction of the duties upon the vessels of any foreign nation, the same reduction is to be made in favor of those of the United States. American debtors, who shall have honestly brought forward and sold all their property for the payment of their debts, are not to be proceeded against for the balance remaining due after the application of the proceeds of such sale. Merchants trading to Siam shall obey the laws and customs of the country; and if they wish to rent

houses, they shall rent the king's factories, and pay the customary rent therefor. The king's officers may take account of goods brought on shore, but no duties shall be levied thereon. In case of shipwreck of an American vessel on the Siamese coast, the persons escaping shall be hospitably entertained, and the property saved shall be restored to the owners; and if a vessel of the United States shall be captured by pirates, and brought into a Siamese port, the persons on board shall be set at liberty, and the property restored to the rightful proprietors. If the privilege shall hereafter be granted to any foreign nation, other than the Portuguese, to have consuls resident in the kingdom, the same privilege shall be extended to the United States.

With a few exceptions, this treaty is a mere transcript, as regards its commercial stipulations, of the treaties of Siam with the British East India Company. Anterior to the period of its conclusion, quite a number of American vessels had visited that kingdom, and it was supposed that the treaty would open an extensive trade between Siam and the United States. Quite the contrary, however, has proved to be the case; for it is stated that not a single cargo has since been shipped under the flag of the United States. In 1850 a special commissioner was sent by the government of the United States to Siam for the purpose of negotiating a new treaty, but without success. A similar result followed the efforts of Sir J. Brooke, British envoy, who had been specially deputed to proceed to Siam for the same object. Since that period, however, and very recently (April, 1855), Sir J. Bowring, for the British government, has succeeded in negotiating a new and much more favorable treaty than the one which it supersedes with the Siamese kingdom. Efforts are now in progress on the part of the United States to negotiate a new commercial treaty with this kingdom; but until such treaty shall have been formed, the United States, being entitled, by Article 4th of the treaty of 1833, to any diminution of duties payable by foreign vessels granted at any future time to any other nation, can, of course, avail itself in that regard, as well as respecting the appointment of consuls, of the British treaty of 1833.

Of the general trade and commercial relations of Siam with nations but little, comparatively, is with certainty known. The following summary respecting the principal products of that kingdom, and their commercial importance, is made up chiefly from British official returns of recent date:

Sugar is looked upon as the principal return for British imports. Its cultivation as an article of commerce originated in the enterprise of Chinese settlers in the year 1810. In 1822 it had reached 60,000 piculs, or 3700 tons; in 1835, 185,000 piculs, or 15,295 tons. At this period the trade in sugar received a severe check, in consequence of the king monopolizing the entire trade in his own hands, and fixing his own prices both for the producer and foreign purchaser. The present king has discontinued the traffic carried on by his predecessor, and cultivators are once more free to sell to any customer. The manufacture, however, still remains burdened with various taxes, which keep up the cost of production, and check demand, so that 80,000 piculs (say 5000 to 6000 tons) are now spoken of as an average crop. The land-tax on sugar plantations is one tical per square of twenty fathoms, which, under favorable circumstances, will yield four piculs. This would amount, on production, to one salung (15 cents) per picul (133½ lbs.); and the duty which is levied on sugar, on its passage to Bangkok, is exactly double the amount of the land-tax, the payment of which, under the new treaty, will free it from any further charge on exportation. Siamese sugar is much esteemed for its whiteness and fine strong grain, and as the greater portion of the valley of the Menam, the area of which has been estimated at 22,000 square miles, is stated to be well adapted to the growth of the

case, it is supposed that the annual sugar crop would admit of very material increase.

Rice.—The extreme facility of irrigation, and the periodical inundations of the Menam, supply with unusual certainty the fertility necessary for the growth of this cereal. Hitherto its exportation was forbidden by law; but under the new treaty it is stipulated that this prohibition shall only be enforced in times of positive scarcity. The demand for this article, both for home and Oriental consumption, is constantly on the increase; and there is every prospect that Siam will, in the course of time, rival the British province of Arracan (in the Bengal presidency) in supplying this article for the markets of China, Australia, and Europe. The annual exportation of rice in this British province is now raised to 120,000 tons—nearly 800 per cent. over the total exportation of rice from the United States in 1855. The trade with Siam, however, will always have this advantage over that with Arracan, that in the former rice and all other products are given in exchange for manufactures and other articles of trade; while in the latter the exports are paid for in bullion. Forty times the amount of seed is stated as the average yield; and the ordinary price is one tical (61 cents) per 183 lbs.

Salt.—This article is obtained of excellent quality from the extensive mud-flats which line the head of the Gulf of Siam, and at so cheap a rate that the cost of production does not exceed from one to two ticals (61 cents to \$1 22) per koyan of 25 piculs, or 3400 lbs. English. Salt is, however, a special object of taxation in Siam; and the duty of \$3 60 per koyan raises the above-mentioned price to seven or eight ticals (\$4 27 to \$4 88) per koyan, equal to about \$2 88 to \$3 36 per ton. The British commissioner endeavored, in negotiating the late treaty, but ineffectually, to obtain a reduction of this high duty. It is, notwithstanding its price in market, in much demand at Singapore; and the Siamese government have withdrawn all impediments hitherto existing to its shipment.

Teak.—The teak forests of Siam are situated at some considerable distance up the Menam, and the trees, when felled, are floated down in large rafts to Bangkok. There is always a brisk demand for this article, both in the markets of China and Singapore.

Sapan-wood.—The annual exportation of this dyewood reaches from 80,000 to 100,000 piculs (from 5000 to 6000 tons). Hitherto the Siamese government have levied a tax of one tical per picul on sapan-wood, being from 50 to more than 100 per cent. upon its value; and it was with great difficulty that the British commissioner persuaded the Siamese authorities to lessen this tax to 2½ salungs per picul—being a reduction of more than one-third upon the old rate.

Rose-wood and Ebony.—These woods are abundant in Siam, and are largely shipped to China and Singapore. The export duty has been reduced one-third of former rates.

Pepper.—The production of this article had reached at one time more than 9,000,000 lbs. per annum, when an oppressive tax, imposed by the present administration of Siam, of one catty of pepper on every vine, or about 8 per cent. on the produce, in addition to an export duty of one tical (61 cents) per picul, amounting to the same percentage, caused such a check to the cultivation, that last year only 20,000 piculs were brought to market. The removal of the first of these taxes, now agreed to, will serve, it is stated, to restore the growth of this useful spice to its former flourishing condition. In 1855 the United States imported from the British and Dutch East Indies 3,304,460 lbs. of black pepper, valued at \$171,008.

Cotton.—Above the line of the inundated tracts, land fit for the cultivation of cotton abounds. The crop has reached as high as 140,000 piculs (8330 tons) in a year; but owing to various causes, some of which the British commissioner has succeeded in removing, it is thought

that its culture will be again encouraged, and its exportation increased.

Silk.—This product has been largely grown in the rich district of Kocat, and the crop has reached 1500 piculs per annum—valued at \$150,000; but the larger markets of China being so close at hand, the silk of Siam will probably never assume much importance in the foreign trade of the kingdom.

Hemp.—This article holds out much interest to foreign traders. Its growth in Siam is only just becoming known, and it is particularly recommended on account of its great strength, and its glossy and silky texture, which would allow of its being woven up into silk fabrics. Its moderate price—10 ticals (\$6 10) per picul—will enable it to compete successfully with that of Manila.

The following list will be found to contain all the manufactures which are most suited to Siamese consumption: White and gray long cloths; white and gray madapollans; white and gray cambrics; white and gray jaconets; book lappets; velvets, plain and figured; checked fancy muslins; American drills; cotton umbrellas; figured long cloths; dyed cambrics; dyed long cloths; prints, chintzes, furnitures, and neutrals; Siam *choots*, or dresses; Turkey red cloth; gray cotton twist; Turkey red twist; imperial red and blue twist; long ells; ladies' cloth; Spanish stripes; merinos of assorted colors; canvas; iron, steel, lead, spelter; earthen-ware, assorted; glass ware and lamps, assorted; muskets, gun-locks; brimstone, beeswax; cowries, flint-stone, musket-flints, etc.

The imports from India and China are even more varied, and consist of almost every article of manufacture, trifling or important, produced in those countries; these being required not only to meet the tastes and requirements of the Siamese, but also to supply the wants of the natives of India and China, many of whom are domiciled in Siam. The statistics of the trade of Siam are but meagre. The following table exhibits the number and tonnage of ships which left the port of Bangkok for China and Singapore, from April 1, to August 31, 1855:

Destination.	Number.	Aggregate Tonnage.	Average Tonnage.
To China	11	4850	441
To Singapore	9	3500	389

—U. S. Com. Relations.

Sicily, or Two Sicilies. The kingdom of the Two Sicilies comprises the ancient realm of Naples and the island of Sicily. Naples proper embraces an area of 31,350 square miles, and, by the census of 1854, contains a population of 6,843,355 inhabitants. Its productions are of the most valuable and varied kind; and it only requires good roads to carry the produce of the soil to market, and security and encouragement under the government, to render the Neapolitan dominions among the most profitably productive in Europe. The chief products are corn, wine, olive-oil, cotton, flax, hemp, liquorice-paste, silk, and wool.

The annual crop of wheat is between 50 and 80 million bushels, and the yearly consumption is about 40 million bushels. The annual produce of Indian corn is about 40 million bushels. The yearly production of wine is about 400,000 pipes, the greater part of which is consumed at home. About 13,000 pipes are made into brandy near Naples, and from 250 to 300 tons of argol and cream of tartar are prepared for foreign markets. About 70,000 tons of olive-oil are expressed yearly, half of which is exported to foreign markets. The quantity of cotton raised annually in the continental part of the kingdom amounts to about two million pounds. In Sicily the cultivation is greater than in Naples. The annual produce of raw silk is about 1,000,000 lbs., of which one half is consumed in the factories of the kingdom.

There are two species of wheat raised in the kingdom of the Two Sicilies—the soft, of which the best quality

of bread is made; and the hard wheat, chiefly employed in the preparation of macaroni. The principal exports of Naples proper are, olive-oil, silk, hemp, wool, wine, grain, macaroni, and coral; imports, colonial and manufactured goods, iron, and cutlery.

Prior to the ratification of the treaty between the United States and the kingdom of the Two Sicilies, of December 1, 1845, the commerce between the two countries was chiefly indirect. Having no commercial treaty, the United States flag had to contend against high duties, an exemption of 10 per cent, in favor of British and French vessels employed in the direct trade, and the extreme rigor of quarantine regulations. The indirect trade was carried on through Leghorn and the French Mediterranean ports, and was necessarily fettered with the incumbrances and burdens incident to a circuitous route. Neapolitan merchandise was taken on board American ships in these ports; while colonial goods destined for the markets of the Sicilies were sold to the French and Tuscan merchants, on whose account they were shipped to their destination, or sold direct to Neapolitan traders, by whom they were introduced under the 10 per cent. discrimination. The retaliatory duties of import and tonnage levied on the Sicilian flag in the United States virtually excluded their vessels from our ports, and the consequence was that the trade between the two countries became exceedingly limited. Indeed, in returns of the foreign trade and navigation of the Two Sicilies for a period of three years (1839, 1840, and 1841), but a single American vessel appears to have entered or cleared at the ports of that kingdom.

The treaty of 1845, which went into effect July 24, 1846, provides that there shall exist between the two countries reciprocal liberty of commerce and navigation; that no higher duties shall be imposed on importations into either country of articles from the other than from any other country; that favors granted by either party to other nations shall be common to the other; that there shall be equalization of duties, etc., on imports and exports, on vessels of either country, as also of tonnage, harbor, and light-house duties; that the stipulations of the treaty shall not apply to the coasting trade; and that no preference shall be given by either party to importations on account of the national character of vessels in which imported. The treaty to be in force ten years, with the usual twelve months' notice for its termination.

By a convention ratified July 14, 1855, two principles were recognized between the two countries as permanent and immutable, to wit: 1st. That the effects or goods belonging to citizens or subjects of a power or state at war are free from capture and confiscation when found on board of neutral vessels, except articles contraband of war; and, 2d. That the property of neutrals on board an enemy's vessel is not subject to confiscation, unless contraband of war.

In 1852 the commerce of the continental part of the kingdom of the Two Sicilies is thus given: Imports, \$12,372,363; exports, \$10,943,831; total, \$23,316,194.

The trade represented by the preceding figures passed exclusively through the custom-houses, and does not comprise the movements at the general entrepôt of Brindisi, nor the transshipment in the roads. The principal foreign powers which participated in the commercial movements of 1853 were England, France, Austria, Sardinia, the Papal States, and Tuscany; and next in the order of importance were Holland, Sweden, Russia, Spain, Greece, the Ionian Islands, Brazil, and the United States. The value of merchandise imported into the continental part of the kingdom, it is seen above, amounted to \$12,372,363. This is the value of maritime commerce with foreign nations only. The coasting trade between the different ports of the kingdom would largely augment this total, but no returns of this trade are accessible. Of the imports, sugar, coffee, and trans-Atlantic produce are chiefly supplied

by England. Marseilles also furnishes small quantities of sugar and coffee from French colonies; but, owing to their superior quality and high price, they are not much in demand. The sugars from Holland, being lower priced, find a readier market. Besides these sources of supply, several Neapolitan vessels have for some years past kept up a direct intercourse between the port of Naples and Brazil. There seems no reason why the United States should not compete with England, Holland, France, and even Genoa, in supplying these trans-Atlantic necessities to the kingdom of the Two Sicilies; nor why the carrying trade in these articles from the countries of production, or from the bonded warehouses of the United States, could not be made as profitable to American as to British, Dutch, French, or even to Genoese vessels. Genoa is a free port, and the dues for pilotage, anchorage, and quarantine are light.—See SARDINIA.

The subjoined statement exhibits the quantities and values of sugar and coffee respectively, exported from the United States to the kingdom of the Two Sicilies, during a period of five years, from 1851 to 1855, both inclusive, made up from the annual reports of the Secretary of the Treasury on Commerce and Navigation; followed by a statement exhibiting the quantities and values of the same articles exported to all countries; and a third exhibiting the quantities and values of cotton and tobacco exported to the Two Sicilies during the same period:

Years.	Sugar.		Coffee.	
	Pounds.	Values.	Pounds.	Values.
1851.....	34,272	\$8,345
1852.....	60,328	4,919
1853.....	91,327	7,667
1854.....
1855.....	302,990*	\$4542	1,830,564	170,354

COTTON AND TOBACCO EXPORTED FROM THE UNITED STATES TO THE TWO SICILIES, FROM 1851 TO 1855.

Years.	Cotton.		Tobacco.	
	Pounds.	Values.	Pounds.	Values.
1851.....	....	....	92,000	\$10,302
1852.....	....	....	208,000	16,619
1853.....	1,069,065	\$96,219	22,000	2,180
1854.....	327,119	31,631	1,282,000	135,582
1855.....	1,239,492	100,724	93,000	24,124
Aggregate.	2,634,706	\$237,574	1,697,000	\$186,897
Average ..	878,235	79,191	339,400	37,361

The following are the chief staples which the Two Sicilies draw from the United States: Tobacco, cotton, rum, flour, naval stores, etc. Of these there were exported in 1854 and 1855 in value as follows:

Description of Merchandise.	1854.	1855.
Whalebone	\$1,000	....
Staves and headings.....	11,822	\$10,713
Masts, spars, and naval stores..	4,865	14,44)
Flour	28,791	....
Cotton.....	81,631	109,724
Tobacco.....	133,582	24,124
Rum (from molasses)	27,256	25,579

In exchange for these staples and for miscellaneous cargoes, our ships return home laden with wines, drugs, fruits, feathers, anchovies, oil, sulphur, silks, corals, and rags; of which latter article were imported in 1854, direct from the Sicilies, 3,140,718 lbs., of the value of \$90,424. Under the treaty of 1845 Sicilian and United States vessels are equalized in the ports of the two countries, when laden with the produce and manufactures of the country to which the vessels belong. The direct trade is, therefore, freed from the restrictions and incumbrances with which it was clogged prior to that period, and the commerce between the two countries has in consequence largely increased. The exports from the United States of its staples alone amount now annually to between \$250,000 and \$300,000, more than one half of which is shipped under the United States flag. By a royal decree bearing date 18th December, 1854, the privileges which apply to the direct trade with the Two Sicilies have been equally extended to the indirect trade in favor of those nations which have

commercial treaties with the kingdom of the Sicilies, when they shall have granted like favors to the flag of the Two Sicilies.

Under the operation of the treaty already referred to, and of the liberal privileges conceded by this decree, the commerce of the United States with the Two Sicilies is increasing. The total value of exports from the Sicilies to the United States in 1845 was \$530,000. In 1854 they reached nearly \$1,000,000, and in 1855 they ascended to \$1,718,949. In 1845 the United States exported to the Sicilies its own staples to the amount of \$70,625, against \$246,151 in 1854, and \$207,790 in 1855. The total trade in 1855 was \$2,370,425, against \$1,219,351 in 1854, and \$934,725 in 1845.

The port charges in the Two Sicilies are $3\frac{1}{2}$ cents per ton on equalized vessels, and 32 cents per ton on those non-equalized. Besides the tonnage duty there are sundry minor charges, including custom-house visit, entrance and clearance charges, etc., amounting in the aggregate to \$3 75 per vessel on entrance; and on clearance, including compensation to brokers, \$5 10. The quarantine regulations require a payment of \$5 for obtaining the requisite pratique. Should the vessel be subject to quarantine, the charges are largely augmented. In order to obtain free entrance, it is necessary to exhibit a clean bill of health, signed by the Neapolitan consul at the port of clearance. It would seem, however, that vessels laden with cotton or other "susceptible" merchandise have always to undergo quarantine,* which is exceedingly strict if during the voyage sickness chanced to prevail on board.

The following is a condensed summary of the latest quarantine regulations in force at the different ports of the Two Sicilies. These regulations are revised annually, but the general principles on which they are based remain unaltered:

"Vessels proceeding from New Orleans, or any port of Louisiana, shall be excluded whenever they come unprovided with a certificate signed by the royal consul at the port of departure, attesting that the yellow fever did not exist in that State, either at the period of sailing or twenty days prior to the same.

"The places *supposed* to be infected by yellow fever are the Argentine and Paraguayan republics, Demerara, Peru, Costa Firma, Gulf of Mexico, Mississippi, Great and Little Antilles, and Savannah.

"The places *suspected* of yellow fever are Santa Martha in Columbia, Chili, Guayana (except Demerara), Ohio and Missouri, Vera Cruz, and ports of the United States, except as above."

The certificate of the Sicilian consul is indispensable to be admitted to pratique; but even with such protection the quarantine regulations are oppressive and uncertain, especially if any sickness has occurred on board during the voyage.

Pilotage.—Vessels arriving at Naples are seldom under the necessity of taking pilots, and hence there is no fixed regulation respecting them. Should a pilot, however, be required, one can at all times be found among the fishermen on the coast, with whom the captain must make the best bargain he can.

The principal ports are Naples, situated on a bay of the same name, having a commodious harbor, and good anchorage for any sized vessels to load and discharge cargoes; and in Sicily proper, Palermo and Messina.

The foreign trade of Naples is almost exclusively in possession of English merchants. The returns for 1855 assign two-thirds of this trade to the English flag, and the other third to the Neapolitan and other flags. Some twenty or thirty vessels from the north of Europe arrive annually with stock-fish, crushed sugar, etc., from Holland. England employs annually in the trade with Naples about one hundred and thirty vessels of small size, from one to two hundred tons each, besides a line of steamers, which regularly touch at this port, to and

from Liverpool. The facilities which these steamers furnish for executing orders suitable for the Neapolitan market present the most serious obstacle to a direct trade with the United States. The privilege of the indirect trade, however, lately conceded to the American flag, may tend to increase the commercial intercourse between the two countries.

The imports from Great Britain in 1855 amounted in quantity to 34,900 tons, which at 40s. (\$9 60) per ton gave to British shippers on freight alone the sum of \$335,040, besides 10 per cent. primage. The value of these imports was estimated at £3,000,000, or \$15,000,000.

The exports from Naples to Great Britain were estimated at 15,500 tons, and the value at about \$7,500,000.

Besides the disadvantage already referred to, under which American vessels would have to compete with English in the trade of Naples, the quarantine regulations are such as to render any enterprise in that trade on the part of American shippers uncertain and hazardous. These regulations, as already observed, are revised annually, and provide that, under the most favorable circumstances, a certificate from the Sicilian consul at the port of departure is indispensable to be admitted to free pratique.

A few facts relative to currency and exchange at Messina, communicated to the State Department under date of October 20, 1855, by the United States consul at that port, are subjoined:

"It is customary to draw, for all transactions with the United States, on Paris or London, and occasionally on Marseilles, Hamburg, or Genoa. American coin, gold and silver, is, and has been for some time, at a discount of from 10 to 15 per cent.

"The only kind of Spanish dollar current here is the pillar dollar, and is at an advance of about 4 per cent.

"Exchanges are very unfavorable, and far below the rates of former years. London, 1038 grains per £; Paris and Marseilles, 41½ grains per franc; Lyons, 41½, and Genoa 42 grains per franc; Leghorn, 35½ grains per lire; Amsterdam, 88½ grains per florin; Hamburg, 78 grains per mark-banco.

"The Sicilian ounce is two dollars and a half, or 30 lires, or 600 grains Sicilian currency."

Island of Sicily.—This island has an area of 10,556 square miles, and a population of 2,208,392 inhabitants. Since its annexation to the kingdom of Naples in 1736, it has experienced much of the evils of absenteeism. The revenue, except that portion of it which is paid to the Neapolitan employes who reside on the island, is drained off to be spent in enriching the metropolitan court. In this respect Sicily in some degree resembles Ireland. The resources which might be beneficially expended in making roads and other improvements, indispensable to the proper development of the industry of the island and the growth of its commerce, are squandered in other countries by an absentee nobility.*

Wheat and barley are exported in small quantities. Other chief crops are beans, pulse, maize, rice, olive-oil, oranges, lemons, almonds, and other fruit; potatoes, tobacco, flax, hemp, sumach, liquorice, and manna. In the northeast part of the island silk is produced, and it is woven at Catania; and in the western part 30,000 pipes of wine are annually made, of which about 20,000 are exported from Marsala. Sulphur is also a leading staple of the island of Sicily. It is found in tertiary formations, and its production is annually increasing. From 1838 to 1842 a monopoly in the export of sulphur was granted by the Neapolitan government to a French mercantile firm; but so vigorous was the resistance of the British government, that in 1842 the monopoly was suppressed. Since that period the

* Of the whole revenue raised in Sicily (about \$10,000,000), half the amount is sent direct to Naples, never to return. *** No country exhibits land so highly taxed, nor one in which so little good is extended to the general community.—MACGREGOR.

* See Consular Returns, "Naples, No. 30, December 30, 1853." Part III.

trade in this article has been annually increasing. These sulphur mines have been explored and worked for more than three hundred years, but it was not until chemical science had pointed out the various uses to which sulphur can be applied that its exportation had risen to any great importance. There are now about 150 mines worked in an area of 2700 miles, though the most productive mines are confined to Favara, Sommatrino, Gallizzi, and Riesi.

Mr. Macgregor gives some interesting statistics of the sulphur trade of the island of Sicily, from which it appears that in 1838 the amount on hand was 80,000 quintals; on the 1st August, 1840, it had risen to 680,000 quintals; in 1841 it reached 830,000 quintals; and in 1842 it stood as high as 1,100,000 quintals.

There entered the ports of the island of Sicily in 1843, 1435 vessels of 211,000 tons; of which from the United States there were 9 of 2500 tons; and during the same year there cleared from Sicilian ports 1427 vessels of 256,000 tons; of which from the United States there were 80 vessels, measuring 22,600 tons.

The value of imports and exports during the same year was:

Imports from all foreign countries	\$4,522,400
Exports to " "	6,594,400
Total trade	\$11,116,800
Imports from the United States	\$272,600
Exports to " "	651,000
Total trade with the United States	\$923,600

Vessels belonging to the Two Sicilies are admitted into the ports of the United States on the same terms as American vessels only when laden with the home produce or home manufactures.

COMMERCE AND NAVIGATION OF THE SICILIES WITH FOREIGN COUNTRIES DURING THE YEAR 1854.

Countries.	Imports. France.	Exports. France.	Clearance.	
			Vessels.	Tons.
Austria	5,206,304	488,886	853	59,307
Denmark .....	.....	.....	1	163
Modena .....	.....	.....	3	207
Roman States .....	.....	600,107	57	23,429
Spain	8,734,826	.....	6	848
United States	1,289,419	547,477	17	5,153
France	10,283,453	14,752,017	295	103,763
Great Britain	19,144,604	12,007,584	300	43,430
Greece	1,061,304	79,698	12	1,289
Holland	4,276,207	256,171	14	2,727
Ionian Islands .....	.....	.....	61	3,213
Sweden and Norway	541,000	.....	6	1,625
Russia	26,282,407	275,738	12	3,214
Tuscany	3,023,807	3,839,936	65	5,800
Turkey	2,763,260	136,702	20	5,677
Sardinia	2,460,871	3,006,882	254	36,651
Prussia .....	.....	.....	2	773
Tunis .....	.....	.....	10	1,036
All others	122,609	66,504	.....	.....
Total	80,270,478	36,717,739	2514	297,631

SHIPPING IN 1854.

	Tons.	Vessels.
Continent	10,863	202,318
Two Sicilies	2,031	47,438
Total.....	<u>12,894</u>	<u>249,756</u>

FOREIGN COMMERCE OF THE UNITED STATES WITH SICILY, FROM OCTOBER 1, 1830, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.		Export.	Import.	American.	Foreign.
Sept. 30, 1831.....	\$2,369	....	\$2,369	....	....	....	378	....
1832.....	3,088	....	3,088	\$156,617	....	....	....	432
1833.....	6,123	\$9,940	9,063	165,714	....	....	....	376
1834.....	4,060	....	4,060	254,966	....	....	....	311
1835.....	17,373	10,884	28,257	274,543	....	\$603	1,204	1,228
1836.....	146,183	49,714	195,897	642,090	....	....	1,457	3,143
1837.....	18,620	5,877	24,497	411,959	....	....	1,280	2,105
1838.....	25,532	21,813	47,345	345,362	....	20,600	1,012	1,824
1839.....	192,462	84,607	277,069	592,551	....	....	2,233	2,298
1840.....	303,217	35,923	337,140	649,525	....	500	1,006	3,176
Total...	\$719,027	\$209,758	\$928,785	\$3,493,732	....	\$21,708	8,520	14,898
Sept. 30, 1841.....	\$474,440	\$11,592	\$486,032	\$588,057	....	\$14,300	1,913	3,566
1842.....	237,861	195,707	433,568	539,419	....	654	1,272	3,016
9 mos., 1843*.....	32,563	51,871	84,420	169,664	....	4,705	595	650
June 30, 1844.....	75,024	273,612	354,316	462,773	....	....	1,045	3,956
1845.....	70,625	334,667	405,292	529,493	....	....	445	3,623
1846.....	319,441	298,891	617,832	518,235	....	....	707	4,318
1847.....	56,399	7,213	64,117	550,988	....	....	1,423	649
1848.....	17,754	9,075	26,829	618,029	....	4,526	924	390
1849.....	24,359	4,854	29,213	530,244	....	....	1,853	232
1850.....	50,577	13,024	63,601	822,629	....	22,625	3,826	1,633
Total...	\$1,360,163	\$1,205,181	\$2,565,344	\$5,324,531	....	\$46,511	13,533	21,407
June 30, 1851.....	\$41,743	\$8,193	\$49,936	\$825,924	....	....	2,848	1,916
1852.....	55,649	10,330	66,539	606,541	....	....	6,600	3,427
1853.....	130,337	24,318	155,155	863,351	....	\$20,000	....	....
1854.....	246,151	13,900	260,051	959,300	....	....	3,862	3,713
1855.....	207,790	443,686	651,476	1,718,949	....	4,870	4,509	3,444
1856.....	303,576	75,195	378,771	1,488,526	....	....	1,642	1,621
1857.....	1,093,951	58,969	1,152,920	1,575,953	....	....	5,384	3,119

* Nine months to June 30, and the fiscal year from this time begins July 1.

Principal Port.—Palermo, anciently Panormus, a large city and sea-port, the capital of the noble island of Sicily, on the north coast of which it is situated, the light-house being in lat. $38^{\circ} 8' 15''$ N., long. $13^{\circ} 21' 56''$ E. Population, 170,000. The Bay of Palermo is about five miles in depth, the city being situated on its southwest shore. A fine mole, fully one quarter of a mile in length, having a light-house and battery at its extremity, projecting in a southerly direction from the arsenal into nine or ten fathoms of water, forming a convenient port, capable of containing a great number of vessels. This immense work cost about £1,000,000 sterling in its construction; but the light-house, though a splendid structure, is said to be very ill lighted. There is an inner port, which is reserved for the use of the arsenal. Ships that do not mean to go within the mole may anchor about half a mile from it, in from 16 to 23 fathoms. mole light bear-

ing northwest three-quarters west. A heavy sea sometimes rolls into the bay, but no danger need be apprehended by ships properly found in anchors and chain cables. In going into the bay it is necessary to keep clear of the nets of the tunny fishery, for these are so strong and well moored as to be capable of arresting a ship under sail.

Money.—Since 1818 the coins of Sicily have been the same as those of Naples, their names only differing. The ducat = 3s. 5½d. sterling, is subdivided into 100 bajocchi and 10 piccioli; but accounts are still generally kept in oncie, tarie, and grani: 20 grani = 1 taro; 30 tari = 1 oncia; the oncia = 8 ducats; and 1 carlino of Naples = 1 taro of Sicily. The Spanish dollar is current at 12 tari 8 grani.

Weights.—100 Sicilian pounds of 12 ounces = 70 lbs. avoirdupois = 85·11 lbs. Troy = 31·76 kilog. = 64·23 lbs. of Amsterdam = 65·58 lbs. of Hamburg.

Sierra Leone, an English settlement, near the mouth of the river of the same name, on the west coast of Africa, lat. $8^{\circ} 30' N.$, long. $13^{\circ} 5' W.$ This colony was founded partly as a commercial establishment, but more from motives of humanity. It was intended to consist principally of free blacks, who, being instructed in the Christian religion, and in the arts of Europe, should become, as it were, a focus whence civilization might be diffused among the surrounding tribes. About 1200 free negroes, who, having joined the royal standard in the American war, were obliged, at the termination of that contest, to take refuge in Nova Scotia, were conveyed thither in 1792. To these were afterward added the Maroons from Jamaica; and since the legal abolition of the slave-trade, the negroes taken in the captured vessels, and liberated by the mixed commission courts, have been carried to the colony. The total population of the colony in 1850 amounted to about 55,500, all black or colored, with the exception of about 100 whites.

Success of the Efforts to civilise the Blacks.—Great efforts have been made to introduce order and industrious habits among these persons. We are sorry, however, to be obliged to add that these efforts, though prosecuted at an enormous expense of blood and treasure, have been signally unsuccessful. There is, no doubt, some discrepancy in the accounts of the progress made by the blacks. It is, however, sufficiently clear that it has been very inconsiderable, and we do not think that any other result could be rationally anticipated. Their laziness has been loudly complained of, but without reason. Men are not industrious without a motive; and most of those motives that stimulate all classes in colder climates to engage in laborious employments are unknown to the indolent inhabitants of this burning region, where clothing is of little importance, where sufficient supplies of food may be obtained with comparatively little exertion, and where more than half the necessities and conveniences of Europeans would be positive incumbrances. And had it been otherwise, what progress could a colony be expected to make into which there have been annually imported crowds of liberated negroes; most of whom are barbarians in the lowest stage of civilization?

Influence of the Colony upon the illicit Slave-trade.—As a means of checking the prevalence of the illicit slave-trade, the establishment of a colony at Sierra Leone has been worse than useless. The trade is principally carried on with the countries round the Bight of Biafra and the Bight of Benin, many hundred miles distant from Sierra Leone; and the mortality in the captured ships during their voyage to the latter is often very great. The truth is that this traffic will never be effectually put down otherwise than by the great powers declaring it to be piracy, and treating those engaged in it, wherever and by whomsoever they may be found, as sea robbers or pirates. Such a declaration would be quite conformable to the spirit of the declaration put forth by the Congress of Vienna in 1824.—See SLAVE-TRADE. But the jealousies with respect to the right of visitation and search are so very great, that it is exceedingly doubtful whether the maritime powers will ever be brought to concur in any declaration of the kind now alluded to; unless, however, something of this sort be done, we apprehend there are but slender grounds for supposing that the trade will be speedily suppressed.

Climate of Sierra Leone.—The soil in the vicinity of Sierra Leone seems to be but of indifferent fertility, and the climate is about the most destructive that can be imagined. The mortality among the Africans sent to it seems unusually great, and among the whites it is quite excessive. Much as we desire the improvement of the blacks, we protest against its being attempted by sending our countrymen to certain destruction in this most pestiferous of all pestiferous places. It would seem, too, that it is quite unneces-

sary, and that blacks may be employed to fill the official situations in the colony. But if otherwise, it should be unconditionally abandoned.

Commerce.—Commercially considered, Sierra Leone appears to quite as little advantage as in other points of view. Palm-oil is the great article of export from the west coast of Africa; and by far the largest portion of it is furnished by the coast to the west and south of the Rio Volta, many hundred miles from Sierra Leone. We doubt, indeed, whether the commerce with the latter will ever be of much importance. At all events, we hardly think that it can be expected materially to increase if it be conducted in the way in which it is affirmed that the intercourse with the liberated negroes is at present conducted.—*Reports on Colonial Possessions*, 1851, p. 175. If there be not some mistake or exaggeration in the statement now referred to, nothing can be conceived more disgraceful. Should it, however, be ascertained that an establishment is really required for the advantageous prosecution of the trade to Western Africa, it is abundantly obvious that it should be placed much farther to the south than Sierra Leone. The island of Fernando Po has been suggested for this purpose; but after the dear-bought experience we have already had, it is to be hoped that nothing will be done with respect to it without mature consideration.

ACCOUNT SHOWING THE VALUE OF THE VARIOUS ARTICLES, THE GROWTH, PRODUCE, AND MANUFACTURE OF THE COLONY AND WEST COAST OF AFRICA, EXPORTED FROM SIERRA LEONE DURING EACH OF THE YEARS FROM 1848 TO 1850, INCLUSIVE.

Articles.	1848.	1849.	1850.
Arrow-root.....	£ 478	£ 492	£ 618
Beeswax.....	281	689	1,952
Benni-seed.....	60	130	417
Bar-wood.....	...	16	225
Cam-wood.....	3,292	3,277	4,406
Coffee.....	38	66	2,288
Gun copal.....	250	1,244	1,071
Ground-nuts.....	13,525	7,380	17,867
" oil.....	646	1,991	2,945
Ginger.....	22,032	10,142	11,818
Hides (dry and salted), leopard and goat skins.....	11,491	9,259	10,832
Ivory.....	1,769	3,555	15,886
Ox horns.....	51	...	17
Peppers and Cayenne pepper.....	2,978	2,631	4,721
Palm oil.....	11,855	43,276	24,970
" nuts.....	...	1,694	439
" oil.....	...	...	340
Rice (clean and rough).....	528	...	839
Teak timber.....	26,336	25,452	11,648
Sundries, including curiosities, mats, etc.....	2	27	55
Total.....	95,615	111,830	123,105

The total value of the exports of British produce and manufacture to the west coast of Africa amounted in 1851 to £658,934; but of that amount only £94,546 went to Sierra Leone. The value of the exports from the latter to the United Kingdom during the ten years ending with 1850 amounted to £63,290 a year. The only manufacture that can be said to exist in the colony is the expression of the oil from the ground-nut by means of machinery.—See NUTS, GROUND. In 1850, 122 ships entered the river, of which 27 were from England.

Colonial Expenses.—The pecuniary expenses occasioned to Great Britain by this colony, and the unsuccessful efforts to suppress the foreign slave-trade, have been altogether enormous. Mr. Keith Douglas is reported to have stated in the House of Commons, in July, 1831, that "down to the year 1824 the civil expenses of Sierra Leone amounted to £2,268,000; and that the same expenses had amounted, from 1824 to 1830, to £1,082,000. The naval expenses, from 1807 to 1824, had been £1,630,000. The payments to Spain and Portugal, to induce them to relinquish the slave-trade, amounted to £1,230,000. The expenses on account of captured slaves were £533,092. The expenses incurred on account of the mixed commission courts

were £198,000. Altogether this establishment had cost Great Britain nearly £8,000,000! The prodigality of this expenditure is unmatched, except by its uselessness. It is doubtful whether it has prevented a single African from being dragged into slavery, or conferred the smallest real advantage on Africa. It, however, enabled the kings of Spain and Portugal to turn their mercenary humanity to good account.—For further details with respect to Sierra Leone and the trade of Western Africa, see the *Report of the Select Committee of the House of Commons on the West Coast of Africa*, Sess. 1842, and the *Parl. Paper* for 1851.

The trade between the United States and the whole of Africa is most insignificant in comparison with that between England and simply the western coast; and it is a fact especially deserving of attention, with reference to Liberia, that for some time past, while the importations from England are increasing, from the United States they are diminishing, particularly cotton goods. It is estimated that there are not less than one hundred ships regularly trading between the British ports and the coast of Africa, while a regular line of steamers plies between England and Liberia and other settlements on the coast. In addition, it is now proposed to send a steamer up the Niger River each season for the encouragement of emigrants and the protection of traders; to secure a free port at Fernando Po, by a commercial treaty with Spain, or in some other convenient locality, as an entrepôt for British merchant ships; to maintain the African squadron in its former state of efficiency, and to make Sierra Leone a free port. The following tables show the relative importance of British and American trade with Africa:

THE TRADE OF THE UNITED STATES WITH AFRICA DURING THE NINE YEARS ENDING JUNE 30, 1857.

Years.	Exports.	Imports.	Total.
1849	\$708,411	\$495,742	\$1,204,153
1850	759,266	524,722	1,283,988
1851	1,340,644	1,163,176	2,503,820
1852	1,246,141	1,057,657	2,303,798
1853	1,610,833	1,202,986	2,813,819
1854	1,804,972	1,386,560	3,191,532
1855	1,375,905	1,337,527	2,713,432
1856	1,795,419	1,163,857	2,959,276
1857	2,484,746	1,521,665	4,006,411

The amount of tonnage cleared from the United States was as follows:

Year ending June 30.	Tonnage cleared.	
	American.	Foreign.
1856	18,077	1075
1857	22,000	742

The following returns to Parliament (as published by the London *Shipping and Mercantile Gazette*) show the increase of exports by Great Britain to the west coast of Africa, and of imports from the same coast:

Years.	Exports.	Imports.	Total.
1850	£639,439	£605,958	£1,245,387
1851	654,543	794,810	1,449,353
1852	533,725	707,024	1,240,749
1853	901,402	749,373	1,650,775
1854	758,509	905,634	1,664,143

This is independent of the British colonies of Sierra Leone, the trade of which amounted in 1854 to \$1,421,865, and of the British possessions on the Gold Coast and the River Gambia, amounting to \$1,547,285 more; and of those at the Cape of Good Hope and in South Africa, swelling the amount \$8,383,090 more; making in all an aggregate of over \$23,000,000 in 1854 for the western coast of Africa entire.—See BLACKWOOD'S *Magazine*, xxiii. 63, xli. 693; *Monthly Review*, cxiii. 188; HUNT'S *Merchants' Magazine*, xv. 572; *Edinburgh Review*, iii. 355.

Silk (Lat. *Sericum*, from *Seres*, the supposed ancient name of the Chinese), a fine glossy thread or filament spun by various species of caterpillars or larvae of the *phalena* genus. Of these the *Phalena atlas* produces the greatest quantity; but the *Phalena bombyx* is that commonly employed for this purpose in

Europe. The silk-worm, in its caterpillar state, which may be considered as the first stage of its existence, after acquiring its full growth (about three inches in length), proceeds to inclose itself in an oval-shaped ball or cocoon, which is formed by an exceedingly slender and long filament of fine yellow silk, emitted from the stomach of the insect preparatory to its assuming the shape of the chrysalis or moth. In this latter stage, after emancipating itself from its silken prison, it seeks its mate, which has undergone a similar transformation; and in two or three days afterward, the female having deposited her eggs (from 300 to 500 in number), both insects terminate their existence. According to Reaumur, the *phalena* is not the only insect that affords this material—several species of the *aranea*, or spider, inclose their eggs in very fine silk.

Raw silk is produced by the operation of winding off at the same time several of the balls or cocoons (which are immersed in hot water to soften the natural gum on the filament) on a common reel, thereby forming one smooth even thread. When the skein is dry, it is taken from the reel and made up into hanks; but before it is fit for weaving, and in order to enable it to undergo the process of dyeing without furring up or separating the fibres, it is converted into one of three forms, viz., *singles*, *tram*, or *organzine*.

Singles (a collective noun) is formed of one of the reeled threads being twisted, in order to give it strength and firmness.

Tram is formed of two or more threads twisted together. In this state it is commonly used in weaving, as the *shoot* or *wef*.

Thrown silk is formed of two, three, or more singles, according to the substance required, being twisted together in a contrary direction to that in which the singles of which it is composed are twisted. This process is termed organizing, and the silk so twisted *organzine*. The art of throwing was originally confined to Italy, where it was kept a secret for a long period. Stow says it was known in England since the 5th of Queen Elizabeth, "when it was gained from the strangers;" and in that year (1562) the silk throwsters of the metropolis were united into a fellowship. They were incorporated in the year 1629, but the art continued to be very imperfect in that country until 1719.

Dates of the Introduction of Silk.—Wrought silk was brought from Persia to Greece 325 B.C. Known at Rome in Tiberius's time, when a law passed in the Senate prohibiting the use of plate of massy gold, and also forbidding men to debase themselves by wearing silk, fit only for women. Heliogabalus first wore a garment of silk A.D. 220. Silk was at first of the same value with gold, weight for weight, and was thought to grow in the same manner as cotton on trees. Silk-worms were brought from India to Europe in the 6th century. Charlemagne sent Offa, king of Mercia, a present of two silken vests A.D. 780. The manufacture was encouraged by Roger, king of Sicily, at Palermo, 1130, when the Sicilians not only bred the silk-worms, but spun and weaved the silk. The manufacture spread into Italy and Spain, and also into the south of France, a little before the reign of Francis I., about 1510; and Henry IV. propagated mulberry-trees and silk-worms throughout the kingdom, 1589. In England silk mantles were worn by some noblemen's ladies at a ball at Kenilworth Castle, 1286. Silk was worn by the English clergy in 1534. Manufactured in England in 1604, and broad silk wove from raw silk in 1620. First attempt to introduce the silk culture into the American colonies by James I., year 1622. Brought to perfection by the French refugees in London at Spitalfields, 1688. A silk-throwing mill was made in England, and fixed up at Derby, by Sir Thomas Lombe, merchant of London, modeled from the original mill then in the King of Sardinia's dominions, about 1714.—HAYDN.

Historical Sketch.—The art of rearing silk-worms, of unraveling the threads spun by them, and manufacturing the latter into articles of dress and ornament, seems to have been first practiced by the Chinese. Virgil is the earliest of the Roman writers who has been supposed to allude to the production of silk in China, and the terms he employs show how little was then known at Rome of the real nature of the article:

"Vellerique ut foliis depectant tenuia Seres."—*Georg.* lib. ii. lin. 121.

But it may be doubted whether Virgil do not in this line refer to cotton rather than silk. Pliny, however, has distinctly described the formation of silk by the *bombyx*.—*Hist. Nat.* It is uncertain when it first began to be introduced at Rome; but it was most probably in the age of Pompey and Julius Cæsar—the latter of whom displayed a profusion of silks in some of the magnificent theatrical spectacles with which he sought to conciliate and amuse the people. Owing principally, no doubt, to the great distance of China from Rome, and to the difficulties in the way of the intercourse with that country, which was carried on by land in caravans whose route lay through the Persian empire, and partly, perhaps, to the high price of silk in China, its cost, when it arrived at Rome, was very great; so much so that a given weight of silk was sometimes sold for an equal weight of gold; at first it was only used by a few ladies eminent for their rank and opulence. In the beginning of the reign of Tiberius, a law was passed, *ne vestis serica viros fœdaret*—that no man should disgrace himself by wearing a silken garment.—*TACITUS, Annal.* But the profligate Heliogabalus despised this law, and was the first of the Roman emperors who wore a dress composed wholly of silk (*holosericum*). The example once set, the custom of wearing silk soon became general among the wealthy citizens of Rome, and throughout the provinces. According as the demand for the article increased, efforts were made to import larger quantities; and the price seems to have progressively declined from the reign of Aurelian. That this must have been the case is obvious from the statement of Ammianus Marcellinus, that silk was in his time (anno 370) very generally worn, even by the lowest classes. *Sericum ad usum antehac nobilium, nunc etiam infimorum sine ulla discretione proficiens.*—*Lib. xviii.*

China continued to draw considerable sums from the Roman empire in return for silk, now become indispensable to the Western World, till the 6th century. About the year 550, two Persian monks, who had long resided in China and made themselves acquainted with the mode of rearing the silk-worm, encouraged by the gifts and promises of Justinian, succeeded in carrying the eggs of the insect to Constantinople. Under their direction they were hatched and fed; they lived and labored in a foreign climate; a sufficient number of butterflies was saved to propagate the race, and mulberry-trees were planted to afford nourishment to the rising generations. A new and important branch of industry was thus established in Europe. Experience and reflection gradually corrected the errors of a new attempt; and the Sogdoite ambassadors acknowledged in the succeeding reign that the Romans were not inferior to the natives of China in the education of the insects and the manufacture of silk.—*GIBBON, Decline and Fall.* Greece, particularly the Peloponnesus, was early distinguished by the rearing of silk-worms, and by the skill and success with which the inhabitants of Thebes, Corinth, and Argos carried on the manufacture. Until the 12th century, Greece continued to be the only European country in which these arts were practiced; but the forces of Roger, king of Sicily, having in 1147 sacked Corinth, Athens, and Thebes, carried off large numbers of the inhabitants to Palermo, who introduced the culture of the worm and the manufacture of silk into Sicily. From this island the arts spread into Italy; and Venice, Milan, Florence, Lucca, etc., were

soon after distinguished for their success in raising silk-worms, and for the extent and beauty of their manufactures of silk.—*GIBBON, vol. x. p. 110; Biographie Universelle, art. ROGER II.* The silk manufacture was introduced into France in 1480, Louis XI. having invited workmen from Italy, who established themselves in Tours. The manufacture was not begun at Lyons till about 1520, when Francis I., having got possession of Milan, prevailed on some artisans of the latter city to establish themselves, under his protection, in the former. Nearly at the same period the rearing of silk-worms began to be successfully prosecuted in Provence and other provinces of the south of France. Henry IV. rewarded such of the early manufacturers as had supported and pursued the trade for twelve years with patents of nobility.

One circumstance distinguishes silk from the other three great sources of textile fabrics; viz., the silk is already a continuous filament before it reaches the hands of the manufacturer; whereas cotton, wool, and flax are all short in the fibre; and these fibres have to be combined end to end by spinning. The little silk-worm, intent upon making a warm habitation for himself, wraps or builds around him a cocoon or small egg-shaped hollow envelope, fabricated of one very long and exquisitely-fine filament of silk. This filament the silk growers—whether in Italy, Turkey, China, or India (these being the chief silk-producing countries)—unwind by various ingenious means; and many filaments are then combined into one to form a thread sufficiently strong to form into hanks or skeins. Such silk is called raw silk, and in this state most of our supply is obtained. It thence follows that the twisting and spinning machinery differs from that employed for the other three kinds of fibre mentioned above. The silk is transferred from hanks to reels, round which it is wound. It is twisted, and wound, and doubled, and wound again, and transferred from one machine to another, until there is sufficient thickness to form a thread for weaving or for sewing, and sufficient twist to give it strength.

A document of particular interest has been published, showing the arrivals of raw silk in Great Britain in each of the fifteen years from 1842 to 1856 inclusive. The entire figures are too extended for insertion, but the following abstract embodies the principal points of interest. The most remarkable feature is that, while China sent to Great Britain only 180,124 lbs. in 1842, the supply furnished by her amounted to 4,576,706 lbs. in 1854, and in 1856 was 3,723,693 lbs., notwithstanding the shipment of a large portion of her crop direct to France in consequence of the failure in that country. The next most important imports are those of Egypt. Fifteen years back—namely, in 1842—the quantity thence was 1 lb., and in 1856 it was 2,514,356 lbs. The East Indian supply has gradually declined, the crops in Bengal for the past few years having been unsatisfactory. From France, in 1842, Great Britain obtained 1,156,498 lbs., and in 1856 only 157,559 lbs. So far from having any to spare, the French manufacturers were compelled to draw upon the stocks in other countries. The imports from Italy have been similarly affected. Those from Turkey have also diminished, but this is to be attributed to the French demand. Among the countries that Great Britain has drawn upon are the United States, but the small quantities obtained must have been of Chinese growth. The supplies from Holland and Belgium, it is also assumed, must have come originally either from the Indian Archipelago or France. It appears that the largest importation ever known was in 1854, when the total was 7,535,407 lbs. Last year, however, it was almost as great, and, as prices have advanced in the two years more than 50 per cent., the money value was proportionately beyond all former precedent.

The following is an official summary of the British importations of raw silks for the years 1852-1856:

IMPORTS OF RAW SILKS INTO THE UNITED KINGDOM FOR EACH YEAR, 1832, 1853, 1854, 1855, 1856.

From	1852. Pounds.	1853. Pounds.	1854. Pounds.	1855. Pounds.	1856. Pounds.
Prussia.....	.....	.....	.....	12,000	5,383
Hanse Towns.....	2,023	9,715	1,706	13,351	1,658
Holland.....	271,089	182,297	155,774	95,972	91,915
Belgium.....	7,416	12,121	14,040	10,549	2,544
France.....	172,005	275,160	148,105	189,070	157,559
Sardinia.....	.....	588	.....	.....	689
Tuscany.....	3,819	2,283	610	734	861
Papal Territories.....	8,530	367	4,324	.....	.....
Naples and Sicily.....	26,411	19,264	10,478	10,322	1,550
Austrian Italy.....	773	916	.....	310	1,609
Malta.....	69,949	99,242	189,186	66,950	62,353
Greece.....	875	5,707	.....	499	.....
Turkey Proper.....	570,123	621,461	213,766	153,812	197,062
Syria and Palestine.....	14,464	8,650	13,787	4,907	5,925
Egypt.....	911,408	1,568,308	1,589,746	772,608	2,514,356
British East Indies.....	1,335,486	533,502	696,728	884,004	610,422
China.....	2,418,343	2,838,047	4,576,706	4,436,502	3,723,698
United States.....	.....	2,180	17,607	15,652	4,330
Other ports.....	18,859	916	2,735	500	1,743
Total.....	5,832,551	6,480,724	7,535,407	6,618,852	7,988,672

AN ACCOUNT SHOWING THE QUANTITIES AND DECLARED VALUES OF BRITISH MANUFACTURED SILK GOODS EXPORTED FROM THE UNITED KINGDOM IN THE YEARS 1850, 1851, AND 1852, RESPECTIVELY, AND SPECIFYING THE COUNTRIES TO WHICH THE SAME WERE SENT, AND THE VALUES OF THOSE SENT TO EACH.

Countries to which exported.	1850.	1851.	1852.
Russia.....	£3,579	£7,492	£6,799
Hanseatic Towns.....	125,689	132,733	179,536
Holland.....	48,543	51,445	114,630
Belgium.....	29,887	35,018	41,247
Channel Islands.....	7,007	9,589	14,055
France.....	176,450	160,011	257,555
Portugal, Azores, and Madeira.....	1,163	2,545	11,943
Spain and Canaries.....	9,991	9,049	12,351
Gibraltar.....	3,389	3,741	5,502
Italy.....	45,736	47,030	49,304
Turkey.....	12,801	7,175	6,762
Egypt.....	11,108	9,779	6,496
British South Africa.....	11,945	6,193	13,721
British East Indies.....	11,797	10,021	8,996
British Australia.....	54,376	68,736	117,118
British N. Amer. Colonies.....	102,291	130,161	82,071
British West Indies.....	25,585	29,432	19,071
Foreign West Indies.....	17,249	25,301	28,545
United States.....	446,433	403,265	464,590
Mexico.....	3,923	9,256	2,942
Central America.....	867	2,984	1,693
New Granada, Venezuela, etc.....	3,498	3,670	4,574
Brazil.....	14,235	23,624	24,709
Uruguay.....	2,798	2,838	12,412
Buenos Ayres.....	11,194	4,655	22,606
Chili.....	33,342	29,062	13,732
Peru.....	19,046	24,369	19,193
All other countries.....	15,864	13,775	9,698
Total.....	£1,255,641	£1,326,773	£1,551,866

The silk exported from Canton consists of two leading varieties, known in commerce by the names of Canton and Nankin. The first, which is raised principally in the province of Canton, is divided into five sorts. The Nankin silk, produced in the province of Kiangnan, is divided into two sorts, known in commerce by the names of Tsatiee and Taysaam. It is very superior to the other, and usually fetches more than double its price. East India native silk comes wholly from Bengal. About the year 1760, the East India Company introduced the Italian mode of reeling silk, which was productive of a very great improvement in the quality of the article; but we are not aware that any subsequent improvement has been effected. The silk goods brought from India are not only inferior, in point of quality, to those of Europe, but also to those of China. Turkey silk wholly consisted, some years back, of what is termed long reel and short reel brutia, a rather coarse description, suited to few buyers, and chiefly used in the ribbon trade of Coventry; but of late it has been imported of a very far superior texture and quality, coming successfully into competition with Italian and China silk. The qualities now known as brutia may be classed as follows; viz., long reel brutia, short reel brutia, long reel Mestup (being a finer thread than common brutia), short reel

Mestup, Selè (a finer sort, generally in loose skeins), Demirdask (a superior kind). At Brussa, the seat of the silk trade in Asia Minor, it is now sold by the oke of 400 drams, and not by the teftee of 610 drams, as formerly: the teftee is, however, still used at Constantinople. The plains of Brussa and the adjacent villages produce different qualities, varying considerably in size, color, and quality. The village of Demirdask produces the finest, owing to the care taken by the natives in selecting the best cocoons, and attending carefully to the evenness of the thread throughout the process of reeling; consequently this description commands a high price, and is approved by our throwsters.

The water of this place is considered favorable to the brightness and glossiness of the silk, by which it may be distinguished from that of Brussa. The silk at Brussa is taken by the country people in small parcels to the bechstar or customs, where it pays duty. The proprietor, with a broker, then takes it to the silk bazar, where it is handed round to the different stands and sold to the highest bidder, resembling in this respect the mode of selling the ores in Cornwall to the different smelters.

Thus a person buying several okes at a time, assort as well as he can the different qualities for packing. It is generally bought by speculators for the Constantinople market, and is forwarded to Ghemlek on camels for shipment per steamers to Constantinople, where it finds its way to the Mizam, or some broker's rooms, where it is sold to the different merchants. The finest longs are mostly bought for the French and Russian markets, generally the latter. The long reels are going out of use in this country, as the more modern machinery is not adapted to its use.

The prices of silk at Brussa in September, 1842, were:

1st quality Demirdask ..	\$235 to \$240 per oke of 400 drams.
2d " " " " " "	210 to 215 " " "
1st Selè	190 to 193 " " "
2d Selè	180 to 185 " " "
Long Mestups	165 to " " "
Long Brussas	150 to " " "
Short Brussas	170 to 175 " " "

COSTS AND CHARGES ON SILK BOUGHT AT BRUSSA AND SHIPPED AT CONSTANTINOPLE FOR LONDON.

One case 46 teftees=70 okes 60 drams, at \$216 50..	\$15,167
Packing charges and commission	493
Carriage from Brussa to Constantinople.....	.....
Loss on gold sent to Brussa.....	.....
Bills, lading, and petty expenses.....	\$28 1-7 per
Inward duty, 70 okes 60 drams, at \$18, or ca. }	2,115
and 7,070 thereon	134 per ct.)
Export duty, 70 okes 60 drams, at \$6, and 7,070 thereon .....	.....
Carriage of money, 1 per cent. ....	.....
Constantinople commission, 3,070.....	531
	\$18,241

Ex. 118. £145 -46 at 41, 104 lbs.=16s. 6d.
Discount and charges in London 2s. 3d.

—13s. 9d.

By far the greater part of the raw and thrown silk that comes from France is not the growth of that country, but of Italy; being principally conveyed by the canal of Languedoc and the Garonne to Bordeaux, whence it is shipped for England. So much is this the case, that it appears from the official accounts published by the French government, that while the aggregate quantity of the French and foreign raw and thrown silk exported from France in 1841 amounted to 1,074,144 kilograms, the portion which was of French origin amounted to only 12,294 kilograms!—*Administration des Douanes*, 1841, p. 241.

We have before us an interesting report on the production of silk, submitted to the Academy of Sciences by M. Dumas, to whom was referred a paper on the subject drawn up by M. André Jean, one of the most experienced silk growers, and for some time engaged with the most commendable perseverance and signal success in the improvement of the different varieties of silk-worms. The observations of the learned author of the report are based mainly upon the important fact that the production of cocoons in France has diminished from 26,000,000 of kilograms (about 58,500,000 lbs.) in 1853 to 7,500,000 (about 16,750,000) in 1856. To comprehend in its proper light the full effect of similar diminutions, in view of a continued and constantly increasing consumption, we must inquire what are the limits to which the production of silk extends? The aggregate production of silk in the world may be estimated at a value of at least 1,000,000,000 francs, or nearly \$200,000,000. Of this sum a little over one-third is assigned to Europe, and the balance to Asia.

ANNUAL PRODUCTION OF SILK IN THE WORLD.

	France.
France.....	103,000,000
Italian States.....	281,500,000
Other countries, chiefly Spain.....	24,500,000
Total for Europe.....	414,600,000
China.....	425,000,000
India.....	120,000,000
Japan.....	80,000,000
Persia.....	23,000,000
Countries of Asia.....	64,800,000
Total of Asia.....	702,800,000
Africa.....	1,100,000
Oceania.....	600,000
America.....	500,000
Aggregate total, France.....	1,119,600,000

If these figures are accurate, must we not conclude from them that the aggregate quantity of silk available in commercial movements is exceedingly limited, and that a general uneasiness in the silk markets must result from any failure in the cocoeneries of Italy, where one-fourth of all the silk in the world is produced, or in those even of France, which yield about one-tenth of the whole production? The falling off in the production of cocoons in France, which we have already indicated, would represent a diminution in value of from 100,000,000 of francs to 25,000,000 had the price of cocoons remained the same at both periods—namely, 1853 and 1856. But the movements of commerce have been so powerless in replacing the deficit of 19,000,000 of kilograms (nearly 42,750,000 pounds), that the price has advanced from 4 francs 50 centimes (84 cents) to 8 francs (\$1 19) per kilogram (2·20 lbs.), so that the loss falls equally upon the producer and the consumer.—For the exports of silk from China, see articles CHINA, CANTON, and SHANGHAI.

Silk Manufacture in the United States.—The introduction of silk culture into the North American colonies dates back to the first settlement of Virginia. James I., who was anxious to promote this branch of industry, several times urged the "London Company" to encourage the growth of mulberry-trees, and addressed a letter to them on the subject in 1622, conveying strict injunctions that they should use every exertion for this purpose, and stimulated the colonists to apply themselves diligently and promptly to the breed-

ing of silk-worms, and the establishment of silk works, bestowing their labors rather in producing this rich commodity than to the growth of tobacco—an article to which his majesty had recorded and published his violent aversion. The company thus incited, showed much zeal in their endeavors to accomplish the king's wishes. A considerable number of mulberry-trees was planted; but little silk was produced, owing to difficulties involved by their dissolution soon after. In about the year 1651 the rearing of silk-worms again became a subject of interest in Virginia, and premiums were offered for its encouragement; but it does not appear that the business was ever prosecuted to any extent. The silk culture was introduced into Louisiana in 1718 by the "Company of the West." In the infant settlement of Georgia, in 1732, a piece of ground belonging to government was allotted as a nursery plantation for white mulberry-trees, and the attention of some of the settlers was soon engaged in rearing silk-worms. In 1726 a quantity of raw silk was raised in that colony, which was manufactured into a piece of stuff, and presented to the queen.

In 1749 an act of Parliament was passed for encouraging the growth of silk in Georgia and Carolina, exempting the producer from the payment of duties on importation into London. A bounty was also offered for the production of silk, and a man named Ortolengi, from Italy, was employed to instruct the colonists in the Italian mode of management. A few years before the Revolution considerable quantities of raw material began to be raised, which was said to be equal, in some cases, to the best Piedmont silk, and worked with less waste than the Chinese article.

In Carolina the culture was undertaken by the small farmers. In 1766 the House of Assembly of this province voted the sum of £1000 toward the establishment of a silk filature at Charleston, under the direction of Mr. Gilbert.

In Connecticut, attention was first directed to the rearing of silk-worms in 1760. Dr. Aspinwall, of Mansfield, from motives of patriotism, used his best exertions to introduce this important branch of rural economy. He succeeded in forming extensive nurseries of the mulberry at New Haven, Long Island, Pennsylvania, and other places. Half an ounce of mulberry seeds was sent to each parish in the colony, with such directions as his knowledge of the business enabled him to impart. In 1783 the Legislature of Connecticut passed an act granting a bounty on mulberry-trees and raw silk. It may here be stated to the honor of Connecticut that she is the only State in the Union which has continued the business without suspension, and probably has produced more silk, from the time of her commencement up to the year 1830, than all the other States.

In the year 1769, on the recommendation of Dr. Franklin, through the American Philosophical Society, a filature of raw silk was established in Philadelphia, by private subscription, and placed under the direction of an intelligent and skillful Frenchman, who, it is said, produced samples of reeled silk not inferior in quality to the best from France and Italy. In 1771 the managers purchased 2300 lbs. of cocoons—all the product of Pennsylvania, New Jersey, and Delaware.—The enterprise was interrupted by the Revolution. A similar undertaking was again attempted in Philadelphia in 1830, under the supervision of M. J. D'Homergue, and cocoons were brought in abundance to the establishment from various parts of the country, and so continued for some time afterward; but for want of capital the enterprise failed.

In about the year 1831 the project of rearing silk-worms and establishing filatures of silk was renewed in various parts of the Union, and the subject was deemed to be of so much importance, that it not only attracted the attention of Congress, but afterward received encouragement from the Legislatures of several

States, by bounties offered for all the raw silk produced within their limits for certain periods of time. The business soon began to be prosecuted with extreme ardor, and continued for several years, resulting in the establishment of several nurseries of mulberry-trees, and ending in the downfall or the famous "Morus Multicaulis speculation," in 1845.

The amount of raw silk exported from Georgia in 1750 was 118 lbs.; in 1755, 138 lbs.; in 1760, 558 lbs.; in 1766, more than 20,000 lbs; in 1770, 290 lbs. From South Carolina, in 1772, 455 lbs. In the year 1765, there were raised on Silk Hope Plantation, in South Carolina, 630 lbs. of cocoons; in Mansfield, Connecticut, in 1793, 265 lbs. of raw silk; in 1827, 2430 lbs.; in 1831, 10,000 lbs.; in Connecticut, in 1844, 176,210 lbs.; in the United States, the same year, 896,790 lbs.

A remarkable circumstance is said to have occurred in the silk factory of M. Garibaldi, at Cremona. It is stated that in this factory a quantity of silk-worms, instead of forming the cocoon as usual, actually wove a kind of silk ribbon, of the breadth of an inch and the length of twelve feet.—*Year-Book of Facts*, 1857.

According to the census returns of 1840, the amount of silk cocoons raised in the United States was 61,552 lbs.; of 1850, 10,843 lbs. From the above it is obvious that the production of cocoons has decreased, since 1840, 46,789 lbs.; and since 1844, 882,027 lbs.

PRODUCTION OF RAW SILK IN THE UNITED STATES.

States and Territories.	Silk Cocoons, Lbs.	
	1840.	1850.
Alabama	1,592	167
Arkansas	95	38
Columbia, District of	651	..
Connecticut	17,538	328
Delaware	1,458	..
Florida	124	6
Georgia	2,992	813
Illinois	1,150	47
Indiana	379	337
Iowa .....	..	246
Kentucky	737	1,281
Louisiana	517	29
Maine	211	252
Maryland	2,290	39
Massachusetts	1,741	7
Michigan	266	108
Mississippi	91	0
Missouri	70	186
New Hampshire	419	191
New Jersey	1,966	23
New York	1,735	1,774
North Carolina	3,014	229
Ohio	4,317	1,552
Pennsylvania	7,262	285
Rhode Island	453	..
South Carolina	2,080	123
Tennessee	1,217	1,923
Texas .....	..	22
Vermont	4,286	268
Virginia	3,191	517
Total lbs.	62,647	10,843

IMPORTATIONS, EXPORTATIONS, AND HOME CONSUMPTION OF FOREIGN SILK; FOREIGN IMPORTATIONS, EXPORTATIONS, AND HOME CONSUMPTION OF MANUFACTURES OF SILK, AND TOTAL HOME CONSUMPTION OF IMPORTATIONS OF SILK AND MANUFACTURES OF SILK IN THE UNITED STATES FOR THE LAST SEVENTEEN YEARS, WITH THE YEARLY AVERAGE THEREOF.

Years.	Unmanufactured Silk.			Manufactures of Silk.			Total home Consumption of Imports of Silk and the Manufactures of Silk in the United States.
	Foreign Imports.	Foreign Exports.	Home Consumption.	Foreign Imports.	Foreign Exports.	Home Consumption.	
1840	\$284,295	\$290,239	\$83,906	\$9,601,522	\$1,015,532	\$8,585,990	\$8,619,586
1841	254,102	227,113	26,989	15,300,795	356,264	14,944,531	14,971,520
1842	33,002	420	32,582	9,444,341	265,159	9,179,182	9,211,764
1843	53,350	3,353	49,997	2,662,087	206,777	2,455,310	2,505,307
1844	172,953	7,102	165,851	8,310,711	230,838	8,079,873	8,250,724
1845	208,454	4,362	204,092	9,731,706	246,272	9,485,434	9,680,616
1846	216,647	23,099	192,648	10,667,649	195,753	10,471,896	10,664,544
1847	250,086	8,895	241,701	11,733,371	324,173	11,399,198	11,640,393
1848	354,973	19,538	335,115	14,543,633	340,853	14,202,780	14,537,595
1849	384,585	55,515	329,020	13,701,232	388,572	13,312,660	13,630,680
1850	401,385	7,408	393,977	17,639,624	352,637	17,286,987	17,630,964
1851	456,499	43,856	412,643	25,777,245	590,168	25,277,077	25,680,720
1852	378,747	7,143	371,604	21,651,752	604,855	21,046,897	21,418,591
1853	722,991	282	722,649	30,434,836	607,294	29,827,542	30,550,241
1854	1,099,389	7,966	1,091,423	34,606,831	843,154	33,763,677	34,045,100
1855	751,617	71,122	680,495	24,366,556	902,135	23,464,421	24,144,916
1856	991,234	4,255	986,979	30,226,532	576,513	29,650,019	30,036,998
Yearly average....	\$409,655	\$40,728	\$363,927	\$17,092,374	\$468,644	\$16,624,330	\$16,993,257

The following is the comparative total receipts of foreign silk goods at all the ports of the United States during the years 1854, 1855, 1856:

	1854.	1855.	1856.
Raw silk	\$1,085,261	\$742,251	\$991,234
Silk piece goods	25,296,519	20,069,957	25,200,651
Hosiery and articles made on frames	1,001,299	457,093	611,298
Sewing silk	332,301	189,220	250,138
Silks, tamboured or embroidered	1,182,299	800,000	1,500,000
Silk hats and bonnets	106,139	110,586	102,827
Silk floss	14,075	9,366	16,498
Holding cloths	43,565	56,984	70,146
Silk and worsted goods	1,594,058	1,133,839	1,335,247
Silks unspecified	6,728,406	3,480,716	3,974,974
Total imp. silks....	\$37,490,205	\$27,052,012	\$54,053,013

By the British tariff, knubs or husks of silk and

waste silk, raw and thrown silk, dyed, single or tram silk, dyed organzine or crape silk, may be imported duty free; manufactures of silk generally 15 per cent. *ad valorem*.

The following table exhibits the population, consumption of imported silk, and the allotment per capita thereof; consumption of imported manufactures of silk, and the per capita thereof, and the total home consumption of imports of silk and manufactures of silk in the United States, with the allotment per capita thereof for the years 1840, 1850, and 1855; also, the production of silk in the United States, and the allotment per capita thereof, and the total consumption of foreign and domestic silk and foreign manufactures of silk in the United States, and the allotment per capita thereof, for the years 1840 and 1850:

United States.	1840.	1850.	1855.
Population	17,069,433	23,101,876	27,135,517
Consumption of imported raw silk	\$33,996 00	\$393,977 00	\$650,495 00
Allotment per capita thereof	20	1 67	2 50
Consumption of imported manufactures of silk	8,585,990 03	17,286,987 00	23,464,421 00
Allotment per capita thereof	50 50	74 46	86 81
Home consumption of imported raw and manufactured silk	\$,619,986 00	17,680,964 00	24,144,916 00
Allotment per capita thereof	50 50	76 15	83 81
Production of silk in the United States	61,633 00	10,843 00	(*)
Allotment per capita thereof	36	06	..
Total consumption of silk	\$,681,639 00	17,691,807 00	..
Allotment per capita thereof	59 56	76 20	..

* The census of 1850 does not furnish the manufactures of silk in the United States.

IMPORTS OF SILK INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Piece Goods.	Hosiery and articles made on Frames.	Sewing Silk.	Hats and Bonnets.	Manufactures not specified.	Floss.	Raw.	Bolting Cloths.
Danish West Indies	\$20							
Hamburg	108,380	\$23,024	\$105		\$54,174	\$762	\$105	
Bremen	1,192,226	64,886	3,463	\$643	374,861	846	2,052	\$3,993
Holland	97		10		72			
Belgium	104,170	3,979		52	37,414			
England	7,895,439	503,130	166,620	19,594	2,477,070	26,954	514,437	16,710
Scotland	10,641	3,540	194	319	21,837			
Canada	723		5	12	1,015			
British West Indies	24							
British East Indies	6,758				5,600			
France on the Atlantic	12,062,303	234,619	31,601	127,536	1,434,167	1,769	1,213	36,959
France on the Mediterranean	4			1,259	69			
Spain on the Atlantic	1,754							
Spain on the Mediterranean	1,164		74					
Philippine Islands	49				124			
Cuba	1,473		569		340			
Sardinia	831							
Tuscany	166		11		594			
Two Sicilies			135					
Austria					15			
Turkey in Asia					154			
Egypt					6			
New Granada	114,718	1,097	492	1,777	31,943			
Brazil	18					73		
Ecuador					1			
China	534,407		8,441		3,076	208	435,927	
Total.	\$22,067,369	\$839,299	\$211,723	\$151,192	\$4,442,522	\$30,612	\$953,734	\$57,602

FOREIGN EXPORTS OF SILK FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Piece Goods.	Hosiery and articles made on Frames.	Sewing Silk.	Hats and Bonnets.	Manufactures not specified.	Floss.	Raw.	Silk and Worsted Piece Goods.
Danish West Indies	\$565							
Hamburg	1,525							
Bremen							\$1000	
Dutch West Indies	1,185							
England	226				\$3,486			
Canada	210		\$15		36,914			
British N. Amer. Possessions	3,136				2,787			
British Honduras	2,123							
France on the Atlantic	1,000				338		3163	
Cuba	1,815	\$444						
Porto Rico	505							
Cape de Verd Islands				\$67				
Azores	344							
Sardinia	100							
Ports in Africa	650							
Hayti	2,260							
Mexico	27,173	1307	6061	663	6,624	\$205		\$1169
Central Republic	2,136							
New Granada	13,381		59					
Venezuela	204				983			
Uruguay, or Cisplatine Rep.					1,400			
Chili	28,475				125			
Peru					2,423			
Sandwich Islands	3,657				2,255			
China	433							
Total.	\$91,159	\$1751	\$6135	\$732	\$57,204	\$205	\$4163	\$1169

—See *North Amer. Rev.*, xxvii. 438 (WALLENSTEIN); *Amer. Quart.*, x. 385; *Westm. Rev.*, xvi. 425, xvii. 241, xviii. 1, 228; *De Bow's Rev.*, v. 324, 411; *Edinb. Rev.*, xliii. 76; *BLACKWOOD'S Mag.*, xviii. 736, xxv. 685.

Silk-cotton. A beautiful silky kind of cotton is obtained from the *Bombax* and other trees; it is short and remarkably elastic, and would be very largely used were it not fragile and tender. The Hindoos spin it into a loose, coarse, warm kind of cloth. In Europe it has not yet been much employed; but in America a method has been discovered of applying it as a covering for so-called silk hats, for which it is said to be admirably adapted. As there is an almost boundless supply of the trees yielding these delicate fibres, there may here be a great manufacture in the future.

Silver (Ger. *Silber*; Du. *Zilver*; Da. *Solv*, Swed. *Silfver*; Fr. *Argent*; It. *Argento*; Sp. *Plata*; Port. *Prata*; Russ. *Serebro*; Pol. *Srebro*; Lat. *Argentum*; Gr. *ἀργυρος*; Arab. *Fazzeek*), a metal of a fine white color, without either taste or smell; being in point of brilliancy inferior to none of the metallic bodies, if we except polished steel. It is softer than copper, but harder than gold. When melted its specific gravity is 10.474; when hammered, 10.51. In malleability it is inferior to none of the metals, if we except gold. It may be beaten out into leaves only $\frac{1}{100,000}$ of an inch thick. Its ductility is equally remarkable: it may be drawn

out into wire much finer than a human hair; so fine, indeed, that a single grain of silver may be extended about 400 feet in length. Its tenacity is such, that a wire of silver 0.078 inch in diameter is capable of supporting a weight of 187.13 lbs. avoirdupois without breaking. Silver is easily alloyed with copper by fusion. The compound is harder and more sonorous than silver, and retains its white color even when the proportion of copper exceeds one half. The hardness is at a maximum when the copper amounts to one-fifth of the silver. The standard or sterling silver of Britain, of which coin is made, is a compound of $12\frac{1}{2}$ parts silver and 1 copper. Its specific gravity is 10.2. The specific gravity of Paris standard silver, composed of 137 parts silver and 7 copper, is 10.175. The French silver coin during the old government was not nearly so fine, being composed of 261 parts silver and 27 copper, or $9\frac{3}{4}$ parts silver to 1 part copper. The Austrian silver coin contains $\frac{13}{83}$ of copper. The silver coin of the ancients was nearly pure, and appears not to have been mixed with alloy.—*THOMSON'S Chemistry*.

The most productive silver mines are in America, particularly in Mexico and Peru. There are also silver mines in Hungary, Saxony, Spain, and other parts of Europe, and in Asiatic Russia.—See **PRECIOUS METALS**.

Besides being used as a coin, or money, silver is ex-

tensively employed in the arts. The value of the silver plate annually manufactured is very considerable. Large quantities are also used in plating. Silver exists in most parts of the world, and is found mixed with other ores in various mines in Great Britain. The silver mines of South America are far the richest. A mine was discovered in the district of La Paz in 1660, which was so rich that the silver of it was often cut with a chisel. In 1749 one mass of silver, weighing 370 lbs., was sent to Spain. From a mine in Norway a piece of silver was dug, and sent to the Royal Museum at Copenhagen, weighing 560 lbs., and worth £1680. In England silver plate and vessels were first used by Wilfrid, a Northumberland bishop, a lofty and ambitious man, A.D. 709.—*TYRELL'S Hist. of England.* Silver knives, spoons, and cups were great luxuries in 1800.

Silver Coin. Silver was first coined by the Lydians, some say; others, by Phidon of Argos, 869 B.C. At Rome it was first coined by Fabius Pictor, 269 B.C. Used in Britain 25 B.C. The Saxons coined silver pennies, which were 22½ grains weight. In 1302 the penny was yet the largest silver coin in England.—*See SHILLINGS, etc., and COIN.*

The scarcity of silver in Western Europe, including Great Britain, and in this country, has given rise to the question, "Where does the silver go?" In connection with this question, we make the following extract from a paper read by Prof. R. H. Walsh, of the Dublin University:

At the time when Pliny termed it the sink of the precious metals, silver was a favorite article of export to the East. It has continued so since, but the trade of late has assumed an extraordinary magnitude. In the five years prior to 1856 over \$110,000,000 worth of silver have been exported to the East through England alone, and from other countries a similar movement has been in operation. The export in 1825 was \$32,000,000, and this year (1856) it is proceeding at the rate of over \$45,000,000 per annum, judging from the returns that have been published for the first four months. Unlike the old movement, the present can not be permanent. The former was seldom more than might be accounted for as the distribution of silver to some of its chief consumers—the nations of the East—according as new supplies were raised elsewhere. It was, in fact, the ordinary movement from the producer to the consumer. Humboldt estimated the annual production of silver in Mexico at 1,184,000 lbs., or about \$25,000,000.

But now silver goes faster to the East than it is produced throughout the world. Hence the process can not be permanent, but must come to an end as soon as the redistribution of the old stock has been effected; for the annual production of silver is only about \$40,000,000; and since the export to the East through England alone is at the rate of over \$45,000,000, it follows that it can not be the new supplies of silver which meet that demand and all others for the same metal, but that there must be some auxiliary fund to be drawn upon. Such a fund is furnished by a cessation in the demand for silver in several countries which before employed it most largely, but now use gold instead. Silver, which used to be coined in France and the United States at an average rate of \$20,000,000 per annum, is now little employed, while much of the old coin of that metal is melted down and exported. In France, it is said that in one year (1853) so much as \$60,000,000 were disposed of in this manner, and that the operation has been since proceeding at a still greater rate. In Mexico there are eight or nine mints, one of which is national, having one general law of coinage, but independent of each other, and subject to no general control. There are some characteristic differences in respect to grades of fineness and accuracy, but they seem not sufficient to call for a distinction, as the only external means of identifying is in the mint mark.

SILVER OF DOMESTIC PRODUCTION, INCLUDING SILVER PARTED FROM CALIFORNIA GOLD, DEPOSITED AT THE MINT OF THE UNITED STATES, ITS BRANCHES, AND THE ASSAY OFFICE, NEW YORK, FROM JANUARY, 1841, TO JUNE 30, 1857 (THAT FOR 1857 BEING SIX MONTHS ONLY, TO JUNE 30).

Years.	Value.	Years.	Value.
1841.....	\$4,300	1850.....	\$261,253
1842.....	6,453	1851.....	389,471
1843.....	8,640	1852.....	404,404
1844.....	30,847	1853.....	417,270
1845.....	4,769	1854.....	328,190
1846.....	3,066	1855.....	333,053
1847.....	6,407	1856.....	321,938
1848.....	6,191	1857.....	127,256
1849.....	59,112	Total.....	\$2,700,728

STATEMENT OF AMOUNT OF SILVER COINED AT THE MINT OF THE UNITED STATES, AND THE BRANCH MINTS AT SAN FRANCISCO AND NEW ORLEANS, UNDER THE ACT OF FEBRUARY 21, 1853 (SIX MONTHS ONLY, 1857).

Years.	Mint of the United States, Philadelphia.	Branch Mint, San Francisco.	Branch Mint, New Orleans.	Total.
1853...	\$7,517,161	....	\$1,187,000	\$8,604,161
1854...	5,373,270	....	3,246,000	8,619,270
1855...	1,419,170	\$164,075	1,918,000	3,501,245
1856...	3,214,249	177,000	1,744,000	5,135,249
1857...	1,437,000	50,000	....	1,487,000
Total.	\$18,950,841	\$391,075	\$8,045,000	\$27,386,916

Silver Mines of Mexico.—It is not generally known in this country that the silver mines of Mexico, which yielded to the Spaniards, between the conquest by Cortez and their expulsion by the Mexicans in 1827, \$2,028,000,000, as shown by the records of the Mints, have since that period steadily and rapidly increased their product, until from an annual yield of about \$20,000,000 it has risen, according to some authorities, to upward of \$40,000,000 in 1856. We have no official data upon which to affirm or deny this. This vast product is from the working of a very small number of mines, while that portion of Mexico north of latitude 24°, and on our own frontier, which, according to Baron Humboldt and others, contains the richest veins—often beginning near the surface, and above water-level, and sometimes yielding vast quantities of pure native silver—have lain for many years entirely unworked and neglected. This has been in consequence of the inability of the few Mexicans scattered over those regions to cope with the wild Apache and Comanche Indians, who have held free scope there until within a few years past. They are now kept out from the states near the lower part of the Rio Grande by the filling up of the country, and by the vicinity of our newly-established military posts. Up to this time the only foreigners who have availed themselves of the opportunities of amassing fortunes from these mines are the English, and a few Germans; and they have confined themselves principally to the poorer veins of the thickly-settled Central and Southern parts of Mexico. But they are now meeting with the rewards of their enterprise.

Recently, several companies have been formed in the United States for working mines in Northern Mexico and Arizona. One of these is composed, in part, of officers of our army, who have seen and examined the localities, and some of whom have resigned their commissions for the purpose of devoting their time to the opening of these mines. Those in Arizona are so far distant, and in a country so uncultivated and so beset by Indians, that it may be the work of time and of much expense to overcome these obstacles. But that American enterprise will finally overcome them none can doubt. On the Lower Rio Grande, however, in the state of Nuevo Leon, within forty-five miles of steamboat navigation, and but forty-five miles from the Texas line, and but four days' sail from New Orleans, are some of the richest mines in the Republic of Mexico. One of these is being reopened by a very strong New York company, called the Valliello, and with good prospects of large returns.—*Letter from New Mexico.* See articles MEXICO, PRECIOUS METALS, and COINS for more extended information in regard to the production of silver.

The product of silver at different periods of the present century is estimated as follows:

	1800.	1850.	1856.
America.....	\$32,891,000	\$29,120,000	\$30,500,000
Europe.....	4,000,000	7,280,000	8,000,000
Asia.....	.....	4,100,000	6,000,000
Africa.....	400,000	.....	.....
Total.....	\$37,291,000	\$40,500,000	\$48,500,000

In regard to the production of silver in Mexico, it appears that the amount of coinage in that country in 1851 was \$23,166,000, of which \$2,004,000 was in silver. From the year 1690 to 1800 the production of the gold and silver mines of Mexico is estimated at \$1,354,000,000, and from 1800 to 1856 at \$160,000,000, as the production of the silver mines alone.

Singapore, an island and British settlement at the eastern extremity of the Straits of Malacca, the town being in lat. $1^{\circ} 17' 22''$ N., long. $103^{\circ} 51' 45''$ E. The island is of an elliptical form, about 27 miles in its greatest length, and 11 in breadth, containing an estimated area of 275 square miles. But the whole British settlement embraces a circumference of above 120 miles; in which are included about 50 desert islets, and the seas and straits within 10 miles of the coast of the principal island. The latter is separated from the main land by a strait of the same name, of small breadth throughout, and scarcely, indeed, a quarter of a mile wide in its narrowest part, which, in the early period of European navigation, was the thoroughfare between India and China. But the grand commercial highway between the eastern and western portions of maritime Asia now passes along the south side of the island, on which the town is built, between it and a chain of desert islands about 9 miles distant; the safest and most convenient channel being so near to the island that ships in passing and repassing come close to the roads. The town is wholly indebted for its rapid rise and growing importance to its position on this strait. This has rendered it not merely a convenient entrepôt for the trade between the Western World and India on the one hand, and China on the other, but also for that between the former and the Eastern Archipelago, the Philippines, etc. It is situated on a river, or rather salt creek, navigable by lighters about three quarters of a mile from the sea. Ships lie in the roads, or open harbor, at the distance of from 1 to 2 miles from town, according to their draught of water. The assistance of a number of convenient lighters, which are always in readiness, enables them to load or unload, with scarcely any interruption, throughout the year. The creek is accessible to the lighters, and the goods are taken in and discharged at convenient quays, at the doors of the principal warehouses.

The climate of Singapore, though hot, is healthy. Fahrenheit's thermometer ranges from 71° to 89° . Being only about 80 miles from the equator, there is, of course, very little variety in the seasons. There is neither summer nor winter; and even the periodical rains are short, and not very well marked—moderate showers of rain falling for about 150 days each year. The settlement of Singapore was formed in February, 1819, and its sovereignty and property, in their present extent, confirmed to the British government in 1825, by a convention with the King of the Netherlands, and a treaty with the Malay princes to whom it belonged. Previously to its being taken possession of by the English, it had been inhabited for about eight years by a colony of Malays, half fishermen and half pirates. When the first census was taken in January, 1824, the population was found to amount to 10,683. In 1828 it had increased to 15,834, in both cases exclusive of troops, camp followers, Indian convicts, and a floating population of about 3000. In 1837 it amounted to 29,984, of whom 13,749 were Chinese settlers, and 9132 Malays, the Europeans being but few in number; and at present (1853) the population exceeds 50,000, of whom about half are Chinese.

The principal merchants and agents are Englishmen, of whom also there are a few shop-keepers, auctioneers, etc. There are also some respectable Chinese merchants; and the bulk of the shop-keepers, with the most valuable part of the laboring population, consist of Chinese. About 5000 adult males arrive annually from China by the junks, about 1000 of whom remain at Singapore, the rest dispersing themselves among the neighboring Dutch, English, and Malay settlements. The boatmen are chiefly natives of the Coromandel coast; and the Malays employ themselves as fishermen, in cutting timber, and in supplying the settlement with the rude produce of the neighborhood. There are good daily markets, open at all hours, and well supplied with vegetables, fruits, grain, fish, pork, and green turtle—the latter the cheapest animal food that can be procured. There are no export or import duties, nor anchorage, harbor, light-house dues, or any fees; but a register is kept of all exports and imports. Reports must be made to the master attendant by the masters of vessels, and invoices delivered to the superintendent of imports and exports. Though there are neither duties on imports or exports, nor on the ships frequenting the port, the revenue of Singapore amounted in 1842–43 to 509,000 rupees, while its expenditure, civil and military, amounted to only 494,029 rupees.

United States Consular Returns from Singapore, Jan. 1, 1855.—The commercial intercourse of the United States with this consular district is governed partly by general acts of the Parliament of Great Britain, and partly by special legislation of the East India Company, through the governor and council at Calcutta. The present port regulations are supposed to be fixed, being for an indefinite period. Singapore is a free port, and the privileges permitted to commerce, as well as the restrictions imposed on it, are applicable, without distinction of flag, to all nations alike. There are no other port charges than the Pedra Branca or Straits light dues, which are three cents per registered ton on merchant vessels. National vessels of all countries are exempt from this tax. The transshipment of goods to any other port in the East India Company's possession, or to any foreign port, is freely permitted to vessels of the United States, but without any special privileges or restrictions. The moneys, weights, and measures known and in common use at Singapore, are neither those of the mother country nor those made use of in the continental possessions of the East India Company. Merchants keep their accounts in Spanish dollars, divided into one hundred parts, called cents, precisely as in our federal currency. Fractional parts of this cent are also coined, and are much in use; these are the half cent and the quarter cent, the latter being called a *pie*, or *pice*. The post-office, however, and all other offices of the British East Indian government, keep accounts only in *rupees*, *annas*, and *pice*.

Moneys.—4 pice make 1 cent; $2\frac{1}{2}$ cents make 1 anna; 16 annas make 1 company's rupee (marked R); 100,000 rupees make 1 lac; 100 lacs make 1 crore. The company's rupee, which is here meant, is valued at 45 cents at Calcutta, while here it is now current at only 42 cents. Besides this coin, there is the old Sica rupee (now nearly obsolete), worth here 45 cents, and the Java rupee, which is just now fluctuating at 35 to 36 cents.

Weights.—Measures of capacity are rarely used, and then only with certain articles, such as tobacco; even oils and other fluids being sold by weight. The denominations of the weights used in Singapore are taken both from the Malays and the Chinese. In naming and reducing them to the United standard value, I omit all those which are not employed commercially with and by foreign residents:

- 16 taels make 1 catty. (The catty is 1 lb. 5 oz. $5\frac{1}{2}$ grs. avoirdupois, or 11 lb.)
- 100 catties make 1 Chinese picul marked (Pl. or PLS.)=138 $\frac{1}{2}$ lbs. avoirdupois.
- 2 Malay piculs make 1 char.
- 40 Chinese piculs make 1 koyan (or coyan).

The Malay catty weighs \$24 Spanish, and the Chinese catty weighs \$22½ Spanish; hence 15 catties Malay=16 catties Chinese. By the Malay, or greater picul, merchants purchase pepper, tin, etc., from the native vessels, but sell by the Chinese or Bazar picul of 133½ lbs. avoidupois. Rice is sold by the koyan of 40 pls.; salt by the same measure, but weighs about 52 piculs; gold and silver thread by a particular catty of \$36 weight; gold dust by the bunkal, which weighs \$2=832 grs. Troy; Java tobacco is sold by the corgé of 40 baskets; India piece goods by the corgé of 20 pieces; wheat and grain by the bag, containing 2 Bengal maunds (the maund is 61½ catties).

Freight.—The rates at which ships are freighted or chartered depend on the demand for tonnage and the supply; on the kind of cargo to be transported, and on the sailing qualities of the vessels. These vary so greatly that it is impossible to give them even approximately. At the present time, for miscellaneous Straits' produce, shippers are paying \$18 @ \$20 per ton of 50 feet to New York or Boston.

Commissions.—While the trading ships of all other nations pay the uniform commissions of 10 per cent. (as established by the Singapore Chamber of Commerce), which include expenses of every sort for purchasing or selling, a special exception is made for what is called the "American trade," meaning that of the United States. The established charges on this are: Commissions on sales of goods or purchase of produce, free of risk, either in sales or on advances on produce, 2½ per cent. (Both of these are guaranteed for an extra 2½ per cent., or 5 per cent. in all.) On negotiating bills of exchange, 1 per cent. Other business on the usual terms. Interest on all moneys advanced is at the rate of 12 per cent. per annum, but on disbursements on account of ships while in port, 5 per cent. Added to these expenses are boat and cooly hire and warehousing, the charges for which differ widely, being governed by circumstances.

The imports from the United States, in comparison with the exports thither, are of trifling amount. I therefore state the modes and terms of purchase, as well as those of sale. Sales of imports are effected in the usual manner by private arrangement with the buyer, and sometimes also by public auction. The terms are, cash down.

Purchase of Cargo.—This is done by private contract (never at public sales) by the house to which the master of the vessel is consigned; the said house buying the goods from either the native or from the Chinese dealers, who are what is commercially styled the "first hands."

Sinhara. The sinhara, or water-nut (Trapa?), is a native of the Cashmere, but grows abundantly in the lakes near the capital, especially in the Wurler lake, and yields an average return of 10,000,000 lbs. of nuts a year. They are scooped up from the bottom of the lake in small nets, and afford employment to the fishermen for several months. These nuts constitute almost the only food of at least 30,000 persons for five months in the year. When extracted from the shell, they are eaten raw, boiled, roasted, fried, or dressed in various ways, after being reduced to flour.

Sinope, a town of Asia Minor, on the south coast of the Black Sea, lat. 42° 2' 30" N., long. 35° 9' 45" E. Population uncertain, probably from 8000 to 10,000. Sinope is situated on a low narrow isthmus, connecting the high rocky promontory of Ada with the main land. Its port, which is the best on this coast, on the south side of the town, is protected from the north and northeast gales by the isthmus and promontory already mentioned. Ships anchor within a third of a mile of the town, in from 13 to 17 fathoms; or nearer to it, in from 5 to 7 fathoms. There is a roadstead on the north side of the isthmus, but it is open and exposed. Sinope is one of the principal stations of the Turkish fleet; and there are docks and arsenals for its

accommodation and outfit. Its exports are inconsiderable, the principal being timber, salt, cordage, fish oil, etc. In ancient times Sinope was a city of great wealth, magnitude, and importance. It was the birthplace of Diogenes the Cynic; and Mithridates made it the capital of his dominions. After its conquest by the Romans under Lucullus, it became the seat of a colony, and continued for a lengthened period to enjoy a good deal of consideration. Should civilization and the arts once more revive in the ancient Pontus, and the other countries to the south of the Black Sea, the excellence of its port could not fail to restore to Sinope some portion of its former grandeur. Even now a considerable intercourse is beginning to take place with the countries east and south of Sinope. Diarbeker on the Tigris, in lat. 37° 54' N., long. 39° 58' 45" E., is one of the principal seats of Eastern commerce; and caravans set out regularly from it for Aleppo, Smyrna, and Constantinople: but any one who consults a map of Asia Minor, and of the contiguous countries, will see at once that Trebizond and the neighboring ports on the southeast coast of the Black Sea are the natural channels through which Armenia, Koordistan, and the northwestern parts of Persia may best maintain an intercourse with Europe. For further particulars as to Sinope, see *TOURNEFORT, Voyage du Levant*, and *NORIE'S Sailing Directions for the Black Sea*.

Skins. The term is applied in commercial language to the skins of those animals—as deer, goats, kids, lambs, etc.—which, when prepared, are used in the lighter works of book-binding, the manufacture of gloves, parchment, etc.; while the term hides is applied to the skins of the ox, horse, etc., which, when tanned, are used in the manufacture of shoes, harness, and other heavy and strong articles. Lamb and kid skins are principally used in the glove manufacture; 120 skins being supposed to produce, at an average, 18 dozen pairs of gloves.—See *HIDES and LEATHER*.

Slate (Roof) (Ger. *Schiefer*; Fr. *Ardoise*; It. *Lavagna*, *Lastra*; Sp. *Pizarra*), a fossil or compact stone (*argillaceous schistus*) that may be readily split into even, smooth, thin laminae. There are several varieties of this valuable mineral, the prevailing colors being gray, blue, and brown. But the tints are very various; and slates are often marked with streaks of a different color from the ground. Slate is principally used in the covering of houses, for which purpose it is infinitely superior to thatch or tiles, and is far less expensive than lead. Good roofing slate should not absorb water; and it should be so compact as not to be decomposed by the action of the atmosphere. When properly selected, roof slates are of almost perpetual duration; but those which are spongy and imbibe moisture speedily get covered with moss, and require, at no very distant period, to be renewed.

Slaves and Slave-trade. A slave, in the ordinary sense of the term, is an individual at the absolute disposal of another, who has a right to employ and treat him as he pleases. But the state of slavery is susceptible of innumerable modifications; and it has been usual, in most countries where it has been long established, to limit in various ways the power of the master over the slave. The *slave-trade* is, of course, the business of those who deal in slaves. A great deal of learning has been employed in tracing the history of slavery, though the subject is still far from exhausted. It seems most probable that it originally grew out of a state of war. In rude, uncivilized communities, where the passion of revenge acquires a strength unknown in more advanced states of society, captives taken in war are adjudged to belong to the victors, who may either put them to the sword or reduce them to a state of servitude. In antiquity the ideas of war and slavery were inseparable. Probably in very remote ages prisoners were most commonly put to death; but the selfish gradually predominated over the more passionate feelings, and for many ages it was usual to reduce them

to the condition of slaves; being either sold by their captors to others, or employed by them as they might think fit. The practice of reducing men to a state of slavery, having once begun, was extended in various ways. The progeny of slaves or of women in a state of slavery were slaves; men born free might sell themselves as slaves; and parents had authority, in Judea and Rome, to dispose of their children for the same purpose.—MICHAELIS on the *Laws of Moses*, ii. 163, Engl. ed. It was the law of Rome, and of most other ancient states, that the persons of debtors who had contracted obligations which they could not discharge should become the property of their creditors. “*Servi*,” says Justinian, “*autem aut nascuntur aut fiunt: nascuntur ex ancillis nostris, fiunt aut jure gentium, id est ex captivitate; aut jure civili, cum liber homo major viginti annos ad pretium participandum sese vendundari passus est.*” —*Instit.*, lib. i. tit. 8.

The African slave-trade was commenced by the Portuguese in 1442. It was, however, but of trifling extent till the commencement of the 16th century. In consequence, however, of the rapid destruction of the Indians employed in the mines of St. Domingo or Hayti, Charles V. authorized, in 1517, the introduction into the island of African slaves from the establishments of the Portuguese on the coast of Guinea. The concurrence of the emperor was obtained by the intercession of the celebrated Las Casas, bishop of Chiapa, who labored to protect the Indians by enslaving the Africans; though, as the latter were certainly more vigorous and capable of bearing fatigue than the former, the measure was not in reality so contradictory as it would at first sight appear to be.—ROBERTSON'S *Hist. America*. The importation of negroes into the West Indies and America, having once begun, gradually increased, until the traffic became of great extent and importance. Sir John Hawkins was the first Englishman who engaged in it; and such was the ardor with which our countrymen followed his example, that they exported from Africa more than 300,000 slaves between the years 1680 and 1700; and between 1700 and 1786, 610,000 Africans were imported into Jamaica only; to which adding the imports into the other islands and the continental colonies, and those who died on their passage, the number carried from Africa will appear immense.—BRYAN EDWARDS, *Hist. West Indies*. The importations by other nations, particularly the French and Portuguese, were also very great. We may, however, shortly observe that there can be no doubt that slavery has always existed in Africa; and it is sufficiently well known that previously to the commencement of the traffic such of the captives taken in war as could not be advantageously employed as slaves were most commonly put to death—cannibalism, the exposure of infants, and human sacrifices being then also very frequent. The slave-trade, by opening a ready and profitable market for slaves, assisted in putting an end to

these enormities, though it be, at the same time, true that the desire of profiting by their sale has tempted the petty princes to make war on each other for the chance of making captives, and has given a stimulus to man-stealing and other atrocities.—*Geog. Dict.*, art. AFRICA. But those who inquire dispassionately into the subject will probably come to the conclusion that, instead of being injured, the slaves have gained by being carried from the Old to the New World. Speaking generally, the negroes are in the lowest state of abasement, possessing merely the rudiments of the most indispensable arts, a prey to the vilest superstition and tyranny, without any tincture of learning, and with little or no regard for the future. The circumstances under which they are placed in their native land may, perhaps, account for the low state in which we find them; but, however explained, the genuine negroes of Africa are admitted, even by those least inclined to depreciate them, to be for the most part “either ferocious savages, or stupid, sensual, and indolent.”—PRICHARD, *History of Man*, ii. 338, 3d ed.

Abolition of Slavery.—The year 1833 was memorable for the abolition of slavery throughout the British colonies. In enacting this celebrated statute, Parliament endeavored to reconcile the apparently conflicting claims of humanity and justice, by providing for the emancipation of the slaves without prejudice to the just rights and claims of their proprietors. This was effected by assigning to the latter the sum of *twenty millions sterling*, which was distributed among them on their complying with the provisions of the act. This is, perhaps, the greatest pecuniary sacrifice ever voluntarily made by any nation in vindication of the right of property. But it was not too great for the object in view; for had that right been violated in this instance, a precedent would have been set for its violation in others, and the consequences would have been most disastrous. The measure, in fact, reflects quite as much credit on the wisdom and honesty as on the generosity of the British nation. This celebrated statute enacted that slavery should cease in all British colonial possessions on the 1st of August, 1834; when the slaves were to become apprenticed laborers, their final and complete emancipation taking place partly on the 1st of August, 1838, and partly on the 1st of August, 1840. But a clamor having been raised against the duration of the apprenticeship, its period was shortened, and the blacks became universally free in 1838.

Distribution of Slave Compensation.—The commissioners for the apportionment of the £20,000,000 granted by Parliament as compensation to slave owners, under the act 3 and 4 Will. IV., cap. 73, issued the following table, showing the average value of a slave in each colony; the number of slaves in each; the total value of the slaves, supposing the annual value of each were realized; and the proportion of the £20,000,000 received by each colony.

Colony.	Average Value of a Slave from 1822 to 1830.	Number of Slaves by the last Registration.	Relative Value of the Slaves.	Proportion of the £20,000,000 to which each Colony is entitled.
	£ s d		£	£
Bermuda	27 4 11½	4,203	114,527	50,584
Bahamas	29 18 9½	9,705	290,573	128,340
Jamaica	44 15 2½	311,632	13,951,139	6,161,927
Honduras	120 4 7½	1,920	230,844	101,958
Virgin Islands	31 16 1½	5,192	165,143	72,940
Antigua	32 12 10½	29,537	964,198	425,866
Montserrat	36 17 10½	6,355	234,466	108,558
Nevia	39 8 11½	8,722	341,893	151,007
St. Christopher's	36 6 10½	20,660	750,840	331,630
Dominica	43 8 7½	14,384	624,715	275,923
Barbadoes	47 1 3½	82,807	3,877,276	1,721,345
Grenada	69 6 0	28,536	1,895,684	616,444
St. Vincent's	58 6 8	22,997	1,341,491	592,508
Tobago	45 12 0½	11,621	529,941	234,064
St. Lucia	56 18 7	13,348	759,890	335,627
Trinidad	105 4 5½	22,359	2,352,655	1,039,119
British Guiana	114 11 5½	84,915	9,729,047	4,297,117
Cape of Good Hope	73 9 11	38,427	2,824,224	1,247,401
Mauritius	69 14 3	68,613	4,783,183	2,112,632
Total		780,993	45,281,738	20,000,000

Dr. Livingstone, who is acknowledged as being conversant upon subjects affecting the slave-trade, says: "I have thus ventured to state my conviction in favor of our present system, formed as it was from personal observation, and in the teeth of a strong bias to the contrary, that you may, according to your custom, and if you should deem it advisable, give this to your readers by way of helping them to both sides of the question. It is not to be supposed for a moment that the present system of coercion will result in a radical cure of the evil. *The cultivation by the Africans on their own soil of the raw materials of our manufactures, and the influence of Christian civilization alone will effect a permanent suppression of the slave-trade.*" But all hope of this must be given up if the coast tribes are to be bounded on by the Europeans to hunt down the defenseless inland inhabitants, *on the absurd pretense of promoting 'free emigration.'* It is no more true that Africans take delight in hunting, buying, and selling each other than that the English glory in hanging themselves in November. I know that this is the case throughout the interior, and I was sorry at the cause of a different state of things on the borders of civilization. But we are ignorant of the sources whence statements such as that referred to arise. From meeting it in various quarters, and more especially in the mouths of slaveholders, or would-be slave employers, I am inclined to think that both it and that about the inefficiency of Her Majesty's cruisers have had their origin in those who are, directly or indirectly, abettors of slavery, and that they are promulgated by many who, like myself, had not the means of testing their truth."

Passing over the interval from the period when the slave-trade was declared to be piracy to the year 1840, we find that the number introduced into Brazil from that year to 1851, inclusive, was 348,609, or a little more than 30,000 a year. During the same period the number imported into Cuba amounted to an average of about 6000 a year. The following tables show the importations into Brazil and Cuba from 1851 to 1854:

		Slaves.
Imported into Brazil in the year 1851.....		47,000
" " " " " " " " " " " " " " " " " "	1852.....	60,000
" " " " " " " " " " " " " " " " " "	1853.....	3,700
Total.....		100,700
Imported into Cuba in 1851.....		8,000
" " " " " " " " " " " " " " " " " "	1852.....	7,524
" " " " " " " " " " " " " " " " " "	1853.....	12,500
" " " " " " " " " " " " " " " " " "	1854.....	10,230
		38,654
Total.....		100,700
Total.....		156,354

For the four years from 1851 to 1854, inclusive, this gives an average importation into both countries of something over 34,000 a year. As perhaps not more than three-fourths of the whole number was reported to the mixed commission, the yearly average for this period may be set down at 45,000. From the year 1854 there were very few, if any, slaves imported into Brazil, in consequence of the laws passed by the government of that country against the traffic. The slave-trade is now mainly, if not wholly, carried on with Cuba, which imports about 20,000 slaves every year; which, added to the total of the trade with both Brazil and Cuba since the year 1850, gives the average number imported every year, up to the present time, at about 30,000. If the profit realized on the purchase of one slave amounts, as we have shown in the following tables, to \$365, the total profits of one year's trade will therefore be about \$11,000,000.

As a curious exhibit, we give the statistics showing the estimated part which this country takes in this nefarious traffic. It is estimated that in the port of New York alone about twelve vessels are fitted out every year for the slave-trade, and that Boston and Baltimore furnish each about the same number, making a fleet of thirty-six vessels all engaged in a commerce at which the best feelings of our nature revolt. If to these be

added the slavers fitted out in other Eastern ports besides Boston, we will have a total of about forty, which is rather under than over the actual number. Each slaver registers from 150 to 250 tons, and costs, when ready for sea, with provisions, slave equipments, and every thing necessary for a successful trip, about \$8000. Here, to start with, we have a capital of \$820,000, the greater part of which is contributed by Northern men. The expenses of fitting out, and of the trip to and from the coast of Africa, may be estimated as follows:

Cost of forty slavers ready for sea	\$320,000
Expenses at the port for brokerage and commission, \$2000 on each vessel	120,000
Captain's and seamen's wages for the voyage	160,000
Amount paid for negroes on the coast of Africa, at \$15 each, allowing 600 to each vessel	86,000
\$15 charges and secret money paid at the place of landing in Cuba or other destination, \$42 for each negro, allowing a diminution of 100 in each vessel by death on the passage	840,000
Total	\$1,476,000

From this estimate it will be seen that the amount of capital required to fit out a fleet of slavers is about \$1,500,000, upon which the profits are so immense as almost to surpass belief. In a single voyage of this fleet 24,000 human beings are carried off from different points on the slave coast; and of these 4000, or one sixth of the whole number, become victims to the horrors of the middle passage, leaving 20,000 fit for market. For each of these the trader obtains an average of \$500, making a total for the whole 20,000 of \$10,000,000. Now, if we estimate the number of trips made by each vessel in a year at two, we will have this increased to \$20,000,000. Each vessel, it is true, can make three, and sometimes four trips, but as some of them are destroyed after the first voyage, we have placed the number at the lowest estimate. The expenses and profits of the slave-trade for a single year compare as follows:

Total expenses of two voyages	\$3,000,000
Total receipts of ditto	20,000,000
Profits	\$17,000,000

The laws of Congress on the subject of the slave-trade were passed March 22, 1794; May 10, 1800; February 28, 1803; March 2, 1807; April 20, 1818; March 3, 1819; May 15, 1820; March 3, 1843; September 20, 1850. Conventions on the subject of the slave-trade were held July 12, 1822; November 13, 1826, with Brazil; March 2, 1827; August 9, 1842. By the act of March 22, 1794, the slave-trade was prohibited. The act of May 10, 1800, applied to foreigners residing in the United States, and forbid citizens from being engaged in foreign ships in the slave-trade. By the act of March 2, 1807, vessels with slaves on board were to be forfeited, the naval forces to be employed to enforce the act. By the act of April 20, 1818, the importation of negroes, or persons of color, "to be held to service or labor," was prohibited. By the act of March 3, 1819, the naval ships would send to the United States, for confiscation, any ships detected in the slave-trade; a bounty was offered of \$25 for each negro captured and delivered to the United States Marshal. By the act of May 15, 1820, the slave-trade was declared to be piracy, and any citizen detected in the trade should suffer death. By the act of September 20, 1850, the slave-trade in the District of Columbia was prohibited; no slave to be brought into the District for sale as merchandise; and all slave depôts to be broken up.

For discussions on slavery and slave-trade, see *For. Quart.*, xxxiv. 104; *South. Quart.*, xix. 101, xxi. 209; *Living Age*, xiv. 235, xvi. 509; *Edinb. Rev.*, viii. 385, xli. 195, xlii. 355, v. 209 (BROUGHAM), xi. 199, xxxviii. 168, xxxix. 118; *Westm. Rev.*, xxxiv. 125; *Blackwood*, lv. 731; *Amer. Atlantic*, 1841; *North Amer. Rev.*, xli. 170, lxixiii. 347 (PEABODY); DE BOW'S *Rev.*, c. 658, xi. 22-284, vii. 122, ix.; *South. Lit. Mess.*, ix. 736, vii. 774.

Coolie Trade.—This trade has sprung up since vigorous efforts have been made to suppress the slave-trade proper. Although theoretically the coolie trade prom-

ised benefits to both planters and coolie, yet practically it is only another form of the slave-trade.

The truth uttered by a late number of the *California Chronicle* in the following paragraph is but too true:

"We hear of these wretched beings dying on their passage from Canton to Callao of hunger, thirst, and foul disease engendered by close confinement, without air or nutriment, in the holds of ships; we hear of these unfortunates murdering one another in the agony of their suffering; and yet, although the thing is plain and palpable before our very eyes, the civilized, the Christian world shrugs its shoulders, exclaims 'horrible,' and leaves the helpless creatures to their fate."

In extenuation of the guilt incurred, it is alleged that the parties concerned have a contract with the coolies; but in effect the deluded victim is a slave, and not the faintest dawn of hope illumines his dark horizon. Numerous important and incontrovertible facts have been brought to the attention of our government by means of the "message from the President of the United States communicating information in regard to the slave and coolie trade," presented to the House of Representatives one year ago.

Mr. Parker, United States Minister to China, wrote to Mr. Marcy on the 12th of February, 1856, that the following shipments of coolies had been made during the year 1855 from Swatow, an illegal port even for legal trade:

	Ships.	Tonnage.	Coolies.
American	5	6,592	8060
British	3	3,821	1938
Chilian	1	500	250
Peruvian	8	1,860	1150
Total	12	12,773	6388

Mr. Parker also stated, from official information, that the number of males imported as coolies from Calcutta and Madras, from 1845 to 1852, into British Guiana and Trinidad, was 1700; and he suggested "the necessity of specific instructions emanating from the Navy Department to our men-of-war on the China station, authorizing them to resort to illegal ports, and to examine such vessels as do, and ascertain that they do not offend against law, and to make them accountable if they do." January, 1856, Mr. C. D. Mugford, at Hong Kong, notified Mr. Parker that he was agent for one of the most respectable firms in the United States, who had made a contract with the Brazilian government for sending to Rio de Janeiro some 2000 Chinese, and that part of them had been shipped, but the firm referred to were ready to abide by the decision of the governments of the United States or China as regards the legality of the trade. Subsequently, Mr. Parker addressed a public notification calling on citizens of the United States to desist from this irregular and immoral traffic.

The evidence constantly accumulating to show the horrible character of this trade calls still more loudly for its speedy suppression. The *London Times* recently published a deeply interesting communication on this subject, from which we extract the following:

"The testimony of Sir John Bowring to the lamentable condition of the Chinese emigrant can not but recall to most of our readers' minds the disclosures made a few weeks ago at the Thames Police Court in London with respect to the condition of the coolies on board the ship *Duke of Portland*, on her voyage from Hong Kong to Havana. It will be remembered that on the occasion referred to the master of the vessel made the confession that one hundred and thirty-two of the emigrants, all of whom had been taken on board, he said, in good health, had died between Hong Kong and Havana. He had 'had as many as two hundred invalids at one time,' and 'many more had died after they had landed in Cuba.' His log-book contained daily, and more than daily, entries of death. The magistrate said 'he had heard of the horrors of the middle passage when the odious slave-trade was in

existence, but he never heard of any thing like this.'

The counsel said, 'It is most horrible. Chinamen are brought from China to work on plantations, and this is the result. The English flag is disgraced by such a traffic.' The captain confessed, 'It is a dreadful traffic, and quite time it was put an end to.' Yet this was but an accidental disclosure of a system which was only casually brought to light in this instance by the magistrate's inspection of the log-book in a suit of wages.

"I have myself, when in Havana, heard accounts and witnessed scenes connected with this traffic which are perfectly appalling. In some instances the proportion of dead to living at the conclusion of the voyage has been as high as two hundred of the one for every three hundred of the other. In March, 1853, the British ship *Gertrude* arrived at Havana with a cargo of 198 Chinamen, and in a note appended to the return we read, 'of the *Gertrude's* 152 died.'

"Such are the horrors of this second slave-trade during the passage. When he arrives at his destination, in the majority of instances, the coolie finds that his misery has but commenced. I have seen examples of considerate treatment, and consequently of comparative comfort; but these are unhappily rare. On arriving at Havana, after passing the quarantine, the coolie, if he survive, is transferred to the highest bidder, who places him upon his plantation side by side with his slaves. His term of service is eight years; his labor as hard as his master thinks he can sustain. He receives a small payment monthly, which makes his condition by a few dollars preferable to that of the slave. He is exposed to the same toil, watched by the same overseer, with whip in hand and sword at his side, as the slave.

"On the other hand, his position is worse than that of his slave companion, inasmuch as his master's interest in him terminates after eight years. In proportion as the term of service approaches its expiration, the motive for retaining the coolie in life decreases. The slave's life is usually worked out, as the Cuban planters have themselves confessed to me, in ten years of full work. The Chinese coolie, as every one who has lived on the Cuban plantations knows, reaches his end on an average after a very much shorter term of labor. Again, the Chinaman does not bear the tropical heat with the ease with which the negro endures it."

Sloop, a vessel of one mast, the mainsail of which is attached to a gaff above, to a boom below, and to the mast on its foremost edge; different from a *cutter* by having a fixed bowsprit and a jib-stay. It is also a general name for ships of war below the size of frigates.

Smack, a vessel with one mast, commonly rigged as a sloop, and used in the coasting trade, or as a tender in the royal navy. The vessels of this name that have long plied between Leith and London are well known, and have always been noted for their security.

Smaltz, or **Smalt** (Ger. *Schmalz*; Du. *Smalt*; Fr. *Smalt*; It. *Smalto azzurro*, *Smaltino*; Sp. *Esmalte*, *Azul azul*; Russ. *Lasor*), an oxyd of cobalt, melted with siliceous earth and potash. It is a sort of glass, of a beautiful deep blue color; and being ground very fine, is known by the name of powder blue. The color of smaltz is not affected by fire; and it is consequently in great demand in the painting of earthen-ware. It is also employed in the coloring of paper, and for other purposes in the arts. Beckmann has proved that the process used in the preparation of smaltz was invented about the end of the 15th or the beginning of the 16th century; and that the blue glass of the ancients owes its color, not to the presence of cobalt or smaltz, but to that of iron.—*Hist. of Inventions*, vol. ii., art. COBALT.

Smuggling, the offense of importing prohibited articles, or of defrauding the revenue by the introduction of articles into consumption, without paying the duties chargeable upon them. It may be committed indifferently either upon the excise or customs revenue.

This crime, which occupies so prominent a place in the criminal legislation of all modern states, is wholly the result of vicious commercial and financial legislation. It is the fruit either of prohibitions of importation, or of oppressively high duties. It does not originate in any depravity inherent in man, but in the folly and ignorance of legislators. A prohibition against importing a commodity does not take away the taste for it; and the imposition of a high duty on any article occasions a universal desire to escape or evade its payment. Hence the rise and occupation of the smuggler. The risk of being detected in the clandestine introduction of commodities under any system of fiscal regulations may always be valued at a certain average rate; and wherever the duties exceed this rate, smuggling immediately takes place. Now there are plainly but two ways of checking this practice—either the temptation to smuggle must be diminished by lowering the duties, or the difficulties in the way of smuggling must be increased. The first is obviously the more natural and efficient method of effecting the object in view; but the second has been most generally resorted to, even in cases where the duties were quite excessive. Governments have uniformly almost consulted the persons employed in the collection of the revenue with respect to the best mode of rendering taxes effectual; though it is clear that the interests, prejudices, and peculiar habits of such persons utterly disqualify them from forming a sound opinion on such a subject. They can not recommend a reduction of duties as a means of repressing smuggling and increasing revenue, without acknowledging their own incapacity to detect and defeat illicit practices; and the result has been that, instead of ascribing the prevalence of smuggling to its true causes, the officers of customs and excise have almost universally ascribed it to some defect in the laws, or in the mode of administering them, and have proposed repressing it by new regulations, and by increasing the number and severity of the penalties affecting the smuggler. As might have been expected, these attempts have, in the great majority of cases, proved signally unsuccessful. And it has been invariably found that no vigilance on the part of the revenue officers, and no severity of punishment, can prevent the smuggling of such commodities as are either prohibited or loaded with oppressive duties. The smuggler is generally a popular character; and whatever the law may declare on the subject, it is ludicrous to expect that the bulk of society should ever be brought to think that those who furnish them with cheap brandy, geneva, tobacco, etc., are guilty of any very heinous offense.

"To pretend," says Dr. Smith, "to have any scruple about buying smuggled goods, though a manifest encouragement to the violation of the revenue laws, and to the perjury which almost always attends it, would in most countries be regarded as one of those pedantic pieces of hypocrisy which, instead of gaining credit with any body, seem only to expose the person who affects to practice them to the suspicion of being a greater knave than most of his neighbors. By this indulgence of the public, the smuggler is often encouraged to continue a trade which he is thus taught to consider as, in some measure, innocent; and when the severity of the revenue laws is ready to fall upon him, he is frequently disposed to defend with violence what he has been accustomed to regard as his just property; and from being at first rather imprudent than criminal, he at last too often becomes one of the most determined violators of the laws of society."—*Wealth of Nations*, p. 406. To create by means of high duties an overwhelming temptation to indulge in crime, and then to punish men for indulging in it, is a proceeding completely subversive of every principle of justice. It revolts the natural feelings of the people, and teaches them to feel an interest in the worst characters—for such smugglers generally are—to espouse their cause

and avenge their wrongs. A punishment which is not proportioned to the offense, and which does not carry the sanction of public opinion along with it, can never be productive of any good effect. The true way to put down smuggling is to render it unprofitable—to diminish the temptation to engage in it; and this is not to be done by surrounding the coasts with cordons of troops, by the multiplication of oaths and penalties, and making the country the theatre of ferocious and bloody contests in the field, and of perjury and chicanery in the courts of law; but by repealing prohibitions, and reducing duties, so that their collection may be enforced with a moderate degree of vigilance; and that the forfeiture of the article may be a sufficient penalty upon the smuggler. It is in this, and in this only, that we must seek for an effectual check to illicit trafficking. Whenever the profits of the fair trader become nearly equal to those of the smuggler, the latter is forced to abandon his hazardous profession. But so long as prohibitions or oppressively high duties are kept up, or, which is, in fact, the same thing, so long as *high bounties* are held out to encourage the adventurous, the needy, and the profligate, to enter on this career, we may be assured that armies of customs officers, backed by the utmost severity of the revenue laws, will be insufficient to hinder them.

The penalty for smuggling in this country is fixed by the act of Congress, August 30, 1842, as follows: That if any person shall knowingly and willfully, with intent to defraud the revenue of the United States, smuggle or clandestinely introduce into the United States any goods, wares, or merchandise, subject to duty by law, and which should have been invoiced, without paying or accounting for the duty, or shall make out, or pass, or attempt to pass through the custom-house, any false, forged, or fraudulent invoice, every such person, his, her, or their aiders and abettors, shall be deemed guilty of a misdemeanor, and, on conviction, shall be fined in any sum not exceeding five thousand dollars, or imprisonment for any term not exceeding two years, or both, at the discretion of the court.

Smyrna, a large city and sea-port of Asiatic Turkey, on the western side of Asia Minor, lat. $38^{\circ} 25' 36''$ N., long. $27^{\circ} 6' 45''$ E. Population probably about 120,000, of whom 60,000 may be Turks, 40,000 Greeks, and the remainder Armenians, Franks, Jews, etc. Smyrna is situated at the bottom of a deep gulf, the entrance to which lies between the island of Mytilene on the north, and Cape Carabourun, in lat. $38^{\circ} 41' 30''$ N., long. $26^{\circ} 21'$ E., on the south. The passage between James's Castle on the south and the opposite sand-bank is narrow; but there is from nine to ten fathoms water, with a blue clay bottom. Merchant ships anchor abreast of the city in from seven to eight fathoms; but the water is so deep that they may come close to the quays. The *inbat*, or sea-breeze, blows from morning till evening, and is always waited for by ships going up to the city. There is excellent anchorage in most parts of the gulf, merely avoiding the shoals on the north side. Smyrna is a place of great antiquity. The excellence of its port, and its admirable situation, have made it be several times rebuilt, after being destroyed by earthquakes. On approaching it from the sea, it has the appearance of an amphitheatre: the castle is at the back of the town, which it commands, on the top of the hill; but it is in a state of decay, and could oppose no resistance to an invading force. The interior of the city does not correspond to its external appearance; the streets being for the most part narrow, dirty, and ill paved. Owing to the want of cleanliness, and of all sorts of precautions on the part of the Turks, Smyrna is frequently visited by the plague. In 1814, from 50,000 to 60,000 of the inhabitants are said to have been cut off by this dreadful scourge. The trade of this city is more extensive than that of any other in the Turkish empire. The

caravans from Persia are chiefly composed of Armenians. They arrive and depart at fixed periods, which are nearly identical with those of the arrival and departure of most of the foreign ships frequenting the port. Bargains are principally effected by Jew brokers, many of whom have amassed considerable fortunes. The principal articles of import consist of grain, furs, iron, butter, etc., from Odessa and Taganrog; and of cotton stuffs and twist, silk and woolen goods, coffee, sugar, cochineal, and dye-woods, iron, tin and tin plates, rum, brandy, paper, cheese, glass, wine, etc., from Great Britain, France, Italy, the United States, etc. The exports consist principally of madder, which is the most valuable article, dried fruits, valonia, opium, silk, wool, box-wood, emery-stone, sponge, drugs, yellow berries, olive oil, Turkey carpets, galls, wax, copper, hare skins, goats' wool, etc. For further details, see, *article TURKEY*, and *TOURNEFORT, Voyage au Levant*, tome ii.; *MACGILL'S Travels in Turkey*, vol. i.

QUANTITIES AND VALUES OF THE ARTICLES EXPORTED FROM SMYRNA IN 1851.

Articles.	Total Quantities exported.	Total Value of Exports.
Almonds	qtls. 1,247	875,850
Barley	kilo. 13,660	122,940
Beeswax	qtls. 733	824,620
Bones	" 8,850	208,750
Box-wood	" 69,584	1,556,060
Broken glass	" 212	18,450
Bullock and lamb skins..	{ bales 173	3,417,000
	{ qtls. 6,488	
Carpets	{ bales 627	1,800,500
Cotton	" 11,712	9,826,450
" spun	" 317	338,030
Dried fruits (dates, etc.)	qtls. 179,073	24,961,890
" dates	kilo. 17,425	
Drugs	cases 611	182,750
"	qtls. 32,700	4,578,000
Emery stones	" 45,076	2,479,180
Essence of roses	cases 32	1,650,000
Filth goats' wool	bales 1,261	4,009,160
Gums	cases 1,499	1,688,800
Hare skins	bales 288	1,209,000
Horns	{ qtls. 1,072	84,610
	{ pairs 1,868	
Leeches	cases 1,057	2,662,500
Liquorice	" 10	5,500
Liquors	" 50	27,500
" rum	bbls. 388	59,200
Madder root	" 60,736	36,288,000
Maize and millet	kilo. 118,950	1,451,230
Mastic	bbls. 3	27,000
Nut-galls	sacks 331	406,400
Nuts	qtls. 3,346	258,450
Oleaginous seeds	kilo. 8,936	248,010
Olive oil	qtls. 135	91,430
Opium*	cases 2,284	13,356,000
Poppy seeds	sacks 1,611	241,350
Provisions	{ kilo. 2,815	294,900
	{ bbls. 2,660	
Rags	bales 1,842	184,000
Radix saporaria	cases 704	177,000
Salap.	" 105	299,000
	bbls. 10	
Scammony	cases 266	665,000
Silk and cocoons	bales 684	2,135,100
Soap, to America	cases 48	15,400
Sponges	" 3,372	10,083,000
Stones	pieces 100,200	150,300
Storax	bbls. 96	25,880
Terre d'Ambre	qtls. 1,940	48,500
Tobacco	{ cases 527	364,700
	{ bbls. 27	
Valonia	qtls. 262,012	17,041,130
Various articles	{ cases 1,225	546,800
	{ bbls. 95	
Wheat	kilo. 15,031	270,560
White stone	qtls. 11,556	478,800
Wines	bbls. 1,629	429,700
Wool	bales 14,547	10,814,040
Yellow berries	sacks 2,670	3,604,500
Total exports from Smyrna...	....	161,676,520

* Opium, 2121 cases. Of this 713 are large, and go to England; 1408 are small, and go direct to China via Egypt.

In his *Lettres sur la Turquie*, the well-informed M. Ubicini estimates the value of the imports into Smyrna in 1851 at 28,473,060 francs, and that of the exports at

36,682,000 francs. The coasting trade, as that between Smyrna, Constantinople, Syria, Alexandria, and the Levant generally, is usually denominated, is almost entirely in the hands of the Greeks, and is very extensive. Excluding Greeks, the port is annually visited by from 550 to 600 foreign ships. Ubicini reckons the value of the imports of English and Swiss cottons at above 14,000,000 francs; the other leading articles of imports are English and German woollens, French silks, and colonial products.

The weights and measures are the same in this city as at Constantinople, with an exception of a small difference on some of the weights. The principal weight in Smyrna is the oke, which is of two different weights. The oke used in retail is of 400 drams, and in wholesale of 380. The wholesale oke being also known as oke of 400 drams, in order to draw a distinction between the two, we will call the first, the oke of 400 drams, "real weight," and the other, the oke of 400 drams, "nominal weight." The only oke known in Constantinople is that of 400 drams, "real weight." At Smyrna, 400 drams, "nominal weight," are = 1 oke; 45 okes=100 rotoli=1 kintal or kantar.

At Constantinople, 400 drams, "real weight," are = 1 oke; 44 okes=100 rotoli=1 kintal or kantar.

Thus, 100 kintals of iron bought at Constantinople will render here 102 $\frac{25}{100}$ kintals, if weighed by two accurate steelyards in both places; but as they are generally very imperfectly made, the difference varies from 1 to 1 $\frac{1}{2}$ per cent. Generally, however, 100 kintals of Constantinople render here from 102 $\frac{1}{2}$ to 104 $\frac{1}{2}$.

General Remarks.—Exports are generally sold for cash, and payment is made on the first Saturday following the day of sale. It sometimes occurs, however, that one half of the money is paid the first, and the other half the succeeding Saturday; but for this purpose a special agreement is generally necessary before concluding the purchase. The term of payment is seldom extended to a third Saturday. The internal duty is always paid by the seller, and is included in the prices of commodities. The exporter has no other tax to pay than the export duty. Box-wood, canary seed, hemp seed, and terra umbra, are generally sold free on board, which comprises export duty, portorage, and shipping charges. Weighing, measuring, and all other charges, are paid by the exporter. The insurance is almost exclusively effected in the United States for goods to the States. The freight for figs, raisins, gums, nut-galls, yellow berries, and valonia, is made payable in pounds sterling (£4 $\frac{3}{4}$ per pound sterling). Some houses charge a half per cent. for storage, some one per cent., and others charge no storage at all; but when they do, they actually pay for one.

Unwashed Wool.—Besides all the charges on unwashed wool, a loss of weight must be added, arising from the picking and assorting, which generally varies from 3 to 5 per cent. The export duty shown in this statement is for Anatolia, Roumelia, and Constantinople wool, which are the kinds generally exported to the United States. The duty upon the wool of Syria, Tripoli (Barbary), Bagdad, and the adjoining country, is of \$0.1097 per 100 pounds. 13,085 bales, washed and unwashed wool, have been exported to the United States during the period mentioned in this statement, representing an amount of \$598,178. No sales of commodities took place during the months at which the price is left blank in this statement. On all such commodities where the price is left open in the column of "retail prices," little or no consumption exists.

Leeches.—Leeches are a monopoly, and two European houses of this city have the exclusive right of exporting them, or to sell them in the market.

Sponges.—The price of this article varies considerably; that of common sponges, called "chemouches," after they had been prepared for shipment, varied from \$15 to \$27 per 100 lbs., and that of fine sponges from \$105 to \$600 per 100 lbs. The former are shipped in

bales, and are the kind most exported to the United States, and the latter in cases. They are generally bought in the lump from on board the boats which bring them from the neighboring islands by the exporters, who wash them, throw off the sand, and otherwise prepare them for shipment; consequently their price per weight depends on the quantity of sand, stones, etc., they may contain, and can only be ascertained after this operation has been gone through. The purchase of this article requires considerable skill, and oftentimes the most experienced dealers are much deceived, so much so that a difference in price of 20 to 25 per cent., more or less, is regarded as a matter of no great moment. Besides the commodities noted in this statement, 2677 bales of rags and 70 tons of emery stones have also been exported to the United States; but both of these articles are a monopoly, and are only exported by two houses of Smyrna. The trade between Smyrna and the United States is generally carried on with Boston and New York, but principally with the former place.—*United States Consul at Smyrna*, November 4, 1854. For further information, see *Com. Relat. United States; Living Age*, x. 201, xxviii. 167; *HUNT'S Merchants' Magazine*, xxv. 452 (F. W. HOLLAND).

Snuff (Germ. *Schnupftaback*; Fr. *Tabac en poudre*; It. *Tabacco da naso*; Sp. *Tabaco de polvo*; Russ. *Nosovoi tabak*), a powder in very general use as an errhine. Tobacco is the usual basis of snuff; but small quantities of other articles are frequently added to it, to vary its pungency, flavor, scent, etc. Though substantially the same, the kinds and names of snuff are infinite, and are perpetually changing. There are, however, three principal sorts: the first, granulated; the second, an impalpable powder; and the third, the bran or coarse part remaining after sifting the second sort. Unless taken in excess, no bad consequences result from its use.—*See TOBACCO*.

Snuffboxes are made of every variety of pattern, and of an endless variety of materials. We only mention them here for the purpose of giving the following details, not elsewhere to be met with, with respect to the manufacture of Laurecekirk or Ayrshire boxes. These are made of wood, admirably jointed, painted, and varnished. These beautiful boxes were first manufactured at the village of Laurecekirk, in Kincardineshire, about 60 years since. The original inventor was a cripple hardly possessed of the power of locomotion. Instead of curtains, his bed (rather a curious work-shop) was surrounded with benches and receptacles for tools, in the contrivance and use of which he discovered the utmost ingenuity. Instead of taking out a patent, the inventor confided his secret to a joiner in the same village, who in a few years amassed considerable property; while the other died, as he had lived, in the greatest poverty. The great difficulty of the manufacture lies in the formation of the hinge, which, in a genuine box, is so delicately made as hardly to be visible. Peculiar, or, as they are called, secret tools, are required in its formation; and though greatly improved by time and experience, the mystery attached to their preparation is still so studiously kept up that the workmen employed in one shop are debarred having any communication with those employed in another.

Snuff-taking. This practice took its rise in England from the captures made of vast quantities of snuff by Sir George Rooke's expedition to Vigo in 1702. The prize of the forces having been sent home and sold, the vice soon obtained from which the revenue now draws, with tobacco, considerably more than £4,000,000 per annum. In the year ending January 5, 1854, there were imported 35,000,000 lbs. of tobacco and snuff, of which 30,400,000 lbs. were entered for home consumption.—*See TOBACCO*.

Soap (Ger. *Seife*; Fr. *Savon*; It. *Sapone*; Sp. *Jabon*; Russ. *Milo*; Lat. *Sapo*). This article was imperfectly known to the ancients. The first express men-

tion of it occurs in Pliny and Galen; and the former declares it to be an invention of the Gauls, though he prefers the German to the Gallic soap. In remote periods clothes were cleansed by being rubbed or stamped upon in water. Nausicaa and her attendants, Homer tells us, washed theirs by treading upon them with their feet in pits of water.—*Odyssey*, book vi. The manufacture of soap began in London in 1524, before which time it was supplied by Bristol at one penny per pound.—*HAYDN*. The soap met with in commerce is generally divided into two sorts, *hard* and *soft*: the former is made of soda and tallow or oil, and the latter of potash and similar oily matters. Soap made of tallow and soda has a whitish color, and is, therefore, sometimes denominated *white* soap; but it is usual for soap-makers, in order to lower the price of the article, to mix a considerable portion of rosin with the tallow; this mixture forms the common *yellow* soap of this country. Soap made of tallow, etc., and potash does not assume a solid form; its consistence is never greater than that of hog's lard. The properties of soft soap as a detergent do not differ materially from those of hard soap, but it is not nearly so convenient to use. The alkali employed by the ancient Gauls and Germans in the formation of soap was potash; hence we see why it was described by the Romans as an unguent. The oil employed for making soft soap in this country is whale oil. A little tallow is also added, which, by a peculiar management, is dispersed through the soap in fine white spots. The soap made in countries which produce olive oil, as the south of France, Italy, and Spain, is preferable to the soap of this country, which is usually manufactured from grease, tallow, etc.—*Thomson's Chemistry*.

The use of soap as a detergent is well known; it may, in fact, be considered as a necessary of life. Its consumption in most civilized countries is immense. Pliny informs us that soap was first invented by the Gauls; that it was composed of tallow and ashes; and that the German soap was reckoned the best.—*Lib. xviii*.

Society Islands. These islands, lying in the Pacific Ocean, between lat. 16° and 18° S., and long. 149° and 155° W., are under the protectorate of the French government. The principal islands of the group are Tahiti, Eimeo, Huahine, Raiatea, Bona-bona, Tahaa, and Meura. Papiete, the capital of Tahiti, is much resorted to by American and other whalers. The exports consist of oranges, pearl-shell, arrow-root, coconut oil, and other native products of minor commercial importance. The intercourse between the United States and these islands has increased with our rapidly-increasing relations with Valparaiso, Callao, Panama, the Sandwich Islands, Australia, and China. In 1852 there entered the port of Tahiti 36 vessels under the United States flag, measuring in all 6668 tons. Under all other flags there entered 141 vessels, with an aggregate of 12,817 tons. There are no import duties charged at the Society Islands, except upon spirituous liquors and wines, and on fire-arms and munitions of war. On the last-named articles these duties amount to a prohibition. These islands are under a different system of commercial legislation from that which obtains in the other French colonial settlements. No distinctions are recognized as to any foreign countries, or as to any foreign or domestic ports, with respect to entering or clearing foreign vessels, with cargoes or in ballast. As regards alcoholic and other beverages, American vessels are placed on the same footing as French vessels as to duty, while those of other nations pay double import duties. This distinction is regulated by *arrêté* No. 65, of May 8, 1853. The ports open to foreign vessels are Papiete and Taonoo, at Tahiti; and Papetoi, at Meura. No foreign vessel is permitted without a special permission, or in urgent necessity, to anchor in any other ports of the islands subject to the French protectorate. Offenders are liable to a fine of from 100

to 500 francs. The coasting trade of the islands belonging to France is reserved exclusively to vessels carrying the French or protectorate flag. The penalty for violating this restriction is, for the first offense, a fine of from 1000 to 2000 francs, and, in case of repetition, double that sum. Every captain must, within twenty-four hours after his arrival, present to the director of customs his manifest, with a detailed statement of the ammunition and arms of every kind, and also of the liquors, which, being subject to import duties, can not be landed without the authorization of the director of customs. Those who infringe this regulation are liable to a fine of from 50 to 400 francs. Making a false declaration respecting prohibited goods, or those the sale of which is restricted, is punished by a fine of from 1000 to 5000 francs.

When vessels have on board prohibited goods, spirits, arms, or ammunition, intended only for their own consumption or the defense of the ship, captains must present to the director of customs a detailed declaration of such kinds of stores within twenty-four hours after their arrival. The sale of munitions of war, powder, saltpetre, projectiles, muskets, arms of any kind, is prohibited, except under special permission from the commissioner of the empire; and should any goods of this kind be attempted to be fraudulently landed, they will be confiscated, in addition to the fine imposed by the police regulations. All spirits or liquors which may be attempted to be fraudulently landed are liable to confiscation, as well as the boat conveying them; and the captain, who is held responsible for all goods which may be on board, under whatever conditions, is liable to a fine of from 5000 to 10,000 francs. All goods admitted to entry in the French establishments of Oceania may be sold on board, provided they be not sold by retail. To effect sales of this kind, however, a license of the first class must be previously obtained, payable in advance, and for a period of three months. Sales of cargoes may also be effected on shore, by opening a store for that purpose, for which a similar license must be obtained, and for the same period. Wines and liquors, however, must be sold exclusively on shore, either through the medium of a consignee, or by the captain or his agent, having first procured the necessary license. Captains of vessels, whenever the length of their stay permits, must give notice of their departure at the post-office forty-eight hours beforehand; and when it is desired that a vessel should remain in port less than forty-eight hours, notice to that effect must be given on the day of arrival. If any of the fines specified in the foregoing regulations should not be paid within five days, at the farthest, from the date of condemnation, or satisfactory security not be tendered, a part or the whole of the cargo will be sold, or the vessel itself be retained, to liquidate the debt.—*Com. Relat. U. S.*

Soda. See ALKALI.

Solder, Sodder, or Soder, a metallic or mineral composition used in soldering or joining together other metals. Solders are made of gold, silver, copper, tin, bismuth, and lead. In the composition there must be some of the metal that is to be soldered mixed with some higher and finer metals. Goldsmiths usually make four kinds of solder, viz.: solder of eight, where to seven parts of silver there is one of brass or copper; solder of six, where only a sixth part is copper; solder of four, and solder of three. It is the mixture of copper in the solder that makes raised plate come always cheaper than flat.

Sound Dues. Under the head of DENMARK the reader will find a full history of this interesting commercial question, and also statistics illustrating the proportional interest which every nation had in the abolishment of the sound dues. Since the article DENMARK was in type the final treaties (including that of the United States here given) necessary for the adjustment of this question have been signed. We here an-

nex, as a supplement to this question, the treaty between the United States and Denmark, year 1857. We also give a table showing the *pro rata* division of the indemnity which each nation agrees to pay Denmark.

On the 4th January, 1856, a meeting of the Ministers of Austria, Belgium, France, Holland, Prussia, Spain, and Sweden, and a Commissioner from Russia, met at Copenhagen to consider the disputed question. On the 17th of February another meeting of the Commission took place, when the same states were represented, with the addition of a delegate from Oldenburg. At this meeting a memorandum was presented, in which Denmark offered to accept as a compensation for the abolition of the sound dues, a sum of 35,000,000 rix dollars (about £3,888,888), which is about fifteen and a half years' purchase of 2,248,579 rix dollars, the average net revenue from the dues during the nine years of peace—1842 to 1847, and 1851 to 1853. Each state interested in the commerce of the Baltic to be responsible for the sum only which is assigned to it, but the offer to be binding on Denmark, on its acceptance by all the states whose representatives have taken part in the negotiation. This proposal has been accepted, as will be seen by the following treaty between the United States and Denmark (see next page).

In the annexed table, showing the *pro rata* amounts to be paid by each nation for the abolishment of the sound dues, it will be seen that Great Britain, Russia, and Prussia pay over 68 per cent. of the total; and that the first and second pay 56 per cent. of the total. The share apportioned to the United States is only 2 per cent., while the trade of this country would appear to be about 6 per cent. of the whole.

TABLE SHOWING THE PRO RATA DIVISION OF THE INDEMNITY TO DENMARK FOR THE ABOLISHMENT OF THE SOUND DUES TO BE PAID BY EACH NATION.

Countries.	Rix Dollars.	Per Cent.
Denmark	1,122,078	3.21
Sweden	1,500,503	4.55
Russia	9,750,993	27.80
Prussia	4,444,927	12.60
Mecklenburg	373,668	1.07
Lübeck	102,906	0.29
The Baltic in general	231,909	0.68
Norway	667,225	1.91
Hamburg	107,612	0.31
Bremen	218,753	0.62
Oldenburg	28,127	0.08
Hanover	128,887	0.35
Great Britain	10,126,855	28.40
Netherlands	1,406,060	4.02
Belgium	391,455	0.85
France	1,219,008	3.48
Spain	1,020,016	2.91
Portugal	274,823	0.77
Sardinia	22,028	0.07
Tuscany	26,196	0.08
Two Sicilies	229,013	0.65
Austria	29,434	0.08
Greece	1,401	0.00
Turkey	35,925	0.10
United States	717,829	2.03
Mexico	6,537	0.02
St. Domingo	13,059	0.04
Venezuela	6,537	0.02
New Granada	8,269	0.01
Uruguay	1,507	0.00
La Plata	8,269	0.01
Brazil	506,295	1.45
Peru	430	0.00
Buenos Ayres	16	0.00
Chili	358	0.00
China	3,269	0.01
Other countries	266,505	1.04
Total	35,000,000	100.00

As to the basis of the contribution, it would have been just to have taken the quantity of goods carried, or duties paid, by the ships of each nation through the Sound and the Belt as determining the proportions respectively to be paid to the capitalization of the dues. But this proportion has not in every case been carried out, as may be seen by comparing the foregoing table with the following, which exhibits the duties paid by every nation.

Countries.	Sailed from Baltic.		Entered into Baltic.	
	Average Sum. 1851-'53.	Per Cent. of the whole Amount.	Average Sum. 1851-'53.	Per Cent. of the whole Amount.
PRIVILEGED.				
United States.....	Rix Doll. 850	0-593	Rix Doll. 976	0-682
Belgium.....	72	0-050	50	0-047
Bremen.....	260	0-182	250	0-183
Denmark.....	11,192	7-790	12,358	8-758
Great Britain.....	84,702	24-926	85,755	25-360
France.....	2,550	1-770	2,524	1-771
Greece.....	6	0-004	6	0-004
Hamburg.....	645	0-451	451	0-319
Hanover.....	5,388	3-735	4,925	3-438
The Netherlands.....	14,388	10-053	14,462	10-244
Italy (Naples).....	366	0-256	396	0-281
Lübeck.....	1,102	0-773	1,020	0-723
Mecklenburg.....	8,200	5-738	7,284	5-159
Norway.....	19,326	13-523	17,956	12-718
Oldenburg.....	1,480	1-007	1,571	1-113
Portugal.....	46	0-032	55	0-039
Prussia.....	21,933	15-348	21,456	15-198
Russia.....	8,467	5-925	7,583	5-371
Spain.....	24	0-017	23	0-016
Sweden.....	12,054	8-435	12,137	8-507
Austria.....	6	0-004	6	0-004
NON-PRIVILEGED.				
Buenos Ayres.....	---	---	6	0-004
Peru.....	6	0-004	5	0-004
Tuscany.....	6	0-004	7	0-005
Total.....	142,908	100-000	141,181	100-000

A Proclamation.—Whereas a convention between the United States of America and his Majesty the King of Denmark, for the discontinuance of the Sound dues, was concluded and signed by their respective plenipotentiaries at Washington, on the 11th day of April, 1857, which convention is as follows:

The United States of America and his Majesty the King of Denmark, being desirous to terminate amicably the differences which have arisen between them in regard to the tolls levied by Denmark on American vessels and their cargoes passing through the Sound and Belts, and commonly called the Sound dues, have resolved to conclude a convention for that purpose, and have named as their plenipotentiaries, that is to say, the President of the United States, Lewis Cass, Secretary of State of the United States, and his Majesty the King of Denmark, Torben Bille, Esquire, Knight of the Dannebrog, and decorated with the Cross of Honor of the same order, his said Majesty's Chargé d'Affaires near the government of the United States, who, after having communicated to each other their full powers in due form, have agreed to and signed the following articles:

Article I. His Majesty the King of Denmark declares entire freedom of the navigation of the Sound and the Belts in favor of American vessels and their cargoes from and forever after the day when this convention shall go into effect as hereinafter provided. And it is hereby agreed that American vessels and their cargoes, after that day, shall not be subject to any charges whatever in passing the Sound or the Belts, or to any detention in the said waters; and both governments will concur, if occasion should require it, in taking measures to prevent abuse of the free flag of the United States by the shipping of other nations which shall not have secured the same freedom and exemption from charges enjoyed by that of the United States.

Article II. His Danish Majesty further engages that the passages of the Sound and Belts shall continue to be lighted and buoyed as heretofore, without any charge upon American vessels or their cargoes on passing the Sound and the Belts, and that the present establishments of Danish pilots in these waters shall continue to be maintained by Denmark. His Danish Majesty agrees to make such additions and improvements in regard to the lights, buoys, and pilot establishments in these waters as circumstances and the increasing trade of the Baltic may require. He further engages that no charge shall be made, in consequence of such additions and improvements, on American ships and their cargoes passing through the Sound and the Belts.

It is understood, however, to be optional for the masters of American vessels either to employ in the said waters Danish pilots, at reasonable rates fixed by the Danish government, or to navigate their vessels without such assistance.

Article III. In consideration of the foregoing agreements and stipulation on the part of Denmark, whereby the free and unincumbered navigation of American vessels through the Sound and the Belts is forever secured, the United States agree to pay to the government of Denmark, once for all, the sum of seven hundred and seventeen thousand eight hundred and twenty-nine rix dollars, or its equivalent, three hundred and ninety-three thousand and eleven dollars in United States

currency, at London, on the day when the said convention shall go into full effect, as herein afterward provided.

Article IV. It is further agreed that any other or further privileges, rights, or advantages which may have been or may be granted by Denmark to the commerce and navigation of any other nation at the Sound and Belts, or on her coasts and in her harbors, with reference to the transit by land through Danish territory of merchandise belonging to the citizens or subjects of such nation, shall also be fully extended to, and enjoyed by, the citizens of the United States, and by their vessels and property in that quarter.

Article V. The general convention of friendship, commerce, and navigation, concluded between the United States and his Majesty the King of Denmark, on the 26th of April, 1826, and which was abrogated on the 15th of April, 1856, and the provisions contained in each and all of its articles, the 5th article alone excepted, shall, after the ratification of this present convention, again become binding upon the United States and Denmark; it being, however, understood that a year's notice shall suffice for the abrogation of the stipulations of the said convention hereby renewed.

Article VI. The present convention shall take effect as soon as the laws to carry it into operation shall be passed by the governments of the contracting parties, and the sum stipulated to be paid by the United States shall be received by or tendered to Denmark; and for the fulfillment of these purposes a period not exceeding twelve months from the signing of this convention shall be allowed.

But if, in the interval, an earlier day shall be fixed upon and carried into effect for a free navigation through the Sound and Belts in favor of any other power or powers, the same shall simultaneously be extended to the vessels of the United States and their cargoes, in anticipation of the payment of the sum stipulated in *Article III.*; it being understood, however, that in that event the government of the United States shall also pay to that of Denmark 4 per cent. interest on the said sum from the day the said immunity shall have gone into operation until the principal shall have been paid as aforesaid.

Article VII. The present convention shall be duly ratified, and the exchange of ratifications shall take place in Washington within ten months from the date hereof, or sooner if practicable.

In faith whereof the respective plenipotentiaries have signed the present convention, in duplicate, and have thereunto affixed their seals.

Done at Washington this 11th day of April, in the year of our Lord one thousand eight hundred and fifty-seven, and of the independence of the United States the eighty-first.

LEWIS CASS. [SEAL.]

TORBEN BILLE. [SEAL.]

And whereas the said convention has been duly ratified on both parts, and the respective ratifications of the same were exchanged in the city of Washington on the 12th instant by Lewis Cass, Secretary of State of the United States, and W. de Raasloff, his Danish Majesty's Chargé d'Affaires and Consul-general in the United States, on the part of their respective governments:

Now, therefore, be it known that I, James Buchanan, President of the United States of America, have caused the said convention to be made public, to the end that the same and every clause and article thereof may be observed and fulfilled with good faith by the United States and the citizens thereof.

In witness whereof I have hereunto set my hand and caused the seal of the United States to be affixed.

Done in the city of Washington, this 13th day of January, in the year of our Lord one thousand eight hundred and fifty-eight, and of the independence of the United States the eighty-second.

JAMES BUCHANAN.

By the President:

LEWIS CASS, Secretary of State.

Sounding, the operation of trying the depth of the sea, and the nature of the bottom, by means of a plummet sunk from a ship to the bottom. There are two plummets used for this purpose, one of which is called the *hand-lead*, weighing about eight or nine pounds; and the other the *deep-sea lead*, which weighs from twenty-five to thirty pounds; and both are shaped like the frustum of a cone or pyramid. The former is used in shallow waters, and on approaching the land after a sea-voyage. Accordingly, the lines used for this purpose are called the *deep-sea lead line*, and the *hand-lead line*. The hand-lead line, which is usually twenty fathoms in length, is marked at every two or three fathoms; so that the depth of the water may be

ascertained either in the day or night. At the depth of two or three fathoms there are marks of black leather; at five fathoms there is a white rag; at seven, a red rag; at ten, black leather; at thirteen, black leather; at fifteen, a white rag; and at seventeen, a red rag.

Sounding with the hand-lead, which by seamen is called *heaving the lead*, is generally performed by a man who stands in the main chains to windward. Having the line quite ready to run out without interruption, he holds it nearly at the distance of a fathom from the plummet; and having swung the latter backward and forward three or four times, in order to acquire the greater velocity, he swings it round his head, and thence so far forward as is necessary; so that by the lead's sinking while the ship advances the line may be almost perpendicular when it reaches the bottom. The person sounding then proclaims the depth of the water, in a kind of song resembling the cries of hawkers in a city. Thus, if the mark of five fathoms is close to the surface of the water, he calls, "By the mark five;" and as there is no mark at four, six, eight, etc., he estimates those numbers, and calls, "By the dip four," etc.; if he judges it to be a quarter or a half more than any particular number, he calls, "And a quarter five," "and a half four," etc. If he conceives the depth to be three quarters more than a particular number, he calls it a quarter less than the next: thus, at four fathoms and three fourths he calls, "A quarter less five."

The deep-sea lead is marked with two knots at twenty fathoms, three at thirty, and four at forty, and so on to the end. It is also marked with a single knot in the middle of each interval.

Until the commencement of the plan of deep-sea soundings, as now conducted in the navy of the United States, the bottom of the sea was almost entirely unknown to us.

It has been proven that the system of deep-sea soundings formerly in use was not accurate. This was simply letting down a lead, until by a shock the line became slack; but it was found that the line would run on without end, being dragged out by under-currents, and that beyond a certain depth no shock was felt.

The plan of deep-sea soundings now in practice in our navy was suggested by Lieutenant Maury, and has been successful principally from the adoption of a lead invented by Lieutenant J. M. Brooke, U.S.N.

This method is to take a cannon-ball, bored through the middle, and a wire inserted; and so arranged that when it touches bottom the ball slips off, and the wire with the line is drawn up. The wire has a cap at the end, with some adhesive matter to attach particles of the bottom. The line is prepared for the purpose, so as to bear the weight, and yet of small resistance in sinking. Experiment has proven that while the plummet is sinking the line runs out at an increasing rate per minute; and by observing when the rate becomes constant, we get the depth, as a current would draw it at a constant speed.

Mr. Maury gives this law of descent:

2m. 21s.	as an average time of descent from 400 to	500 faths.
3m. 26s.	" " " " " "	1000 " 1100 "
4m. 29s.	" " " " " "	1500 " 1900 "

Lieutenant Walsh, of the United States schooner *Fancy*, reported a cast with the deep-sea lead of thirty-four thousand feet without a bottom. His sounding-line was an iron wire more than eleven miles in length. Lieutenant Berryman, of the United States brig *Dolphin*, reported another unsuccessful attempt to fathom mid-ocean with a line thirty-nine thousand feet in length. Captain Dedham, of Her Britannic Majesty's ship *Herald*, reported bottom at the depth of forty-six thousand feet; and Lieutenant J. P. Parker, of the United States frigate *Congress*, afterward, in attempting to sound near the same place, let go his plummet, and saw a line fifty thousand feet long run after it as

though the bottom had not been reached. The last three attempts were made according to the plan mentioned above. For further interesting items we refer to MAURY'S *Physical Geography of the Sea*.—See ATLANTIC OCEAN.

Soundings for the Atlantic Telegraph.—The result of these soundings has been to establish the hypothesis of Lieutenant Maury, of a submarine plateau from the Newfoundland Banks nearly to the coast of Ireland. We extract portions of the report of Lieutenant O. H. Berryman, U.S.N., to the Secretary of the Navy, giving an account of the experimental soundings made by him in the United States steamer *Arctic*, to corroborate the existence of this plateau.

"UNITED STATES STEAMER ARCTIC, New York, October 14, 1856

"Leaving New York on the night of July 13, I steered directly for St. Johns, where I arrived on the 29th. Taking in coal by the 31st, I sailed for Ireland, and commenced sounding as near on the Great Circle as possible, passing the north end of the 'Grand Banks' in latitude $48^{\circ} 34' N.$, and one hundred and twenty fathoms water, although the best charts I have on board record one hundred and fifty-four. This difference I attribute to the mode of taking soundings at the time that survey was made. At intervals of thirty, forty, sixty, and one hundred miles, we sounded, all attended with complete success, but frequently involving many hours, both night and day, of great suspense and hard work, losing sometimes two or three thousand fathoms of line, sounding apparatus and all.

"The great plateau became so apparent in the middle of the ocean, and our fuel being considerably reduced, I determined to increase the intervals between the positions, to enable me to reach the coast of Ireland with enough soundings to complete a line entirely across. This was accomplished on the 22d of August, and I arrived in the harbor of Queenstown with only a few bushels of coal on board.

"Temperatures were taken hourly at the surface, and at twenty fathoms every four hours. Attempts were made to obtain them at the bottom and at different depths, but the results were so worthless, owing to some derangement of the thermometers, that I abandoned taking them, as they interfered very much with the more important object of sounding and obtaining bottom. On one occasion two were sent to the bottom in very deep water, and one indicated a temperature of twenty-one degrees, the other twenty-four degrees. On examining and comparing the rest of the thermometers, I found them all differing from each other so much, and some of the bands being broken, I was sure that they could not be used with any proper results.

"Currents were experienced to the eastward, from nine to fifteen miles in each twenty-four hours, between the Grand Banks and those of Ireland. No good opportunities for observing under-currents occurred, there being always either too much wind or a high sea. None appeared to affect our soundings very much—so little, indeed, that frequently the slack line would be coiled or kinked upon the bottom, showing plainly that it reached the bottom without the assistance of the lead—determining in my own mind that, however others may think, the cable or wire of the lightest kind will here reach the bottom most certainly.

"Only one of the sounding apparatus which was used remains, and is sent to the department for inspection, it being somewhat different, we believe, from any heretofore used—being an association of Brooke's and Massey's, with a weight or lead of my own adoption.

"The line used in sounding was that obtained from Boston, which proved indifferent, and was all expended before reaching Ireland, and we had to resort to two parts of smaller line furnished at the navy-yard. Having eighty thousand fathoms of the smaller size line on reels, we had it made up into one of about four thousand, and we found it decidedly the best that we have yet used, it being very strong and small.

"On both sides the interest taken in this great enterprise is very great, and it is with every satisfaction that I can state that the navy of the United States is particularly recognized as having promptly and efficiently executed the preliminary and important survey for so stupendous a work as laying a telegraphic cable of three thousand miles long across an ocean upward of two thousand fathoms deep, and nearly seventeen hundred miles wide."—O. H. BERRYMAN, U. S. N.

For a full statement of the results of these soundings in determining the proposed line of the cable of the Atlantic submarine telegraph, and for the statistics concerning this line, see article TELEGRAPH.

ABSTRACT OF DEEP SEA SOUNDINGS AND TEMPERATURES, WITH THEIR LATITUDES AND LONGITUDES, MADE ON BOARD THE UNITED STATES STEAMER "ARCTIC," LIEUTENANT COMMANDING O. H. BERRYMAN, UNITED STATES NAVY, BETWEEN NEWFOUNDLAND AND IRELAND, AUGUST, 1856.

Number	Miles.	Depth in Fathoms.	Latitude.	Longitude.	Barometer.	Thermometer attached.	Thermometer.		
							Dry Bulb.	Wet Bulb.	Water Surface.
1	34	96	47 50	52 00	30.34	68	55	49	47
2	17	150	48 00	51 41	30.48	66	49	51	47
3	17	98	48 13	51 20	30.38	62	49	47	45
4	19	85	48 27	50 58	30.34	63	49	47	47
5	19	120	48 40	50 36	30.41	64	50	47	44
6	23	870	48 51	50 05	30.38	68	50	48	42
7	20	460	49 12	49 42	29.84	60	54	54	50
8	30	732	49 36	49 05	30.15	68	54	52	56
9	23	1080	49 40	48 20	30.25	63	58	53	51
10	65	1500	49 49	46 43	30.38	68	59	60	53
11	32	1827	49 49	45 54	30.29	64	55	56	55
12	42	1627	49 50	44 43	30.20	66	59	59	60
13	88	1600	50 15	43 08	30.10	67	55	55	53
14	83	1500	50 03	40 26	30.12	68	55	55	54
15	77	1564	50 20	38 30	30.13	69	57	56	56
16	52	1600	50 44	37 15	30.03	69	55	57	56
17	56	1650	51 06	35 50	29.89	60	58	57	57
18	64	1650	51 15	34 08	29.88	60	55	56	57
19	72	2070	51 38	32 20	29.77	68	57	57	57
20	116	2000	52 24	29 16	29.99	67	56	56	58
21	72	1830	52 26	27 18	30.06	68	56	56	57
22	35	1920	52 26	26 30	30.15	71	59	58	59
23	53	1813	52 02	24 51	30.10	68	57	57	58
24	90	1650	51 45	22 23	30.05	69	60	60	62
25	40	1530	51 45	21 19	29.94	74	59	60	62
26	41	1543	51 50	20 12	29.90	71	59	60	61
27	60	1750	51 48	18 31	29.90	72	61	62	60
28	60	1905	52 01	17 06	29.83	70	65	65	62
29	30	1513	52 05	16 05	29.66	69	59	60	59
30	39	410	52 03	15 02	29.75	71	60	61	62
31	55	255	51 43	13 44	30.48	69	62	62	61
32	10	410	51 52	13 16	30.04	68	58	60	61
33	31	717	51 54	12 27	30.05	71	58	59	61
34	38	114	51 44	11 24	30.13	69	59	61	58

NOTE.—The soundings in this table are placed in the order in which they appear on the profile, without regard to dates.

South America. The southern portion of the American continent extends from Point Gallenas, in lat. $12^{\circ} 30'$, to Cape Horn, in lat. $56^{\circ} 30'$. The extent of coast that it offers to the Caribbean Sea and the Atlantic is estimated at 11,000 miles; and the coast washed by the Pacific, it is stated by the latest geographical authority, has an approximate continuity of 6800 miles. At the southern extremity there is a group of mountainous islands, separated from the main land by the Straits of Magellan, and forming the Archipelago of Terra del Fuego, or "Land of Fire," so called from the number of fires which its discoverer, Magellan, saw along its coast at night, supposed to have been volcanic. This archipelago, with its barren islands and rocks, must, however, be considered as the termination of the continent. Immediately north lies the vast and almost uninhabited country of Patagonia; while on the east, at a distance of from 300 to 400 miles in the South Atlantic, lie the Falkland group of islands.

The vast region known geographically as Patagonia extends from the River Negro, lat. 39° , to the Straits of Magellan, lat. 53° S., a distance of about 970 miles

in length, with a breadth varying from 200 to 420 miles. It comprises two distinct physical regions, differing in surface and climate—the one lying on the west side of the Andes, the other on the east, and called, respectively, Eastern and Western Patagonia. The former is claimed by the Argentine Republic to the Straits of Magellan, and the latter by Chili, down to Cape Horn. Both sections are as yet, however, inhabited by aboriginal races, with the exception of a Chilian settlement at Port Famine, and on the Straits of Magellan. This division of Patagonia is comprised in the Chilian province of Chiloe, which is composed of the archipelago of that name; that of Chonos, of the most southern islands, and that part of the continent which extends from Rio Negro, and as far south as Cape Horn. On the eastern division there are several ports, among which are, Gallegos, in $51^{\circ} 38'$; Santa Cruz, in $50^{\circ} 7'$; San Julian, in $49^{\circ} 12'$; Desire, in $47^{\circ} 5'$; Nuevo Golfo, in 43° ; and San Antonio, in 41° south. The few tribes of aboriginal Indians that inhabit this inhospitable region subsist upon the products of their fishery. The principal object of Chili in colonizing Port Famine, on the Straits, was to keep in check these nomadic tribes, though the colony has also been used for penal purposes. Cape Horn is uninhabited.

The South American continent has on its Pacific coast no large rivers. On the Atlantic, however, are the Amazon, the Orinoco, and the Plata, and a number of others, which, though not so large as those named, are equal in size, if not superior, to even the largest rivers in Europe. The Amazon is the largest river on the globe. Its principal tributaries vary in length from 1000 to 1800 miles, while the central stream is 4000 miles long, and is navigable 2200 miles from the sea. Peru, Bolivia, and Chili are the great mineral sites of South America, and produce chiefly silver, but also some gold and other metals, especially copper, which is very abundant in Chili. The most distinguishing feature in the vegetation of South America is the prodigious forests, which cover about two-thirds of the whole surface. Fruits of almost every variety abound, and indigo, coffee, sugar-cane, maize, and the cocoa-tree are among the chief products. The cultivation of the tea-tree has been attempted in Brazil, though it is believed without success; but *yerba mate*, from which is prepared the customary beverage of one half of the peninsula, grows in the greatest abundance in Paraguay. Spain and Portugal were severally the original colonists of South America—the former founding the states of Venezuela, New Granada, Bolivia, Peru, Chili, the Argentine Republic, Uruguay, and Paraguay; and the latter the vast empire of Brazil.

The South American states all achieved their independence between the years 1810 and 1825. These states, together with the colonies and other regions comprised in South America, with their respective areas, population, capitals, etc., are exhibited in the following table, derived from the latest geographical authority; though, as regards the strict accuracy of the figures given, the same remark applies that is made with reference to similar tables respecting Mexico and the Central American states:

States, etc.	Area in Square Miles.	Population.	Population to Square Mile.	Capitals.	Population.
New Granada.....	521,948	2,343,054	4.29	Bogota.....	45,000
Venezuela.....	429,712	1,149,836	2.69	Caracas.....	53,800
Ecuador.....	287,633	665,000	2.32	Quito.....	65,000
Guiana, British.....	96,000	127,635	1.33	Georgetown.....	25,500
Dutch.....	59,765	61,080	1.02	Paramaribo.....	18,000
French.....	27,560	22,010	0.83	Cayenne.....	5,000
Brazil.....	2,973,400	6,065,000	2.04	Rio Janeiro.....	266,000
Peru.....	438,726	2,115,493	4.24	Lima.....	100,000
Bolivia.....	473,298	1,447,000	3.06	Chuquisaca.....	26,000
Chili.....	241,952	1,133,862	4.53	Santiago.....	78,000
Argentine Republic.....	786,000	764,000	0.47	Buenos Ayres.....	100,000
Paraguay.....	72,106	300,000	4.16	Asuncion.....	12,000
Uruguay.....	73,533	120,000	1.63	Montevideo.....	16,000
Patagonia, east of Andes.....	210,000	300	.....	.....	.....
Falkland Islands.....	6,297	560	0.09	Port Stanley.....	300
Total.....	6,762,540	16,814,300	2.41	.....	.....

In the population given in the third column, no account is taken of the uncivilized Indian races, which probably number between 1,000,000 and 1,200,000 souls. These are found chiefly in the great plains of the Orinoco, Amazon, and Parana. The relative rank of the South American states, as regards their commercial intercourse with the United

States, may be inferred from the subjoined comparative statement, exhibiting the values of exports to each country from the United States, and of imports from each country into the United States, during a period of four years, from 1852 to 1855, inclusive; made up from United States Treasury reports for said years:

South American States.	1854.		1855.		1856.		1857.	
	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.
Brazil.....	\$4,239,241	\$14,110,387	\$4,261,273	\$15,218,935	\$5,094,908	\$19,262,657	\$5,545,267	\$21,460,733
Chili.....	2,193,250	3,332,167	3,426,257	3,518,896	2,867,743	2,467,819	2,907,165	3,742,439
Venezuela.....	1,200,883	3,072,649	1,223,449	8,616,869	1,712,774	4,202,692	1,427,578	3,860,518
Argentine Republic.....	761,726	2,144,971	969,427	2,545,087	1,259,865	2,322,161	1,318,807	2,784,473
Peru.....	685,155	1,065,406	870,546	597,618	1,244,233	217,759	567,932	208,747
Uruguay.....	512,957	457,179	422,172	242,709	551,329	361,036	1,006,172	868,497
Ecuador.....	.....	57,584	66,092	12,533	.....	.....	.....	.....

—*Com. Relat. U. S.* For a complete exhibit of the commerce of each country, see articles under the proper heads.—See *North Amer. Rev.*, xii. 432 (E. EVERETT), xix. 158 (J. SPARKS); *Westm. Rev.*, vi. 202; *Edinb. Rev.*, xliii. 259; *DE Bow's Rev.*, vi. 3; *Foreign Quart. Rev.*, xviii. 455; *Christ. Rev.*, xvi. 321; *Quart. Rev.*, xxxii. 125; *Southern Quart. Rev.*, xii. 330; *Dem. Rev.*, i. and ii.—See article AMERICA.

Southampton, a parliamentary and municipal borough, sea-port town, and county of England, in the southern part of the county Hants, occupying a peninsula between the mouths of the Test and Itchin rivers, at the head of Southampton water, 12 miles south-south-west from Winchester, on the southwestern railroad, 72 miles southwest from London. Latitude of Saint Michael's spire, 50° 54' N., long. 1° 24' 2" W. Population in 1851, 35,305. The new docks on the east of the town, opened in 1842, have an area of 208 acres, and have admitted steamers of more than 700 tons burden. The West India, Mediterranean, and other mails, have their station here, and the town communicates by steamers with all the ports of South England, the Channel islands, Ireland, and by railroad with London, and all the centre of England. The port extends from near Portsmouth to Christchurch. Here are some manufactures of silks and carpets, but ship-building and general commerce are the chief sources of wealth. Southampton is now the point of departure of the steamers for Alexandria (see *ante*, p. 20), and a stopping-place for the steamers between Bremen and New York.

South Carolina, one of the Southern United States, is situated between 32° 2' and 35° 10' N. lat., and between 78° 24' and 83° 30' W. long. It is 200 miles long and 125 broad, containing 28,000 square miles. The population in 1790 was 240,000; in 1800, 345,591; in 1810, 415,115; in 1820, 502,741; in 1830, 581,458; in 1840, 594,398; and in 1850, 668,507.

Early History.—When the Spaniards, under Vasquez Ayllon (1520 and 1526), arrived on the coasts of what we now call Carolina, and more especially South Carolina, they heard here of a great Indian king and country, both called *Chicora* or *Chicoria*, and they applied that Indian name for some time to this country, without, however, giving to it very distinct limits. The country was also sometimes called after its discoverer, *Tierra del Licenciado Ayllon*, or, shorter, *Tierra de Ayllon*, often also corrupted to *Terra de Aillon*. Under this name the Spaniards comprehended sometimes a very great part of North America, sometimes not more than this province.

French Claims.—It is curious enough that the French also, when they (1563) arrived at the locality of Ayllon's activity, heard again of an Indian king and country of that name. In their ears it sounded, however, like *Chicola* or *Chiouole*. After the French navigation to these regions we hear the country sometimes designated by the French themselves with the name *La Floride Française*, and other nations also called it *French Florida*. The Spaniards, of course, always considered it as a part of their Spanish Florida. The French built on their Riviere May (St. Mateo or St.

John's River) a fort, which they called Fort Caroline or Carolina. Some map-makers and geographers applied this name, as an appellation of a country or territory, to the whole region. So we see, for instance, on a map of North America by Cornelius a Judeis (1593), the whole French Florida called *Carolina*, in honor of Charles IX., king of France. It is curious that the same name was afterward given to the same locality in honor of an English king.

English Settlements.—The English, since their settlements at Roanoke, comprehended the whole territory of Carolina under their widely-extended name of Virginia, after 1583. This grant had, however, very slight consequences. The country was not settled, not taken possession of, not even surveyed or explored. In the year 1663 Charles II. made another grant of all the lands between the 36th and 87th degrees of north latitude to Edward, earl of Clarendon, and some other lords and gentlemen, and this tract was again called, in his honor, *Carolina*; so that we may say we have three kings as godfathers to this province—Charles IX. of France, Charles I. and Charles II. of England. By a second more ample charter of the 24th of March, 1667, Charles II. extended the boundaries of Carolina from north latitude 29° to 36° 30', and from east to west "until the Pacific Ocean." The country was divided into two great counties—a northern one, called the county of Albemarle, and a southern one, called Clarendon county.

In this same year (1667) William Sayle, the appointed Governor of Carolina, explored and surveyed the whole coast of the province, entering all the rivers and making astronomical observations. He no doubt, also, procured a map of the country to be made, but unhappily this map is not preserved for us. Probably the results of this first good survey of the coasts of Carolina were not then made known to the world at large; for we find still, on the edition of Champlain's maps of the year 1677, along the coasts of Carolina, this inscription: "*Terre non encore bien decouverte continente a la Florida*" (a land not yet well discovered is connected with Florida).

In the year 1729 the whole great province was divided into North and South Carolina, and as the dividing point on the coast was fixed a small inlet to the west of Cape Fear, called Little River Inlet. In the year 1733 the province of Georgia was detached as a separate government of the old Territory of Carolina, and the southern boundaries of this latter were fixed at the mouth of the Savannah River, and within these boundaries the name of Carolina has been prescribed ever since. According to what we stated, we may in a certain degree consider the names of Wingandacoa, Weapemec, Ould Virginia, Albemarle county, as old particular designations for North Carolina; and the name of Chicora, Terra de Ayllon, Florida Française, Clarendon county, as particular appellations applied to South Carolina.—J. G. KOHL. See NORTH CAROLINA.

Physical Features, etc.—The sea-coast is bordered with a series of islands, between which and the shore there is a very convenient navigation. The main land is

naturally divided into the lower and upper country. The low country extends from eighty to one hundred miles from the sea-coast, and is covered with extensive forests of pine, called pine barrens, interspersed with marshes and swamps of a rich soil. The banks of the large rivers and the creeks of this region are bordered with a belt of excellent land, producing cotton and Indian corn in abundance. The marshes and swamps in this district make fine rice plantations. The staple productions of the State are cotton and rice, great quantities of which are exported. Rice is extensively cultivated where the land can be irrigated by the tide or the overflowing of the rivers. The sea-land cotton produced on the islands along the shores is of a superior quality, and is in great demand. Gold, iron, granite, and marble, are the principal minerals.

There were in this State in 1850, 4,072,651 acres of land improved, and 12,145,049 acres of unimproved land in farms. Cash value of farms, \$82,431,684; and the value of implements and machinery was \$4,136,354. The number of live stock was—horses, 97,171; asses and mules, 37,483; milch cows, 193,244; working oxen, 20,507; other cattle, 563,935; sheep, 285,551; swine, 1,065,503; aggregate value, \$15,060,015.

Agricultural Products, etc.—Wheat, 1,066,277 bushels; rye, 43,790; Indian corn, 16,271,454; buckwheat, 283; oats, 2,322,155; barley, 4533; peas, 1,026,900; potatoes, 136,494; sweet potatoes, 4,337,469; rice, 159,930,613 pounds; value of products of the orchard, \$35,108; produce of market gardens, \$47,286; pounds of butter made, 2,981,850; of cheese, 4970; sugar, 671 hogsheads; maple-sugar, 200 pounds; molasses, 15,904 gallons; beeswax and honey, 216,281 pounds; wool,

pounds produced, 487,233; cotton, 300,901; flax, 333; silk cocoons, 123; hops, 26 pounds; tobacco, 74,285; hay, tons of, 20,925; clover seeds, 376 bushels; other grass seeds, 30; flax-seed, 55 bushels; wine, 5880 gallons. Value of home-made manufactures, \$909,525; and of slaughtered animals, \$1,302,637.

The Great Pedee River, 450 miles long, rises in North Carolina, and runs through the eastern part of the State. It is navigable for sloops 130 miles. The Santee, formed by the junction of the Wateree and the Congaree, rises in North Carolina, and has a sloop navigation for about 130 miles. The Saluda is a branch of the Congaree. The Edisto is navigable for large boats 100 miles. The Savannah washes the whole southwest border of the State, and is a noble stream. There are several smaller rivers, among which are Cooper, Ashley, and Combahee.

Manufactures, etc.—There were in the State in 1850, 13 cotton factories, with a capital invested of \$778,000, employing 371 males and 572 females, producing goods valued at \$742,220; 6 establishments with a capital of \$185,700, employing 155 persons, and making 1286 tons of castings, etc., valued at \$87,683; 287 flouring and grist mills, 448 saw-mills, 107 tanneries, 41 printing-offices, 45 newspapers—7 daily, 4 tri-weekly, 2 semi-weekly, 24 weekly, 1 bi-monthly, 5 monthly, and 1 quarterly publication. Capital invested in manufactures, \$6,060,565; value of manufactured articles, \$6,200,864.

In June, 1856, there were 9 railroads, with 846 miles of road finished and in operation, and 874 miles in course of construction. There were 16 banks and 2 branches, with a cash capital of \$16,073,580.

FOREIGN COMMERCE OF THE STATE OF SOUTH CAROLINA FROM OCTOBER 1, 1820, TO JULY 1, 1857, SHOWING ALSO THE DISTRICT TONNAGE IN 1821, 1831, 1841, AND 1851.

Years ending	Exports.			Imports.		Tonnage cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.	
Sept. 30, 1821.....	\$6,867,515	\$332,996	\$7,200,511	\$8,007,113	45,342	19,575	16,249	17,102	
1822.....	7,136,366	123,954	7,260,320	2,233,586	48,524	15,237	.....	.....
1823.....	6,671,998	226,816	6,898,814	2,410,101	54,637	24,069	.....	.....
1824.....	7,833,713	200,363	8,034,082	2,166,185	61,092	18,578	.....	.....
1825.....	10,876,476	180,267	11,056,742	1,892,297	57,520	17,081	.....	.....
1826.....	7,468,966	85,070	7,554,036	1,634,453	63,820	18,818	.....	.....
1827.....	8,189,496	133,065	8,322,561	1,434,106	68,854	24,601	.....	.....
1828.....	6,508,570	42,142	6,550,712	1,242,043	67,555	25,596	.....	.....
1829.....	8,134,676	40,910	8,175,586	1,189,613	66,337	24,473	.....	.....
1830.....	7,580,821	46,210	7,627,031	1,054,619	52,404	20,405	.....	.....
Total...	\$77,268,596	\$1,411,799	\$78,680,395	\$18,173,156	566,145	208,713	.....	.....
Sept. 30, 1831.....	\$6,528,605	\$46,596	\$6,575,201	\$1,238,163	43,426	29,045	5,802	9,040	
1832.....	7,685,833	66,898	7,752,731	1,213,725	47,893	41,836	.....	.....
1833.....	8,337,512	96,813	8,434,325	1,517,765	49,069	37,478	.....	.....
1834.....	11,119,565	88,213	11,207,778	1,787,267	60,347	40,495	.....	.....
1835.....	11,224,298	116,718	11,333,016	1,891,855	48,703	33,476	.....	.....
1836.....	13,482,757	201,619	13,684,376	2,801,361	61,552	35,036	.....	.....
1837.....	11,138,992	81,169	11,220,161	2,510,890	49,609	39,256	.....	.....
1838.....	11,017,391	24,679	11,042,070	2,318,791	37,242	27,355	.....	.....
1839.....	10,318,822	66,004	10,385,426	3,066,077	51,923	30,627	.....	.....
1840.....	9,981,016	53,753	10,036,769	2,068,870	52,090	25,465	.....	.....
Total...	\$100,834,791	\$342,062	\$101,676,853	\$20,424,624	536,789	340,070	.....	.....
Sept. 30, 1841.....	\$8,011,392	\$31,892	\$8,043,284	\$1,557,431	63,469	28,716	12,953	11,441	
1842.....	7,508,399	17,324	7,525,723	1,359,465	61,132	34,048	.....	.....
9 mos., 1843.....	7,754,152	6,657	7,760,809	1,294,709	71,400	43,191	.....	.....
June 30, 1844.....	7,429,585	3,697	7,433,282	1,131,515	49,801	48,926	.....	.....
1845.....	8,884,770	5,878	8,890,648	1,143,158	66,708	33,912	.....	.....
1846.....	6,329,535	18,942	6,348,477	902,536	50,514	27,579	.....	.....
1847.....	10,428,146	3,371	10,431,517	1,580,655	55,429	40,792	.....	.....
1848.....	8,081,917	.....	8,081,917	1,485,249	53,854	42,562	.....	.....
1849.....	9,699,875	1,301	9,701,176	1,475,695	88,738	58,101	.....	.....
1850.....	11,446,892	908	11,447,800	1,938,785	72,222	52,830	.....	.....
Total...	\$80,074,663	\$89,970	\$86,164,633	\$13,561,251	653,327	410,947	.....	.....
June 30, 1851.....	\$15,316,578	.....	\$15,316,578	\$2,081,312	51,336	59,172	.....	17,977
1852.....	11,670,021	.....	11,670,021	2,175,614	59,927	53,234	.....	.....
1853.....	15,400,408	.....	15,400,408	1,809,517	76,368	56,260	.....	.....
1854.....	11,982,308	\$12,708	11,995,016	1,711,855	85,003	39,623	.....	.....
1855.....	12,608,911	1,350	12,700,260	1,588,742	110,533	84,414	.....	.....
1856.....	17,358,298	2,251	17,360,549	1,905,234	114,963	47,255	.....	.....
18 7 mos., 1857.....	10,127,434	12,969	10,140,403	2,019,786	105,062	47,940	.....	.....

* Nine months to June 30, and the fiscal year from this time begins July 1.

Principal Ports.—Charleston, lat. 32° 47' N., long. 79° 48' W., situated on a point of land between the Ashley and Cooper rivers, has a spacious harbor. At the entrance to the harbor there is a sand bar, of about eight miles in length, having several channels. Three of the channels can only be used by ships of large ton-

nage; one, the ships' channel, has a depth of water of twelve feet at ebb-tide, and from seventeen to twenty at flood-tide. Ships always take a pilot, on account of shifting sands, and are moored along-side wharves in safety inside the harbor. It is the chief commercial emporium of the State, and the largest shipping port on the Atlantic below Baltimore. The chief exports are cotton and rice. It is connected with the interior by the South Carolina and the Northeastern railroads. The tonnage of Charleston, in 1856, was 59,128 tons.

Beaufort, on the west side of Port Royal River, an inlet of the Atlantic, and sixteen miles from the sea, has a good harbor, but on account of a bar at its mouth only small vessels can enter it. It has little or no commerce. The tonnage in 1856 was only 110 tons.—For further particulars as to South Carolina, see *Southern Quart. Rev.*, xviii. 66, xx. 273, 298, iv. 247 (SIMMS); *De Bow's Rev.*, viii. 24, xi. 123; *North American Rev.*, xiii. 143.

South Sea Bubble. This destructive speculation was commenced in 1710, and the company incorporated by statute in 1716. The bubble, which ruined thousands of families, exploded in 1720, and the directors' estates, to the value of £2,014,000 sterling, were seized in 1721. Mr. Knight, the cashier, absconded with £100,000; but he compounded the fraud for £10,000, and returned to England in 1743. Almost all the wealthy persons in the kingdom had become stock-jobbers and speculators in this unfortunate scheme. The artifices of the directors had raised the shares, originally of £100, to the enormous price of £1000.—See CHARLES MACKAY'S *History of Modern Monias*; *Bankers' Magazine*, N. Y.

South Sea Duties. The British act of the 9 Ann. c. 21, establishing the South Sea Company, conveyed to them the exclusive privilege of trading to the Pacific Ocean, and along the east coast of America, from the Orinoco to Cape Horn.

Sovereign (the Coin). The name of an ancient as well as a modern English gold coin. In Henry I.'s reign, a coin of this denomination was issued, of the value of twenty-two shillings, and one twenty-fourth part of the weight of a pound of gold. In 84 Henry VIII., sovereigns were coined of the value of twenty shillings, which afterward (4 and 6 Edward VI.) passed for twenty-four and thirty shillings. By 56 George III., sovereigns of the new gold coinage were directed to pass for twenty shillings, and they were issued from the Mint the same year (1816), and have since maintained the same value.

Sovereignty of the Seas. The claim of England is of very ancient date. Arthur was the first who assumed the sovereignty of the seas for Britain, and Alfred afterward supported this right. The sovereignty of England over the British seas was maintained by Selden, and measures were taken by government in consequence, 8 Charles I., in 1633. The Dutch, after the death of Charles I., made some attempts to obtain it, but were roughly treated by Blake and other admirals. Russia and other powers of the North armed, to avoid search, in 1780; again in 1800.—HAYDN.

Soy, a species of sauce prepared in China and Japan from a small bean, the produce of the *Dolichos soja*. It is eaten with fish and other articles. It should be chosen of a good flavor, not too salt nor too sweet, of a good thick consistence, a brown color, and clear; when shaken in a glass, it should leave a coat on the surface, of a bright yellowish brown color; if it do not, it is of an inferior kind, and should be rejected. Japan soy is deemed superior to the Chinese. It is worth, in bond, from six to seven shillings sterling a gallon. It is believed to be extensively counterfeited.—MILBURN'S *Orient. Com.*

Spain, or Espana (Iberia, Hispania), a country of southwestern Europe, occupying the greater part of the Iberian peninsula, and often termed colloquially "the Peninsula," extending between lat. 36° 1' and

43° 45' N., and long. 8° 20' E., and 9° 21' W., bounded north by the Bay of Biscay and by the Pyrenees, which separate it from France, east by the Mediterranean, south by the Mediterranean and the Strait of Gibraltar, and west by Portugal and the Atlantic Ocean.

Spain is rich in minerals, especially mercury, iron, copper, and lead. The celebrated gold and silver mines of the time of the Romans have long been abandoned, but mercury is extracted in great abundance from the mines of Almaden. Lead forms an important branch of mining industry. Coal is found chiefly in the Asturias; copper, tin, zinc, antimony, arsenic, and cobalt, are common, and rock-salt is abundant in the hills of Cardona. The principal rivers of Spain are, from north to south, the Ter, Llobregat, Ebro, Guadalquivir, Júcar, and Segura, flowing east to the Mediterranean. The Minho, Douro, Tagus, Guadiana, and Guadalquivir, flowing mostly through Portugal west and south to the Atlantic. Few of these are navigable, and those only for small boats near their mouths.

Spanish Colonies.—The principal are Cuba, Puerto Rico, and some smaller islands in America; the Philippine and Marianne Islands in the Pacific, the Canary Islands in the Atlantic, Fernando Po and the Island of Annabon in the Gulf of Guinea, and Ceuta, Gomer, and Melilla in Barbary.—For a full account of the Colonies, see articles under these heads.

The Public Debt of Spain.—The following is an official return of the state of the public debt of Spain on the 30th of June, 1855:

	Reals.
Three per cent. stock, payable to bearer, and inscriptions transferable and non-transferable (internal).....	2,681,011,544
Ditto given as guarantees for loans and contracts.....	543,012,000
Ditto deferred.....	1,597,289,456
Three per cents (foreign).....	713,594,910
Ditto deferred.....	816,978,400
Consolidated bonds and other internal stock, bearing 4 per cent. interest.....	56,880,492
Five per cent. stock and inscriptions, transferable and non-transferable.....	134,178,119
Redeemable debt, 1st class.....	331,201,486
Certificates of current debt at 5 per cent. in paper (Certificaciones de deuda corriente al 5 por 100 4 papel).....	495,398,238
Non-consolidated bonds.....	90,847,692
Laminas Provisionales.....	56,887,833
Bonds payable to bearer of redeemable debt, 2d class.....	265,400,000
Provisional documents for interest on the deuda corriente at 5 por 100 4 papel.....	129,552,650
Bonds of all kinds of the debt without interest (deuda sin interés).....	387,328,678
Inscriptions of active debt, 5 per cent.....	14,260,000
Inscriptions of English claims, 5 per cent.....	60,000
Ditto in favor of French treasury.....	278,268,123
Ditto United States.....	12,000,000
Foreign passive debt.....	33,504,000
Inscriptions of old foreign 5 per cent. debt.....	79,882,000
Ditto foreign 3 per cents of 1831.....	1,786,133
Actions of national loan of 1831.....	3,774,000
Certificates of premium on the Lafitte loan.....	2,301,300
Deferred debt of 1831, without interest.....	122,310,000
Bonds payable to bearer of foreign redeemable debt, 2d class.....	970,964,000
Capitals recognized to the owners of lay tithes	115,075,735
Certificates of ditto, and interest on the same	89,677,238
Proprietors of quirements of the order of St. John of Jerusalem.....	91,400
Interests of the inscription in favor of the French treasury.....	183,760,874
Capitalizable interest at 5 per cent.....	35,746,157
Interests of 4 and 5 per cent. debt, home and foreign.....	18,543,633
Interest in paper of the 5 per cent. current debt	407,040,748
Bonds issued for personal services (1st class).....	23,978,124
State paper issued for railway undertakings (acciones de ferro carriles).....	192,200,000
Loans (by decrees and laws) of 1833, 1841, 1850, 1851, and 1852.....	192,880,000
Treasury bills, preferable, with interest.....	12,251,384
Ditto, non-preferable.....	42,601,670
Ditto, preferable, without interest.....	149,870
Ditto, non-preferable, without interest.....	1,068,694
Total Reals, 1855.....	13,580,466,110

The same report states that the total amount of redeemable debt, including 1st and 2d class, purchased

since the law of 1851 to the end of June, 1855, was 934,935,271 reals, and cost the state 67,101,134 reals.

The climate of Spain varies exceedingly with elevation and position; it is warm on the coasts; the tablelands are exposed to great heat in summer, and extreme cold in winter. The soil is generally fertile, except in the elevated and arid districts of the central provinces; the chief crops are wheat, maize, barley, rice, hemp, and flax. The amount of corn is often insufficient for home consumption. The wines of Spain are much esteemed; the principal growths are those of Xeres (sherry), Rota, Malaga, Alicante, Malvasia, and Val de Penas; the other products are soda (from marine plants), honey, wax, and silk, the latter very abundant in the southeastern provinces. In the southern provinces the sugar-cane and cotton have been acclimatized, and there the orange and citron grow in great abundance. The best building timber grows in the northern coast; the cork-tree, the kernes oak, and the shumac-tree, yield valuable products. The horses of Andalusia are celebrated; the mules and asses are remarkable for beauty and size. Cattle are of good breeds. The race of sheep called the merino yields a great quantity of excellent wool; their exportation has always been prohibited, their pasturage is regulated by ancient laws, and their number is reckoned at five or six millions.

Commerce.—There is not at this time, nor has there ever been, a commercial treaty between the government of the United States and that of Spain. But two treaties of any kind have been negotiated between the two governments—one purporting to be “A treaty of friendship, limits, and navigation,” signed October 27, 1795; the other, “A treaty of amity, settlement, and limits,” February 22, 1821.

In regard to navigation, the first-mentioned treaty provided chiefly for a state of war, and prescribed the immunities and privileges to which the vessels of each should be entitled, in such a contingency, in the ports, harbors, bays, etc., of the other.

By article 1st, the contracting parties agree that there shall be a firm and inviolable peace and sincere friendship between his Catholic Majesty, his successors and subjects, and the United States and their citizens, without exception of persons or places.—*Art. 7.* The citizens and subjects, vessels and effects, of each of the parties, not to be liable to embargo or detention for any military expedition, or other public or private purpose, by either party.—*Art. 13.* In the event of a war between the contracting parties, the merchants residing in the dominions of either to be allowed one year from the declaration of war to remove their effects.—*Art. 18.* Ships of war of either party, when exercising right of search, to remain out of cannon-shot, and to board with two or three men only; and having seen passport, not to molest in any manner, nor force to quit her intended course, the vessel so visited.—*Art. 19.* Consuls to be reciprocally established, and to be entitled to the privileges and powers enjoyed by those of the most favored nations.—*Art. 22* (1st section). The two contracting parties to give in future to their mutual commerce all the extension and favor which the advantages of both countries may require.

The treaty of 1819, so far as it relates to navigation, confirms all the foregoing stipulations of the treaty of 1795; and as no limit was assigned to the duration of that treaty, those stipulations are still in force, and, with subsequent acts of legislation, regulate the intercourse, navigation, and commerce between the United States and its citizens, and the King of Spain, his successors and subjects, between whom it is agreed “there shall be a firm and inviolable peace and sincere friendship, without exception of persons or places.” The commerce between the United States and Spain, though at all times employing but a limited capital, commenced at a period long anterior to the American Revolution. The British-American colonists were permitted, by act of

Parliament, to carry on a direct trade in all articles, except tobacco and naval stores, with countries south of Cape Finisterre. This trade consisted principally in exporting from the colonies lumber, laths, and other produce (tobacco and naval stores excepted), and in bringing home return cargoes of wine, salt, fruits, and other productions of the Spanish peninsula.

After the peace of 1783, a more unrestricted trade was opened between the two countries; but, owing to the prohibition on tobacco (a policy adopted for the purpose of encouraging the growth of that article in the Spanish colonial possessions), and the high protective duties on most of the other leading staples of the United States, the trade could not have realized any hope of profitable investment, or given much encouragement to commercial enterprise. The wines, fruits, olive oil, salt, brandies, barilla, silks, and wools of Spain, would constitute a profitable and an easy exchange for the productions of the United States, particularly breadstuffs, tobacco, and cotton, if that country could be induced to relax a system of restrictive policy which has never realized the benefits it was designed to secure, and has virtually rendered Spain, to a great extent, commercially isolated from the other nations of the earth. Her legislation in regard to commercial intercourse with foreign countries would seem to be based upon the principle of possessing and securing within herself all the advantages of an extensive commerce, and all the means of luxury, wealth, and power—a principle which, however gratifying to national vanity it may be in theory, needs no other proof of its utter impracticability, if not of its inevitably pernicious consequences, than a reference to what is known of the history of Japan or China, or even to the commercial condition of Spain herself during the last half century. She has ever maintained and exercised the right to be the sole arbiter of her commercial regulations, and, as such, permits no foreign interference with her policy of excluding from her ports the produce of the industry and soil of other nations. Two features stand prominently forward in this exclusive and restrictive system: the first, the exclusion of commodities from any country, except her colonial empire, especially before its dismemberment and consequent diminution; and, secondly, by compelling the latter to consume no manufactured articles except those of Spain, with the view that all the precious metals should be sent to the mother country, where they would remain if no foreign merchandise was admitted. Notwithstanding these precautions, the precious metals were drained off to foreign countries, in exchange for the enormous contraband importations smuggled into Spain, by way of the Basque provinces, through Portugal; by way of the Mediterranean; and also even, as they were, and are to the present day, by way of Gibraltar. Besides, an extensive contraband trade with the Spanish settlements in Cuba and South America was carried on by the British-American colonies, thus draining off a large portion of the precious metals, which it was the policy of the mother country to monopolize, at a cost so fatal to her commercial prosperity. This contraband trade was, however, arrested, and after a short time totally suppressed, by the vigilance of the *guarda-costas* stationed by Spain along the coasts, and by the indiscriminate seizure of all British colonial vessels found near the shores of the Spanish colonies.

The trade with Spain of late years exhibits in a most striking manner the pernicious effect of a system of commercial intercourse which, however well it may have fulfilled its ends when Mexico, the West Indies, the South American republics, and the Spanish Polynesian islands all poured their united treasures into the lap of Spain, and thus rendered her to a certain extent independent of other nations, has long since proved to be the most serious, if not the only, obstacle to her regaining the proud and prominent position she once held in the family of nations. The difference in the amount

of exports between the periods of 1834 and 1854 is attributable to the partial relaxation of the restrictive system within the past few years, particularly the modifications which the tariff has undergone since 1849; but the great disproportion between imports and exports, resulting in so large a balance against Spain, shows that the prohibitions and restrictions are as yet but partially abated.

Of the article of tobacco, about 6,000,000 lbs. is smuggled annually from Gibraltar into Spain, and about 4,000,000 lbs. is exported from the same depôt to Oran, Algiers, Malta, and other places. Spain, in the face of this contraband, still maintains her royal tobacco monopoly. Exclusive of the tobacco smuggled into Spain from Gibraltar, it is smuggled along the whole north and west coasts of Spain. The extension of the Spanish customs to the sea-coasts and ports of Biscay in 1844 has not diminished, but, it is asserted, has greatly increased, the contraband trade.—MACGREGOR, parts 13 and 14, p. 95.

Notwithstanding the apparently satisfactory results, the commerce of the United States with Spain, in American bottoms, is perceptibly declining. Various causes conspire to this result, among which may be regarded as the most prominent the enormous differential duties imposed on imports under all foreign flags, and the discriminating duties of port and navigation, amounting to 100 per cent. on American vessels in favor of national, and what is styled "privileged vessels," or, in other words, the vessels of nearly all other foreign nations. Besides, American vessels are frequently exposed to local restrictions (doubtless unauthorized by the government) in the different ports, to which they must either quietly submit, or incur all the expense, delay, and trouble of protesting against the action of officials whose power in such cases is as unlimited as its exercise is arbitrary and oppressive. Vessels of the following nations are ascertained to be of this class: England, France, Holland, Portugal, Russia, Prussia, Sardinia, Belgium, Hamburg, Sweden and Norway, Tuscany, Bremen, Papal States, Denmark, Brazil, Ecuador, Lübeck, Hanover, Mecklenburg, Oldenburg, and Sicily.

This has been a subject of frequent complaint on the part of American captains, but thus far without obtaining relief. The United States consul at Malaga, under date of April 3, 1854, adverting to this subject, says: "Although subject to the Central Board at Madrid, [quarantine regulations] are almost entirely under the control of the local board of this city, * * * ordering vessels off to lazarettos, * * * in the face of clean bills of health certified by Spanish consuls, upon mere reports, without any official information to warrant such extraordinary measures."

The following table will show, approximately, to what extent the direct trade between the United States and Spain has fallen off within the past few years. Most of this trade is carried on through the port of Malaga.

TONNAGE OF AMERICAN VESSELS ENTERED AT THE PORT OF MALAGA IN THE FOLLOWING YEARS.

Years.	Tons.	Years.	Tons.
1846	15,276	1850	16,600
1847	12,288	1851	11,918
1848	15,699	1852	12,610
1849	13,652	1853	11,375

The falling off in tonnage which the above table exhibits is, however, perfectly reconcilable with the comparative tables for 1854 and 1852, when we take into consideration the fact that at least one-third of the exports to the United States is carried by privileged vessels; and even national vessels, notwithstanding the discriminating duty of 10 per cent. to which they are subject in the ports of the United States, participate largely in this carrying trade, for the purpose of returning with cargoes of cotton for Malaga and Barcelona, or with codfish from Newfoundland.

The great articles of export from Spain consist (exclusive of silk manufactures) of raw products. Of these

wine, olive oil, wool, fruits of various kinds, lead, quicksilver, brandy, cork-wood, salt, raw silk, wheat, etc., are the most important, and are almost all susceptible of an indefinite increase.

The great articles of import are colonial products, obtained principally from Cuba, Porto Rico, etc.; cottons and cotton wool; linens, and hemp and flax; woollens; salted fish; hardware, glass, and earthenware; timber, rice, hides, butter and cheese, etc. Subjoined is

AN ACCOUNT OF THE VALUES OF THE PRINCIPAL ARTICLES OF NATIVE PRODUCE EXPORTED FROM SPAIN IN 1849, SHOWING ALSO THE PROPORTIONAL VALUE OF EACH ARTICLE.

Articles in the Order of their importance	Value in Reals Vellon	Amount per Cent. of Total Value.
Wine, sherry	75,830,620	.....
" common	22,760,768	.....
" Malaga	4,162,791	.....
Total wine	102,754,179	22.76
Olive-oil	46,797,947	9.95
Flour	36,850,052	7.85
Quicksilver	36,286,840	7.71
Lead	32,561,614	6.94
Raisins	22,745,848	6.35
Wool	14,339,281	3.06
Coin	13,302,902	2.84
Cork-wood	13,151,455	2.81
Brandy	12,922,000	2.76
Cochineal	11,287,903	2.46
Silver in bars	10,004,603	2.13
Salt	9,941,327	2.11
Nuts	5,724,628	1.22
Soap	5,530,453	1.17
Silk	4,155,455	0.88
Liquorice	3,477,235	0.74
Almonds	3,441,264	0.74
Oranges	3,306,380	0.73
Silk goods	2,759,572	0.58
Saffron	2,717,535	0.57
Hides	2,577,416	0.54
Iron	2,226,905	0.47
Woolen goods	2,159,519	0.46
Wheat	1,965,844	0.42
Shoes	1,922,579	0.41
Pastas	1,886,929	0.40
Maize	1,656,215	0.35
Cattle	1,601,798	0.34
Garbanzos, or chick-pea ..	1,600,242	0.34
Garden stuff	1,503,122	0.32
White paper	1,479,278	0.32
Books	1,446,014	0.30
Rice	1,358,949	0.29
Sedge matings, etc.	1,349,253	0.28
Lemons	1,209,705	0.26
Sausages	1,177,724	0.25
Hempen yarn	1,156,446	0.24
Oil of almonds	1,006,548	0.24
Kidney beans	1,087,036	0.23
Sugar	1,044,879	0.22
Salted codfish	916,768	0.20
Grapes	912,768	0.19
All other articles	30,725,990	6.56
Total	469,010,917	100.00

The importance of the trade that Spain formerly carried on with her vast possessions in the New World was at all times much exaggerated; and she, in truth, was little better than an agent in the business, the greater part of the goods sent on Spanish bottoms to the colonies being, in reality, the property of foreign merchants. Spain, notwithstanding the emancipation of Mexico and South America, has still some very valuable colonies; and, if nothing else can, the astonishing progress made by Cuba and Porto Rico since the abolition of the prohibitive system, should satisfy her of its ruinous tendency.

New Organization of Ports.—By royal decree of February 28, 1854, a new organization is made of the customs service by land and sea, the principal features of which it may be interesting to the mercantile interests of the United States to have noted. As regards the sea, it divides the service into four classes. The first class comprises importation, exportation, re-exportation, coasting-trade, and all other commercial operations in the ports of Alicante, Almeria, Barcelona, Bilbao, Cadiz, Carthagena, Palma de Majorca, San Sebastian, Santander, Seville, Tarragona, and Vigo. In the second class, comprising the ports of Carril, Palo-

mas, and Rivadeo, the importation of cotton-tissues is not to be permitted. In the ports of the third class, comprising those of seventeen provinces, only certain specified articles, principally raw materials, are to be imported and exported; and in those of the fourth class, comprising sixteen provinces and the Balearic Isles, only coasting-trade operations and exports are to be allowed. As regards the land, it is divided into three classes, and the regulations are framed solely with a view to prevent smuggling. They do not, however, possess sufficient interest for insertion here at length.

The principal ports are, Alicante, a sea-port in Valencia, lat. $38^{\circ} 20' 41''$ N., long. $80^{\circ} W$. The harbor is open and spacious, between Cape de la Huerta on the northeast, and Isla Planá on the south, distant from each other about ten miles. Ships of considerable burden moor from one-fourth to one mile from shore, in from 30 to 40 feet of water; they are exposed to all winds from the east-northeast to south by west; but the holding-ground is good, and there is no instance of a ship having been driven from her moorings in the past twenty years.

Barcelona, the principal town of Spain on the Mediterranean, in lat. $41^{\circ} 22' N$, and long. $2^{\circ} 40' E$. The harbor is naturally bad, and is formed by a mole or jetty. The depth of water within the mole is from 18 to 20 feet; but there is a bar between the mole and Monjui, and which has frequently not more than ten feet. Vessels inside the mole are safe. Large vessels have to anchor outside, and are much incommoded by the winds.

Bilbao, sometimes incorrectly written Belboa, a sea-port in the Bay of Biscay.

Cadiz, the principal commercial city and sea-port of Spain, on its southwestern coast, on the rocky and elevated extremity of a narrow, low peninsula, or tongue of land, projecting from the Isla de Leon N.N.W. about $4\frac{1}{2}$ nautical miles. It is surrounded on all sides except the south—where it joins the land—by the sea, and is very strongly fortified. Population in 1837, 58,525. It is well built, and has at a distance a very striking appearance. The tower or light-house of St. Sebastian stands on the western side of the city, being in lat. $36^{\circ} 31' 7'' N$, long. $6^{\circ} 18' 52'' W$. It is a most conspicuous object to vessels approaching from the Atlantic. The light, which is 172 feet high, is of great brilliancy, revolves once a minute, and in fair weather may be seen more than six leagues off.

Bay of Cadiz.—The entrance to this noble basin lies between the city and the town and promontory of Rota, bearing northwest by north, distant about $1\frac{1}{2}$ leagues. The bay is of very great extent, affording in most places good anchorage. The port is on the eastern side of the city, where a large mole has been constructed.

By a royal order of January 3, 1852, it was decreed that all foreign vessels belonging to countries where Spanish vessels are placed on the same footing as national, with respect to port dues and charges, should enjoy a like privilege in the ports of Spain and adjacent islands; but, practically, this decree was not permitted to apply to vessels of the United States, and they continued subject to double the amount of such dues and charges paid by other foreign and the national vessels. The reason for the non-fulfilment of this provision, as respects this country, was the refusal of the government of the United States to receive vessels in its ports on equal terms from Cuba and Porto Rico; and the government of Spain refused to accede to such condition, as it desired to secure this benefit for its marine, from wheresoever her vessels might proceed. On the 16th of June, 1854, however, the American minister at Madrid was officially informed by the Spanish Minister of State that her Majesty the Queen had been pleased to command that American vessels "be considered in the peninsula and adjacent islands like national ones, as regards the duties of port and navigation, in

reciprocity for what is practiced with the Spanish vessels proceeding from the same places in the United States, and with reference to the same duties." The official notification added, that corresponding orders had been given, "under date of the 14th inst., to the general direction of custom-houses and tariffs," to carry into effect the dispositions of this order.

The effect of the above-recited royal order will be to place American shipping on an equality, as respects the duties of port and navigation, with national and privileged vessels, and thus reciprocate the terms on which Spanish vessels have been admitted into the ports of the United States since 1852. Should this be followed up by a liberal modification, or an entire abolition, of the enormous discriminating duties levied on foreign imports in the ports of Spain, the commercial intercourse between the two countries would soon become a source of industrial development and national prosperity, equally beneficial and profitable to each. The quarantine regulations of Spain have always been complicated and vexatious. They were simplified, however, by a sanitary tariff, promulgated December, 1855, a translation of which is subjoined:

TARIFF OF SANITARY DUTIES EXACTED IN THE PORTS AND LAZARETTOS OF SPAIN.

Entrance Duties.—Coasting vessels of more than twenty tons burden will pay one quarter of a real per ton for the round voyage.

Vessels proceeding from the ports of the Mediterranean and other ports of Europe, including the coast of Africa to the parallel of the Canary Islands, will pay one half of a real per ton for the round voyage.

Vessels from other places will pay one real per ton each voyage.

Quarantine Duties.—Vessels of every class will pay one quarter of a real per ton each day they are subject to quarantine, whether in actual lazarettos or undergoing observation.

Lazaretto Duties.—The fee for each person in the lazaretto will be four reals per diem.

Merchandise subject to purification will pay as follows:

The clothing and baggage of each of the crew	5 reals.
The clothing and baggage of each passenger	10 "
Hides of cows, per 100	6 "
Fine skins	6 "
Goat, sheep, lamb-skins, and the skins of other small animals, per 100	2 "
Feathers, goats'-hair, soft hair, wool, cotton, hemp, and flax, per quintal	1 "
Large live animals, such as horses and mules, each	8 "
Small animals, each	4 "

Certificates of Health shall be made out, and legally attested, free of charge.

Regulations.—Vessels in quarantine defray all the expenses attending the discharge of merchandise, its transfer to the sheds and work-houses, and its purification. They, in like manner, pay, as an additional duty, the expenses attending the application of hygiene measures, which must be employed before the departure or arrival of the embarkations, as the regulations dispose, or as the condition of the vessel may require. During all the incidents of quarantine, every possible facility is to be afforded to vessels, no expense being permitted without the knowledge or consent of the captain, agent, or consignee. All persons who perform quarantine in the lazarettos defray all the necessary expenses, inasmuch as the four reals per diem which is exacted from each is only the fee for residence.

Where Spanish vessels are about to depart from a port of the United States with any goods, wares, or merchandise, for any destination other than some port or place in the islands of Cuba or Porto Rico, the bond and security required by the 3d section of the act of 30th June, 1834, are exacted in all such cases, before allowing clearance or departure of the vessels.

A Spanish vessel leaving a port of Spain for a port in Cuba, but, not finding there a satisfactory market,

proceeding, without breaking bulk or taking in any goods at said island, to a port in the United States, would not on entry be subjected to any other or higher duties of tonnage or imposts than she would be if direct from a port of Spain to the United States; the voyage, under the circumstances, being regarded as continuous.

COMMERCE OF SPAIN IN THE YEAR 1854.

Countries	Imports.	Exports.
EUROPE.	Reals.	Reals.
Austria.....	1,040,527	874,013
Belgium.....	2,915,839	8,849,715
Bremen and Hamburg.....	4,404,303	14,061,459
Sardinia.....	4,727,877	26,454,925
Denmark.....	395,863	10,985,836
Two Sicilies.....	42,920	1,430,458
Roman States.....	3,610,425	877,162
France.....	173,559,279	298,421,957
Netherlands.....	3,321,084	4,630,929
England.....	168,324,624	305,220,802
Portugal.....	5,627,270	31,955,002
Prussia.....	102,500	7,408,274
Russia.....	1,183,709	2,950,131
Sweden.....	24,083,880	4,276,887
Tuscany.....	2,395,346	12,672,205
Turkey.....		1,560,021
Great Britain.....	50,050,500	14,819,880
Total.....	442,214,919	682,069,056
ASIA.		
Philippines.....	25,229,166	7,631,364
English Possessions.....	6,506	2,101,264
Zanzibar.....	872,726	....
Total.....	26,108,398	9,732,628
AFRICA.		
Algiers.....	354,260	7,971,208
Egypt.....	1,971,748	20,160
Morocco and Tunis.....	268,659	579,848
Portuguese Possessions.....	32,000	76,849
Total.....	2,626,676	8,648,065
AMERICA.		
Cuba and Porto Rico.....	148,546,232	161,013,480
Brazil.....	6,395,792	9,056,339
Chili.....	222,380	7,785,872
Ecuador.....	12,142,586	30,000
United States.....	111,723,886	57,312,251
Guatemala.....	2,511,390	73,059
Mexico.....	596,370	7,124,632
New Granada.....	20,040	....
Peru.....	8,654,520	2,623,274
Rio de Plata.....	10,555,391	32,686,464
Uruguay.....	725,054	6,816,693
Venezuela.....	27,118,037	1,435,037
Danish Colonies.....	....	411,037
French Colonies.....	....	16,000
English Colonies.....	13,323,623	5,068,840
Total.....	342,535,251	292,453,034
Grand total, Reals...	813,485,244	993,502,783

		Entered.		Cleared.	
		Vessels.	Tons.	Vessels.	Tons.
1853	(Loaded.....)	6698	795,140	5787	629,681
	(In ballast.....)	2068	189,837	1041	158,130
	Total.....	8766	984,977	6828	787,811
1854	(Loaded.....)	6473	756,525	7376	828,897
	(In ballast.....)	2974	306,409	656	95,326
	Total.....	9447	1,062,934	8032	924,223

The marine service of Spain in 1855 consisted of four vessels of the line, nine frigates, eight corvettes, fifteen brigs of the first, and four of the second class; five schooners, six sloops, forty steamers, and three hundred and nineteen smaller craft, mounting in all 1250 ordinary, and 280 swivel guns.

The imports into and exports from Spain for the year 1856 are shown as follows:

	Value in Reals.
Imports of 1856.....	873,771,700
Imports of 1855.....	764,150,259
Increase in 1856.....	115,621,441
Exports in 1856.....	1,043,610,106
Exports in 1855.....	1,246,784,599
Decrease in 1856.....	203,174,493

From this exhibit we see that in the aggregate there was a decided decrease in the trade of Spain in the year 1856 over that of 1855.

Statement showing the American merchant vessels which arrived at Cadiz in five years, 1849 to 1853 inclusive:

Years.	Vessels.	Men.	Tons.
1849.....	63	801	24,310
1850.....	47	557	16,493
1851.....	46	614	18,553
1852.....	46	673	21,117
1853.....	30	379	11,667
Total.....	232	3024	92,140

American and other foreign vessels can only trade between Spain and other countries; they can not participate in any Spanish coasting, domestic, or internal trade.

The navigation and trade between the United States and Spain does not increase. The tariff of Spain excludes most of the staple articles of the United States, such as grain, breadstuffs, rice, tobacco, etc., the principal article of import from the United States being undressed oak staves for wine-casks. In order to promote navigation and trade between the two countries, it is necessary that high duties, prohibitions, and restrictive measures on both sides should cease.

COMPARATIVE STATEMENT OF THE COMMERCE OF THE UNITED STATES WITH SPAIN, INCLUDING THE CANARIES AND PHILIPPINE ISLANDS; EXHIBITING THE VALUE OF EXPORTS TO AND IMPORTS FROM EACH COUNTRY, AND THE TONNAGE OF AMERICAN AND FOREIGN VESSELS ARRIVING FROM AND DEPARTING TO EACH COUNTRY, DURING THE YEARS DESIGNATED.

Years.	COMMERCE.				NAVIGATION.			
	Value of Exports.			Value of Imports.	American Tonnage.		Foreign Tonnage.	
	Domestic Produce.	Foreign Produce.	Total.		Entered the United States.	Cleared from United States.	Entered the United States.	Cleared from United States.
1845.....	\$452,091	\$64,673	\$516,764	\$1,759,877	31,438	14,184	10,774	2,115
1846.....	541,993	61,843	603,746	1,339,749	27,981	16,242	6,492	3,138
1847.....	2,006,716	95,438	2,102,054	1,847,179	37,133	20,896	14,079	17,500
1848.....	2,336,141	21,647	2,407,788	2,428,539	43,677	25,276	10,849	20,637
1849.....	1,944,202	60,629	2,004,831	2,485,210	38,790	27,684	11,697	30,542
1850.....	3,399,362	131,928	4,031,290	3,504,454	42,797	27,385	30,064	48,843
1851.....	5,155,126	151,186	5,706,314	3,444,979	35,683	40,151	28,432	61,490
1852.....	3,445,080	152,417	3,597,497	3,360,332	37,908	28,974	22,402	53,532
1853.....	4,642,740	51,848	4,694,588	4,648,629	47,360	40,012	24,272	47,97
1854.....	4,650,181	78,444	4,728,625	5,122,453	45,044	38,924	16,050	41,231
1855.....	4,702,252	441,612	5,143,864	5,366,108	61,690	55,709	36,687	42,393

A SUMMARY OF THE AMOUNT OF NATIONAL TONNAGE, AND OF THE NUMBER OF EFFICIENT SEAMEN ENGAGED IN THE COMMERCE AND NAVAL SERVICE OF SPAIN, AS OFFICIALLY STATED, FOR THE YEAR 1853.

Districts.	Officers, Masters, Pilots, etc.	Active Seamen.	Number of Vessels over 400 Tons.	Number of Vessels from 200 to 400 Tons.	Number of Vessels from 80 to 200 Tons.	Number of Vessels from 20 to 80 Tons.	Vessels of Foreign build.	Steamers.	Vessels building.
Cadiz.....	2,076	13,001	4	25	62	313	39	12	13
Ferrol.....	3,202	22,116	11	74	342	442	13	5	62
Cartagena.....	7,774	20,897	15	118	380	1163	23	9	79
Havana.....	696	2,052	7	39	99	295	389	20	23
Manilla.....	93	17,772	8	16	84	1244	10	..	..
Total.....	13,841	75,838	45	263	967	3487	484	46	177

NOTE.—In this summary the seamen, tonnage, etc., of the province of Porto Rico are omitted; and there are some omissions also in the provinces of Vascongados, Philippines, etc.

COMMERCE OF THE UNITED STATES WITH SPAIN ON THE ATLANTIC, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	\$224,703	\$189,900	\$514,606	\$254,025	....	\$21,200	8,64	....
1822.....	116,270	67,742	184,012	322,535	\$3,030	3,500	3,079	177
1823.....	130,066	65,66	196,032	508,437	....	5,560	4,623	....
1824.....	140,436	366,434	506,870	550,560	....	91,094	6,084	....
1825.....	73,515	22,722	156,237	244,064	....	800	2,345	....
1826.....	71,313	22,27	93,540	332,719	....	2,390	3,640	435
1827.....	74,761	47,178	121,939	154,885	....	2,800	2,245	....
1828.....	40,946	199,053	240,89	210,684	33,630	245	2,930	750
1829.....	545,753	139,732	685,485	337,490	50,000	14,450	12,719	1,550
1830.....	533,956	61,327	600,283	461,267	....	25,475	9,987	....
Total...	\$2,057,622	\$1,243,181	\$3,300,803	\$3,075,735	\$86,630	\$167,923	55,650	2,912
Sept. 30, 1831.....	\$285,584	\$63,498	\$299,012	\$566,072	\$4,000	\$46,439	4,593	1,063
1832.....	302,584	44,681	347,265	677,483	2,050	9,029	6,033	2,033
1833.....	201,619	24,571	226,190	337,794	1,321	34,428	5,723	1,537
1834.....	202,744	25,033	227,777	640,869	9,605	2,491	6,136	1,524
1835.....	430,984	87,230	518,214	468,969	76,412	2,328	9,247	1,411
1836.....	604,929	46,280	651,209	793,708	26,214	3,400	5,971	4,021
1837.....	230,099	46,750	276,849	465,467	15,050	10,428	2,724	5,843
1838.....	187,405	12,470	199,875	244,200	12,239	78,766	5,301	1,537
1839.....	316,144	32,014	348,158	263,183	3,50	....	15,129	1,617
1840.....	137,835	5,839	143,674	200,815	1,370	3,707	11,160	2,419
Total...	\$2,709,927	\$388,216	\$3,188,225	\$4,668,570	\$151,731	\$191,086	72,022	23,070
Sept. 30, 1841.....	\$203,323	\$17,822	\$221,145	\$190,727	\$12,020	\$3,200	7,557	1,474
1842.....	333,222	1,200	334,422	79,735	....	1,842	11,656	2,308
9 mos., 1843*.....	50,100	240	50,340	49,029	....	7,195	2,298	302
June 30, 1844.....	560,631	23,803	578,439	252,127	17,743	5,143	10,427	1,35
1845.....	271,233	550	271,783	117,158	....	1,876	6,523	672
1846.....	345,442	....	345,442	147,363	....	4,650	6,753	2,871
1847.....	770,743	10,115	780,858	274,708	9,500	55,52	9,585	1,174
1848.....	597,797	....	597,797	277,105	....	55,429	12,926	2,200
1849.....	169,071	31,479	200,550	313,490	28,157	24,413	17,243	2,234
1850.....	609,659	28,553	638,217	380,181	17,013	....	13,706	10,583
Total...	\$3,916,226	\$113,772	\$4,029,998	\$2,081,623	\$95,033	\$150,345	98,684	24,052
June 30, 1851.....	\$953,713	\$1,075	\$950,788	\$451,797	....	....	14,083	12,424
1852.....	499,314	23,208	526,522	342,096	\$25,700	....	10,163	8,406
1853.....	631,494	15,551	647,045	636,646	13,581	\$2,960	10,768	6,229
1854.....	1,590,948	....	1,300,348	533,874	....	14,032	8,940	3,164
1855.....	1,181,159	151,117	1,340,275	513,140	....	....	2,254	6,570
1856.....	1,417,949	10,306	1,428,255	582,025	....	....	18,223	7,807
1857.....	2,962,097	13,882	2,976,979	692,982	....	2,300	28,611	10,075

COMMERCE OF THE UNITED STATES WITH SPAIN ON THE MEDITERRANEAN, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	\$24,225	\$915	\$5,140	\$288,363	....	\$5,002	1,174	....
1822.....	525,200	1,354	526,554	503,656	....	2,796	2,489	177
1823.....	20,876	19,447	40,323	473,539	....	8,540	874	....
1824.....	9,840	....	9,840	508,667	....	47,159	756	356
1825.....	13,814	6,335	20,149	382,999	....	....	1,568	....
1826.....	80,964	20,045	101,010	332,398	....	1,400	1,462	....
1827.....	62,353	7,112	69,465	480,350	....	19,200	1,912	....
1828.....	66,844	51,193	118,037	421,476	....	1,280	3,066	213
1829.....	185,952	45,700	231,652	474,120	....	15,800	4,516	....
1830.....	145,556	....	145,556	543,271	....	13,436	3,017	....
Total...	\$1,140,624	\$152,102	\$1,292,726	\$4,138,534	....	\$114,583	20,834	746
Sept. 30, 1831.....	\$75,121	\$7,193	\$82,319	\$709,022	....	\$8,150	1,905	536
1832.....	186,864	1,054	187,918	740,701	....	450	3,286	1,808
1833.....	136,150	546	136,696	806,774	....	1,994	4,845	2,050
1834.....	187,473	....	187,473	1,112,365	....	3,000	4,625	2,886
1835.....	93,949	43,798	137,747	826,709	\$25,500	31,633	6,374	3,204
1836.....	273,523	....	273,523	1,000,781	....	....	6,515	3,621
1837.....	324,187	30,246	354,433	1,931,699	21,800	2,100	1,846	4,838
1838.....	336,904	2,535	339,439	863,336	1,866	11,549	1,853	4,736
1839.....	209,724	19,000	228,724	1,597,793	19,300	2,800	5,637	2,058
1840.....	215,584	3,035	218,619	1,463,850	....	8,634	4,006	....
Total...	\$2,044,434	\$107,472	\$2,151,906	\$11,653,145	\$68,966	\$70,311	40,892	25,726
Sept. 30, 1841.....	\$173,603	\$9,907	\$183,630	\$1,719,069	\$9,534	\$16,184	4,843	....
1842.....	221,593	16,573	238,476	1,005,640	....	....	5,310	90
9 mos., 1843*.....	15,768	23,340	39,108	415,080	....	58,777	470	....
June 30, 1844.....	55,700	23,803	84,503	381,287	23,340	30,493	805	....
1845.....	82,435	47,718	130,153	954,028	28,808	111,562	2,900	1,066
1846.....	1,183,340	41,063	1,229,403	1,016,551	25,000	126,612	7,261	10,326
1847.....	1,741,474	6,875	1,748,349	910,346	8,575	54,030	9,180	27,313
1848.....	1,610,423	19,327	1,639,250	1,005,087	19,827	112,223	5,603	28,073
1850.....	3,256,369	96,855	3,353,217	1,702,214	\$5,792	407,188	9,467	34,297
Total...	\$8,355,031	\$291,061	\$8,646,092	\$9,444,757	\$246,894	\$912,569	53,140	107,482
June 30, 1851.....	\$4,457,331	\$137,472	\$4,594,803	\$1,710,776	\$107,043	\$8,450	9,576	44,014
1852.....	2,718,504	114,237	2,832,741	1,443,975	87,965	1,500	6,174	37,631
1853.....	3,923,656	34,297	3,957,953	1,458,879	34,297	....	7,600	38,130
1854.....	3,212,368	81,040	3,293,408	1,579,074	31,040	....	12,140	37,224
1855.....	3,375,680	203,701	3,579,381	1,985,372	6,126	26,333	18,873	33,777
1856.....	5,049,380	57,633	5,006,063	1,650,441	29,450	19,500	12,135	60,067
1857.....	7,715,907	11,211	7,727,118	2,050,084	....	24,500	21,005	67,687

* Nine months to June 30, and the fiscal year from this time begins July 1.

Of the changes in the commercial policy of Spain the following particulars, furnished by the United States consul at Cadiz, will be found interesting:

"OCTOBER 3, 1855.

"The Queen's decree of the 30th, and order thereon of the 31st of July of the present year, was issued, establishing a *Junta consultiva de aranceles*, or a board of consultation in relation to custom-house tariffs, regulations, and all matters relating to imports and exports, with extensive powers, and determining their attributions. The object of this board is declared to be to discuss and propose to the minister of the hacienda all reforms which they may conceive ought to be made in the custom-house tariffs, and to occupy themselves with and direct all the proceedings which may be found with respect to the understanding of the same, their application and modification; as also with respect to the reclamations of foreign powers, and those which ought to be made on the part of Spain, with respect to the agreements and treaties of navigation or commerce, and any other affair whatever relative to the mercantile legislation. This *Junta de aranceles* is to be a corporation independent in all points of any other office of the state; and as such is clothed with the same faculties, privileges, and pre-eminences which belong to the other directive centres of the ministry of the hacienda, of a permanent character. The junta is empowered, in the performance of its duties, to communicate directly with, and claim from, Spanish consuls in foreign countries, governors, and provisors of provinces, administrators of custom-houses, juntas of commerce, economical societies, etc., and any other authorities, offices, and corporations whatever, all data they may conceive necessary for the execution of the business committed to them. Copies of this decree and order are herewith, detailing at length the persons composing the junta, and the mode in which they are to proceed. This board is now organized, and is expected to make a report pending the next session of the Cortes. It is presumed that they will recommend the favoring of navigation under the *Spanish flag*; the admission of certain kinds of cotton manufactures, and other articles now prohibited; together with an augmentation of two millions of dollars in the custom-house revenue on imports; also the maintenance of the present monopolies of tobacco, salt, stamped paper, and the duties payable thereon."

Moneys, Weights, and Measures.—The weights and measures are the established ones of Castile; the *arroba* of solids being considered of 25 pounds, of 16 ounces to the pound; and of liquids, 32 *cuartillas*, except in the article of olive-oil, which will be deemed a solid. The *quintal* will be of 100 pounds, and the ton of 20 quintals. The yard will be of 36 inches. The money is the *real de vellon*, which is divided into 100 parts, called centimes.

Moneys.—The real vellon is valued at the custom-house of the United States at 5 cents; 20 real vellons = \$1; the real of plate is double the real vellon = 10

cents; 1 hard dollar = $12\frac{1}{4}$ dollar of exchange = 10 reals of new plate = $10\frac{1}{2}$ of old plate = 20 reals vellon = 170 quarters = $361\frac{1}{4}$ maravedis of old plate = 680 reals vellon = \$1 03 $\frac{1}{2}$.

Gold Coinage.—The last date that we have noticed of the long-continued doubloon series of Peninsular coinage was 1824. The half doubloon of that year weighed 0.433 ounce, 865 fine; value, \$7 75. The new gold coin is a piece of 100 reals, weighing 0.268 ounce, 896 fine, \$4 96.3.

Silver Coinage.—The principal coin (not the largest) seems to be the piece of 4 reals, or pistareen, which before 1837 was of the weight 0.189 ounce; fineness, 810; value, 20.7 cents. The standards have been lately changed, and the new pistareen weighs 0.166 ounce, fineness, 899; value, 20.3 cents. There is also a large piece of 20 reals (dollar), worth 101.5 cents; and pieces of 10, 4, 2, and 1 real in proportion.—*United States Mint Report*, 1857.

Weights.—**Gold and Silver Weight.**—Gold and silver are weighed by the Castilian mark of 50 castellanos, 400 tomines, or 4800 grains.

Apothecaries' Weight.—The apothecaries' weight is the Castilian, but the ounce is divided into 8 drachmas, 24 escrúpulos, 48 obolos, 144 caracteres, or 576 grains.

Commercial Weight.—One commercial pound is equal to 2 marks (Castilian), or 16 ounces. One commercial ounce = 8 drachmas = 16 adarmes = 576 grains. One quintal of 4 arrobas, or 100 pounds, = 101.44 pounds avoirdupois, or 46 kilograms. One arroba = 25 pounds 7 ounces.

Measures.—**Dry Measure.**—Corn, salt, and other dry articles are measured by the cahiz. One cahiz = 12 fanegas; one fanega = 12 celemines. The celemine has various subdivisions, as $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, etc. The fanega measures 4322 $\frac{1}{2}$ Spanish, or 3439 English cubic inches, and is equivalent to 1.55 English imperial bushels. Five fanegas are nearly equal to one quarter English.

Wine Measure.—One arroba of wine measures 4245 English imperial gallons. One arroba of oil, $3\frac{1}{2}$ English gallons. One bota = 30 arrobas of wine, or 38 $\frac{1}{2}$ of oil. The bota contains 127 $\frac{1}{2}$ English gallons, and the pipe 114 $\frac{1}{2}$ English gallons.

Long Measure.—One Spanish foot = 12 pulgadas, or 144 lines, and is equivalent to 11.128 English inches, or 0.2826 of a French metre. One palmo, of 9 pulgadas, or 12 dedos, = 8 $\frac{1}{2}$ English inches. One vara, or 4 palmos, = 33.384 English inches, or 0.847 of a metre. One braza = 2 varas, or 6 feet. One passo = 5 feet. One estadal = 4 varas, or 12 feet. One cuerda = 8 $\frac{1}{2}$ varas, or 25 $\frac{1}{2}$ feet.

FOREIGN COMMERCE OF THE UNITED STATES WITH SPANISH AMERICAN COLONIES* (INCLUDING MEXICO), FROM OCTOBER 1, 1820, TO SEPTEMBER 30, 1824.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	\$568,176	\$529,569	\$1,087,735	\$1,114,117	\$54,893	\$129,462	13,208	282
1822.....	1,592,767	1,838,286	3,421,053	2,522,988	57,693	661,117	31,747	364
1823.....	1,372,526	3,229,347	4,601,873	4,842,503	.....	1,950,416	38,112	.....
1824.....	2,827,521	5,040,966	7,868,487	6,786,769	.....	3,674,800	61,651	1554
Total...	\$6,800,990	\$10,628,158	\$16,929,148	\$15,266,377	\$112,591	\$6,415,795	139,718	2200

COMMERCE OF THE UNITED STATES WITH TEXAS,* FROM OCTOBER 1, 1836, TO JULY 1, 1846.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1837.....	\$797,512	\$210,616	\$1,007,928	\$163,884	\$1,700	.....	12,939	1,092
1838.....	1,028,818	219,062	1,247,880	165,718	825	.....	28,145	897
1839.....	1,379,065	306,017	1,687,082	318,116	.....	\$17,409	48,508	1,008
1840.....	987,072	281,199	1,218,271	303,847	.....	55,062	41,177	536
1841.....	516,255	292,041	808,296	395,026	.....	65,688	32,838	13
1842.....	278,978	127,051	406,929	480,892	.....	25,510	24,316	1,369
9 mos., 1843.....	105,240	37,713	142,953	445,399	.....	17,174	16,185	927
June 30, 1844.....	196,447	81,101	277,548	678,551	.....	10,114	20,065	1,779
1845.....	210,736	153,056	363,792	755,324	.....	46,427	18,930	2,221
1846.....	250,240	223,363	473,603	183,058	.....	10,699	28,204	3,245
Total...	\$5,700,163	\$1,934,119	\$7,634,282	\$3,889,315	\$2,525	\$248,083	271,352	12,561

* The commerce of Texas from 1846, when it became one of the United States, may be found under the head of Texas; and the commerce of Mexico, since its independence, under the head of Mexico.

† Nine months to June 30, and the fiscal year from this time begins July 1.

COMMERCE OF THE UNITED STATES WITH SPANISH WEST INDIES [CUBA EXCEPTED], FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	\$175,217	\$33,604	\$208,821	\$26,616	....	\$12,787	11,134	....
1822.....	150,435	7,646	158,041	133,667	....	35,629	10,650	....
1823.....	226,033	25,495	251,528	81,070	....	22,738	8,400	1,128
1824.....	306,846	283,718	510,614	386,646	....	8,895	5,068	180
1825.....	216,102	22,156	238,258	713,627	....	5,659	5,969	75
1826.....	210,858	12,068	222,926	770,770	....	7,841	6,879	....
1827.....	218,156	10,363	228,519	169,612	\$2,000	13,760	7,104	603
1828.....	222,191	15,677	237,868	1,129,130	1,950	8,446	7,848	323
1829.....	209,750	33,900	243,650	838,532	31,505	8,644	11,051	216
1830.....	245,636	27,523	273,159	1,307,143	21,650	7,718	8,704	480
Total...	\$2,211,804	\$427,710	\$2,639,514	\$3,099,174	\$57,115	\$127,137	82,931	3,014
Sept. 30, 1831.....	\$261,801	\$53,245	\$315,046	\$1,580,156	\$35,683	\$16,173	8,272	1,051
1832.....	322,559	72,552	395,111	1,849,182	42,369	9,127	9,343	717
1833.....	393,992	27,398	421,390	1,879,324	7,040	8,992	18,361	219
1834.....	431,805	59,722	491,527	2,246,413	11,450	11,160	15,769	741
1835.....	536,035	91,622	627,657	2,364,170	70,950	15,256	21,140	172
1836.....	594,559	65,899	660,458	3,209,043	47,056	8,600	22,079	423
1837.....	517,778	52,138	569,916	2,481,082	42,833	53,725	17,071	1,155
1838.....	692,568	80,484	773,052	2,636,152	30,443	36,783	19,588	2,496
1839.....	779,049	87,343	866,397	3,742,519	115,207	23,144	22,547	1,160
1840.....	770,440	29,208	799,628	1,898,732	81,272	46,695	22,559	952
Total...	\$5,353,565	\$99,616	\$5,453,182	\$23,926,803	\$434,004	\$234,656	172,187	8,996
1841.....	\$721,845	\$23,087	\$744,932	\$2,560,020	\$28,923	\$17,790	30,129	730
1842.....	610,813	19,718	630,531	2,517,001	12,757	63,457	29,565	1,134
9 mos., 1843.....	442,034	11,321	453,355	1,076,125	1,872	47,943	18,361	340
June 30, 1844.....	636,962	5,177	642,139	2,425,202	4,083	27,021	23,143	683
1845.....	638,149	20,775	658,924	2,026,253	11,608	53,453	28,575	622
1846.....	675,441	25,905	701,346	2,277,110	15,054	62,670	30,056	1,373
1847.....	825,079	33,585	858,664	2,141,929	21,394	14,157	26,767	1,879
1848.....	801,722	37,012	838,734	2,106,296	21,556	20,919	35,241	1,150
1849.....	523,292	33,234	556,526	1,964,861	28,045	27,664	25,570	3,848
1850.....	816,062	63,591	879,653	2,067,866	68,758	2,600	30,744	3,103
Total...	\$6,741,399	\$308,805	\$7,050,204	\$21,162,663	\$234,015	\$346,692	283,451	14,917
June 30, 1851.....	\$961,410	\$57,290	\$1,018,700	\$2,480,322	\$39,600	\$345	36,320	6,013
1852.....	1,015,563	39,542	1,055,105	3,001,223	51,846	26,277	35,010	5,544
1853.....	810,411	54,143	864,554	2,800,926	47,957	13,016	30,815	9,429
1854.....	990,686	60,967	1,051,653	2,850,353	133,700	19,179	31,014	8,548
1855.....	1,144,581	88,037	1,232,618	2,475,928	16,000	23,625	34,140	5,522
1856.....	1,099,599	49,125	1,148,724	3,870,063	24,259	14,700	33,644	1,950
1857.....	1,733,429	152,045	1,885,474	5,748,600	493,415	658	37,633	5,550

* Nine months to June 30, and the fiscal year from this time begins July 1.

Specie (Fr. *espèce*), coin and bullion used as a circulating medium in distinction from paper money.—See articles BANKS, COINS, PRECIOUS METALS, GOLD, and SILVER.

Spectacles. An optical instrument, consisting of two lenses set in a frame, for assisting or correcting the defects of imperfect vision. The lenses are convex or concave, according to the nature of the defect to be remedied. In old age the pupil of the eye becomes flat, and the rays of light are consequently not refracted sufficiently in passing through it to meet on the retina and produce distinct vision. This defect is remedied by a convex lens, which produces a slight convergency of the rays before they enter the eye. Short-sighted people, on the contrary, require concave lenses; because, in their case, the indistinctness of vision proceeds from too great a curvature of the pupil, which causes the rays to meet in a point before they reach the retina—a defect which is remedied by giving the rays a slight divergency before they enter the eye. Spectacles were unknown to the ancients. They are generally supposed to have been invented in the 13th century, by Alexander de Spina, a monk of Florence, in Italy, about A.D. 1285.—*Gen. Hist.* They were invented by Roger Bacon, according to Dr. Plott, about 1280. Some affirm that the real inventor was Salvino; and Mr. Mann gives proofs in favor of Salvino in his *Treatise on Spectacles*.—HAYDON.

Spelter, a name frequently given to ZINC; which see.

Spermaceti (Ger. *Wallrath*; Fr. *Blanc de Baleine*, *Sperme de Baleine*; It. *Spermaceti*; Sp. *Espuma de Balena*; Russ. *Spermazet*), a product obtained from the brain of the *physeter macrocephalus*, a species of whale inhabiting the Southern Ocean. The brain being dug out from the cavity of the head, the oil is separated from

it by dripping. The residue is crude spermaceti, of which an ordinary-sized whale will yield twelve barrels. It then concretes into a white, crystallized, brittle, semi-transparent, unctuous substance, nearly inodorous and insipid. On being cut into small pieces it assumes a flaky aspect. It is very heavy, its specific gravity being 9.433. It is used in the manufacture of candles, in medicine, etc.

Spices (Ger. *Spezereyen*; Du. *Speceryen*; Fr. *Epicerie*, *Epices*; It. *Spezi*, *Spezierie*; Sp. *Especias*, *Especerías*; Port. *Especiaria*; Russ. *Pränie korenja*). Under this denomination are included all those vegetable productions which are fragrant to the smell and pungent to the palate; such as cloves, ginger, nutmegs, allspice, etc.

The ordinary spices which are used in housekeeping, and are sold by the grocer are *pepper* (white, black, and cayenne), *mustard*, *ginger*, *nutmegs*, *mace*, *pimento* or *allspice*, *cloves*, *cinnamon*, and *cassia*. All of these spices are more or less pungent to the taste and stimulating to the stomach, and are used as additions to food, not as food itself. For these qualities they depend upon an essential oil in most cases, varying in each particular case. *Pepper*, however, has a nitrogenized principle, similar in composition to thein and caffeine, and called *piperin*.

Pepper is the produce of two allied plants (known as *Piper nigrum* and *longum*), and the part used is the berry, dried in the sun. *Black* and *white pepper* are both obtained from the berry of *Piper nigrum*; the former being the entire berry, ground, while the latter consists of the berry deprived of its outer covering, or husk, before it is reduced to powder. *Long pepper* is not ground, and is not much used in the present day. *Pepper-corns*, being these berries, are imported from Penang, Malabar, and Sumatra. The best are those

which are not too small, nor too much shrunk in drying, but which feel heavy in the hand, and sink in water. In looking at a section, the outer part, which is black, or reddish black, is easily distinguished from the inner or central, which is more or less white, and brittle, hard toward the exterior, and soft and powdery toward the centre. In separating these parts, as for the purpose of procuring the white pepper, an inner reddish covering remains attached to the internal white structure, and this being ground up with it, is faintly indicated in the pure white pepper-powder by small reddish specks. The active properties of this spice depend upon an *acrid resin*, an *essential oil*, and a substance before alluded to, called *piperin*. The outer cortical part contains the resin, in the inner coat lies the oil, and within the internal or white structure is the *piperin*.

Pepper, both black and white, is adulterated with a variety of articles—as, the flour of linseed, mustard, wheat, sago, and arrow-root. Pepper-dust, also, being the sweepings of the floors of warehouses, and known as P.D., is largely used in making up low-priced pepper. Powdered cayenne is likewise said to be used, but, according to Dr. Hassall, not to any extent. Chemistry and our natural senses are greatly at fault in detecting these adulterations; and the microscope is the chief means upon which reliance can be placed, and, as is proved, a very sufficient one.

Cayenne pepper is composed of the pods of several species of *capsicum*, which is an annual herbaceous plant, a native of America, cultivated in the West and East Indies, and to some extent in the United States. Each pod is made up of three parts, an outer skin, an inner parenchymatous substance, and a quantity of small seeds. All these are ground up to constitute the pepper sold as cayenne, but it is to the first that it chiefly owes its pungent taste. It contains a very active principle which is called *capsicin*, and of which a very minute quantity, even as little as half a grain, diffused throughout a room will set a whole party of people sneezing. This pepper is far more subject to adulterations than black and white pepper, and is in fact scarcely ever free from mixture either with red-lead, red-ochre, or common salt—four only out of ninety-eight samples examined by Dr. Hassall being perfectly genuine; thirteen presented red-lead, often in poisonous quantities, and in seven Venetian-red, red-ochre, or brick-dust, were found. Six of the samples contained salt in large quantities, with rice and coloring matter, and in the same number also appeared rice mixed with turmeric and cayenne, and colored with red-lead or some ferruginous earth. It is said that this pepper is often imported in a ground state, and therefore a good deal of this sophistication is due to foreign roguery. The mineral ingredients are easily detected by chemical means, as red-lead, vermilion, etc.; but for the most of the other articles the aid of the microscope is again required. With a knowledge of the difficulty in detecting adulterations, it behooves us all to deal for our peppers only with those who are of high character and standing in the trade; but as our senses tell us pretty clearly the strength of the spice, and as all the adulterations of black and white pepper are tolerably innocent, no harm accrues, except to the purse, from the substitution of a weak spice for a strong one. In the case, however, of cayenne pepper, the presence of red-lead, vermilion, or other mineral coloring matter is of serious importance, and should be cautiously avoided by a careful dealing with honest tradesmen.—See CAYENNE and PEPPER.

Mustard is obtained from the plants known as the black and white mustard plant (*Sinapis nigra* and *alba*). The former of these has smooth seed-vessels, and reddish or blackish-brown seeds, which are very pungent; while the latter has rough or hairy pods and yellow seeds, less pungent than those of the black mustard. The seeds of the black mustard are composed of cel-

lulose matter, containing in addition a volatile and a fixed oil of mustard; also, two peculiar substances known as myronic acid and myrocene, all of which are deficient in white mustard seed. The fixed oil exists in the seed, but the volatile oil is formed in the same manner as the essential oil of bitter almonds, by the joint action of water, and a peculiar coagulable albuminous matter, called *myrocene*, upon a substance very imperfectly known, which is termed *myronic acid*. This acid has no smell, and is not volatile, but is bitter to the taste, and contains *sulphur* and *nitrogen*. Heat coagulates myrocene, which is necessary to the formation of the essential oil, and hence mustard should always be mixed with hot water to develop its pungent powers properly.

Adulteration in this article seems to be the rule, and a pretty invariable one; for in no single case did Dr. Hassall find pure mustard seed sold in London. The nature of the admixture was in nearly all cases the same, genuine mustard being more or less mixed with wheaten flour, and colored with turmeric. Even in the case of an article which was specially sent up from Newcastle-on-Tyne as a perfectly pure specimen, a very small quantity of turmeric was discovered, which the manufacturer afterward candidly admitted was added to the mustard for the purpose of heightening its color. This admission must be highly gratifying to the *Lancet* Commissioners, as the quantity was only two ounces in fifty-six pounds, or one part in 448. In purchasing mustard, there is no guide short of the microscope but the palate, as the full power is not developed until the flour is mixed with hot water. The adulterations are, however, only of importance as far as the money-value is concerned, as the turmeric is innocent enough of all other mischief. Most people can judge of the strength of this spice when it is used, and they may therefore readily take this as their guide in dealing with their grocer for future orders.

Ginger is cultivated in Asia, Africa, and the tropical parts of America, and is the root of the *Zingiber officinale*, a perennial plant, of which the stem reaches to the height of three or four feet. The roots are dug up at the end of the first year; they are well washed, and then they are stripped of their outer skin, or left as they are, constituting in this way the two primary divisions of ginger into *coated* and *uncoated*; in addition to which, it is sometimes imported from Jamaica in a *green* state, preserved in jars with sirup. The two first divisions are sold either in the state in which they are imported, or finely ground, and sifted with great care. Ginger owes its pungency to a volatile oil, with an acrid resin, which are contained in it, and mixed up with other vegetable substances, as gum, starch, and woody fibre. Ground ginger contains all the elementary principles of the root. It is adulterated with wheat flour, sago, potato flour, cayenne pepper, mustard husks, and turmeric powder, none of which are prejudicial to health, and the fraud is only on the pocket.

Nutmegs and *Mace* are both obtained from the nutmeg-tree, of which there are three species—*Myristica fragrans*, *M. fatua*, and *M. malabarica*. Together they are the fruit of the tree, which is similar in appearance to a pear-tree, and produces a fruit about the size of a peach, but shaped like a pear, and smooth externally. The outer fleshy part of this is the pericarp, and this when ripe separates into two longitudinal sections, within which lies the seed proper, or *nutmeg*, inclosed in two coats, besides the *mace*, which fills up the space between these and the pericarp. The tree known to botanists as *Myristica fragrans*, is cultivated in the Molucca Islands, as well as in Java, Sumatra, Singapore, Penang, the island of Bourbon, Bengal, Madagascar, and the West Indies; and these trees produce the *true nutmeg* of commerce, which is round, and of a strong aromatic flavor and smell. A second and inferior kind, called the *wild* or *false nutmeg*, is obtained from the *Myristica fatua* and *M. mala-*

basica, growing in a wild state; and they may be distinguished from the true nutmeg by being longer and paler than it. Mace is also true or wild, according as it is obtained from either kind of nutmeg-tree. As imported into this country, the true mace is of a golden or orange yellow, transparent and horny. False or wild mace is of a dark red color, and deficient in flavor and smell. The nutmeg, as well as the mace, contains a fixed, and also a volatile oil, as well as starch and woody matter.

Adulteration.—It might readily be supposed, as these spices are not powdered, but are sold as imported, that no adulteration could possibly be practiced; and it appears, in reality, that very little is attempted. The only fraud is found to consist in the abstraction of the volatile oil by distillation, which deprives the nutmeg and mace of their chief flavor and utility as spices. In order to preserve the nutmeg from insects, it is often soaked in lime water, or covered with powdered lime; but this does not seem to be a fraud, but rather a preservative. It therefore need not be guarded against, but the presence of the full complement of oil should, if possible, be insured. This can only be done in practice by attending to the flavor and smell, and comparing them with the recognized genuine article. The shape is a good guide to the true nutmeg, and purchasers should always select those of a round form, avoiding those which are like dates in appearance, or even at all elongated beyond a very slight departure from the true circle.

Pimento, or *Allspice*, also called Jamaica pepper, is the berry of a tree bearing the first name, and growing in the West Indies, from which it is imported in bags. There are two qualities of it, but only one is extensively used in this country.

Pimento, like most other spices, owes its qualities as a condiment to its essential oil, which is contained in considerable quantities in the berries mixed with gummy and resinous matter, astringent extract and fatty oil. This essential oil is readily obtained by distillation. The adulteration of this spice is so trifling as scarcely to require alluding to; and as the price of pimento at present in the London market is from 4½d. to 4½d. per lb., with a duty of 5s. per cwt., the retailers make a fair profit in selling it at 8d. and need not have recourse to adulteration.—See PIMENTO.

Cloves are the flower-buds of the *Caryophyllus aromaticus*, which is grown in the Molucca Islands, Sumatra, the Mauritius, Bourbon, Cayenne, Martinique, and St. Vincent. They present a peculiar oblong appearance, too well known to need minute description, with a pungent and aromatic taste, which is highly agreeable to most people. Like the other spices, cloves contain an essential oil, besides resin, tannin, and woody fibre. The oil is extracted in considerable quantities, and

sold separately for various purposes. The wholesale price is from 4½d. to 1s. 2d. per lb.; and the duty being 2d. per lb., together with the retailer's profit, bring them up to the retail price of 1s. for Bourbon and Cayenne, 1s. 4d. for superior Bourbon, and 2s. for Penang cloves.

Cinnamon and *Cassia* are the bark of two species of *Cinnamomum*; that producing the former bearing the specific name *Zeylanicum*. The cinnamon-tree is cultivated chiefly in Ceylon, but sparingly in Bombay, Malabar, and Java. The bark, as sold, is peeled from the three-year old branches, and dried in the sun; and its quality varies considerably, but its external characters are generally pretty nearly the same. *Cassia*, or the bark of the *Cinnamomum cassia*, is brought from China, Malabar, Bombay, and the Mauritius; it resembles the true cinnamon in flavor, though less delicate and not so sweet, and attended with a certain degree of bitterness. It is constantly substituted for cinnamon, and it is necessary, therefore, to endeavor to distinguish the one from the other by our ordinary senses, if possible.

The bark of cinnamon is not much thicker than drawing-paper, and breaks with an uneven margin, showing a coarse arrangement of its fibres. It also consists of several concentric layers of bark, one within the other. These are called *quills*, and are of a pale brown, with a sweet aromatic taste, unaccompanied by any bitterness or astringency.

Cassia bark is considerably thicker and coarser, and has a short fracture and smooth edge. It has generally only one, or at most two quills, within the external one; and the taste is a coarse imitation of cinnamon, with a strong tendency to leave an astringent bitter on the tongue. By these characters the bark of the one, when whole, may be distinguished from the other; but when powdered, the aid of the microscope is required to detect the imposition, which is extensively practiced; and, falling this, the character of the vendor is the only safeguard. *Cassia* buds are also imported.

The cinnamon of commerce is chiefly produced in the island of Ceylon, from the *Laurus cinnamomi* of botanists, the *Koorvoondoo-gaha* of the Singhalese, a plant which appears to have flourished in that island from the earliest period. We learn from Scriptural history that this spice was employed by the Hebrews in their religious ceremonies; and there can be little doubt that their supplies were derived from the Arabian merchants who traded between the Red Sea and the East.

Mixed spice, as implied by the name, is a compound of the various ordinary spices, as ginger, pimento, cassia, etc. It is largely adulterated, and can not, therefore, be recommended, nor is its use at all required, inasmuch as the cook may in all cases use her own judgment to greater advantage.

IMPORTS OF SPICES INTO THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30, 1857.

Whence imported.	Mace.		Nutmegs.		Cinnamon.		Cloves.		Pepper, Black.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Hamburg			1,507	\$614						
Holland	5,277	\$2,683	132,535	73,945	9,330	\$2,691	5,510	\$2,664		
Dutch West Indies									2,175	\$145
Dutch Guiana							10,358	525		
Dutch East Indies	10,892	5,372	49,158	22,473	19,787	1,243			1,180,080	70,154
Belgium			8,371	4,527	2,200	666				
England	5,317	2,908	108,725	59,715	31,157	9,721			51,993	4,277
Scotland			3,485	1,467					42,543	4,072
Canada			468	251						
British West Indies					100	23	4,108	198	4,736	14
British Possessions in Africa									1,800	
British Australia			400	175						
British East Indies	27,789	15,785	181,878	83,965	22,660	4,521	665	546	3,650,132	199,370
France on the Atlantic			10,751	5,864						
French Guiana							10,503	475		
Cuba									4,009	396
Porto Rico			204	\$9						
Madeira									50	6
Africa							1,126,937	60,915		
Hayti									3,170	169
Buenos Ayres, or Argentine Repub.			591	555						
China			2,149	996					8,000	501
Total	49,275	\$26,754	450,440	\$254,637	85,234	\$18,865	1,153,381	\$65,332	1,945,695	\$279,287

IMPORTS OF SPICES INTO THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30, 1857.—Continued.

Whence imported.	Pepper, Red.		Pimento.		Cassia.		Ginger, Ground.		Ginger, in Root.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Holland.....	.....	.....	.....	2,528	.....	\$272	.....	.....	.....	.....
Dutch West Indies.....	.....	.....	1,990	\$187	.....	.....	.....	.....	.....	.....
Dutch East Indies.....	.....	.....	.....	.....	22,559	1,946	.....	.....	.....	.....
England.....	15	\$9	.....	.....	119,870	10,744	48	\$8	115,390	\$4,894
British North American Possessions.....	.....	.....	24,986	2,692	.....	.....	.....	.....	.....	.....
British West Indies.....	.....	.....	3,445,677	288,731	60	4	1200	24	34,916	1,724
British Honduras.....	.....	.....	.....	.....	.....	.....	.....	.....	160	8
British Possessions in Africa.....	2,460	86	.....	.....	.....	.....	.....	.....	302,104	10,228
British East Indies.....	.....	.....	.....	.....	314,076	89,512	.....	.....	836,684	21,784
France on the Atlantic.....	.....	.....	.....	.....	35,112	5,265	.....	.....	.....	.....
Spain on the Mediterranean.....	5,330	281	.....	.....	.....	.....	.....	.....	.....	.....
Philippine Islands.....	.....	.....	.....	.....	42,000	6,884	.....	.....	.....	.....
Cuba.....	7,178	531	.....	.....	.....	.....	.....	.....	13,946	455
Porto Rico.....	.....	.....	185	12	.....	.....	.....	.....	.....	.....
Africa.....	7,971	251	.....	.....	.....	.....	.....	.....	168,319	4,329
Hayti.....	.....	.....	.....	.....	.....	.....	.....	.....	6,700	127
Mexico.....	19,074	1210	8,114	481	.....	.....	.....	.....	.....	.....
Chili.....	1,200	92	.....	.....	.....	.....	.....	.....	.....	.....
Sandwich Islands.....	.....	.....	.....	.....	.....	.....	.....	.....	358	19
China.....	.....	.....	.....	.....	896,513	137,256	.....	.....	37,944	615
Total.....	42,628	\$2460	8,480,842	\$241,506	1,432,713	\$201,833	1248	\$32	1,516,631	\$44,123

SUMMARY OF THE IMPORTS OF SPICES INTO THE UNITED STATES FOR THE FISCAL YEARS ENDING JUNE 30, 1856-57.

Spices.	1855-56		1856-57.	
	Pounds.	Value.	Pounds.	Value.
Mace.....	44,415	\$23,500	4,215	\$6,754
Nutmegs.....	594,818	\$26,133	450,441	254,637
Cinnamon.....	85,218	51,145	85,284	18,865
Cloves.....	900,447	23,077	1,155,381	65,332
Black pepper.....	6,787,899	313,552	4,948,698	279,287
Red pepper.....	118,741	5,844	42,698	2,460
Pimento.....	4,906,028	352,022	3,480,842	241,508
Cassia.....	1,132,118	163,705	1,432,713	201,833
Ginger, ground.....	.....	.....	1,248	32
in root.....	1,113,346	22,713	1,516,581	44,123
Total.....	15,633,040	\$1,283,105	13,166,040	\$1,134,876

Spikenard. This odoriferous plant belongs to the valerian order, and although its fragrance is generally considered unpleasant to European nostrils, it is so much admired by Eastern natives that some of the most esteemed Asiatic perfumes are composed of valerian and spikenard. The fragrance of spikenard is frequently mentioned in the Holy Volume. "While the king sitteth at his table, my spikenard sendeth forth the smell thereof." "There came a woman having an alabaster box of ointment of spikenard very precious." It is nevertheless unknown to English and French perfumers.—*PRESSE'S Art of Perfumery.*

Spinning. The art of spinning was ascribed by the ancients to Minerva, the goddess of wisdom, such was their veneration for it. Arcas, king of Arcadia,

taught his subjects the art of spinning about 1500 B.C. Lucretia with her maids was found spinning when her husband Collatinus paid a visit to her from the camp. The wife of Tarquin was an excellent spinner; and a garment made by her, worn by Servius Tullius, was preserved in the Temple of Fortune: Augustus Caesar usually wore no garments but such as were made by his wife, sister, or daughter. The spinning-wheel was invented at Brunswick about A.D. 1530. Till 1767, the spinning of cotton was performed by the hand spinning-wheel, when Hargrave, an ingenious mechanic, near Blackburn, made a spinning-jenny with eight spindles. Hargrave also erected the first carding-machine, with cylinders. Arkwright's machine for spinning by water was an extension of the principle of Hargrave's; but he also applied a large and small roller to expand the thread, and for this ingenious contrivance took out a patent in 1769. At first he worked his machinery by horses; but in 1771 he built a mill on the stream of the Derwent, at Cromford. In 1779, Crompton invented the mule, which is a further and wonderful improvement of this art.—*PHILLIPS.* See COTTON MANUFACTURE.

Spirit of Wine. See ALCOHOL.

Spirits. All inflammable liquors obtained by distillation—as brandy, rum, geneva, whisky, gin, etc.—are comprised under this designation. See articles under these heads.

ACCOUNT OF THE SPIRITUOUS AND MALT LIQUORS PRODUCED IN THE UNITED STATES IN 1850, SHOWING THE AMOUNT OF GRAIN, ETC., CONSUMED IN THEIR PRODUCTION.—FROM THE RETURNS UNDER THE SEVENTH CENSUS.

States.	Capital invested.	Quantities and Kinds of Grain, etc., consumed.								Hands employed.	Quantities of Liquor produced.		
		Barley	Corn.	Rye.	Oats.	Apples.	Mo. inascs.	Hops.			Ale, etc.	Whisky, etc. f.	Rum, etc.
	Dollars.	Bushels.	Bushels.	Bushels.	Bush.	Bushels.	Hbds.	Tons.			Barrels.	Gallons.	Gallons.
Maine.....	17,000	.....	.....	.....	.....	.....	2,000	.....	5	800	.....	.....	220,000
Vermont.....	7,000	2,500	.....	.....	.....	.....	.....	1	2	.....	.....	.....	.....
Massachusetts.....	457,500	80,000	19,400	26,600	.....	.....	25,130	29	131	25,800	120,000	3,786,000	.....
Rhode Island.....	17,000	12,500	.....	.....	.....	.....	.....	6	9	3,900	.....	.....	.....
Connecticut.....	15,000	.....	20,000	20,000	.....	.....	10	2	20	.....	130,000	1,200	.....
New York.....	2,585,900	2,062,250	1,647,266	909,067	6,707	60,940	24,500	581	1380	644,700	9,231,700	2,488,800	.....
New Jersey.....	409,655	103,700	254,000	58,400	.....	409,700	.....	42	197	34,750	1,250,530	.....	.....
Pennsylvania.....	1,719,960	550,105	1,483,555	517,180	24,700	51,200	10	263	911	189,581	6,548,310	1,500	.....
Maryland.....	247,100	76,900	166,100	54,300	460	.....	.....	25	126	26,330	787,400	.....	.....
Virginia.....	100,915	20,000	250,700	62,680	450	.....	.....	14	123	5,500	879,440	.....	.....
North Carolina.....	21,930	.....	64,650	4,700	.....	.....	.....	.....	75	.....	153,030	.....	.....
South Carolina.....	3,475	.....	13,100	.....	.....	.....	.....	.....	33	.....	43,900	.....	.....
Georgia.....	7,150	.....	20,150	2,500	1,500	.....	.....	.....	15	.....	60,450	.....	.....
Alabama.....	500	.....	.....	.....	.....	.....	25	.....	2	.....	.....	.....	3,000
Louisiana.....	8,500	10,000	.....	.....	.....	.....	.....	10	8	3,000	.....	.....	.....
Tennessee.....	66,125	3,000	258,400	5,480	.....	.....	.....	.....	159	.....	657,000	.....	.....
Kentucky.....	168,895	65,650	551,850	30,520	.....	5,000	.....	18	274	19,500	1,491,745	.....	.....
Missouri.....	298,900	124,440	303,200	24,900	.....	.....	.....	31	179	44,850	939,400	.....	.....
Ohio.....	1,262,974	330,950	3,588,140	281,750	19,500	.....	.....	178	1083	96,143	11,865,150	.....	.....
Indiana.....	334,950	118,150	1,417,900	48,700	1,000	.....	.....	18	287	11,005	4,639,900	.....	.....
Illinois.....	303,400	98,000	703,500	48,700	2,200	.....	.....	30	274	27,925	2,315,000	.....	.....
Michigan.....	139,425	32,030	212,800	19,150	.....	.....	.....	16	95	10,320	690,900	.....	.....
Iowa.....	19,500	.....	51,150	7,200	.....	.....	.....	.....	19	.....	160,600	.....	.....
Wisconsin.....	98,700	91,020	29,900	200	.....	.....	.....	28	98	31,320	127,000	.....	.....
New Mexico.....	7,300	.....	2,000	*12,900	.....	.....	.....	.....	21	.....	42,000	.....	.....
Utah.....	3,000	1,000	.....	.....	.....	.....	.....	.....	3	300	.....	.....	.....
Dls. of Columb.....	12,000	5,000	.....	.....	.....	.....	.....	.....	5	1,350	.....	.....	.....
Total.....	8,334,254	3,787,195	11,067,761	2,143,927	56,517	526,840	61,675	1294	5487	1,177,924	42,133,955	6,500,500	.....

* Wheat.

† This includes high wines.

EXPORTS OF DOMESTIC SPIRITS FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Spirits from Grain		Spirits from Molasses		Spirits from other Materials	
	Gallons.	Value	Gallons.	Value	Gallons.	Value
Russia on the Black Sea	4,799	.....	.....	.....	.....
Asiatic Russia	\$5,181	.....	.....	.....	.....
Russian Possessions in North America	3,013	.....	.....	.....	.....
Danish West Indies	12,731	.....	2,055	.....	.....
Hamburg	8,337	.....	4,029	.....	.....
Bremen	699	.....	210	.....	.....
Dutch West Indies	14,515	.....	8,505	.....	.....
Dutch Guiana	70	.....	105	.....	.....
England	61,061	.....	33,548	.....	.....
Scotland	3,400	.....	1,475	.....	.....
Gibraltar	45,592	.....	29,679	.....	.....
Malta	18,000	.....	8,900	.....	.....
Canada	257,034	.....	124,657	.....	.....
Other British North American Possessions	55,701	.....	40,904	.....	.....
British West Indies	6,585	.....	3,235	.....	.....
British Honduras	9,136	.....	4,724	.....	.....
British Guiana	167	.....	.....
British Possessions in Africa	5,929	.....	2,530	.....	.....
Other ports in Africa	100,314	.....	37,134	.....	.....
British Australia	21,043	.....	14,501	.....	.....
British East Indies	5,040	.....	2,191	.....	.....
France on the Atlantic	890,536	.....	521,013	.....	.....
France on the Mediterranean	365,095	.....	220,369	.....	.....
French North American Possessions	1,563	.....	706	.....	.....
French West Indies	8,031	.....	.....
Spain on the Atlantic
Canary Islands
Cuba	5,553	.....	2,950	.....	.....
Porto Rico	13,943	.....	7,790	.....	.....
Portugal	40,315	.....	25,423	.....	.....
Madeira	4,501	.....	.....
Cape de Verd Islands	149	.....	197	.....	.....
Sardinia	2,260	.....	1,781	.....	.....
Two Sicilies	1,310	.....	1,087	.....	.....
Austria
Turkey in Europe	220	.....	400	.....	.....
Turkey in Asia	410	.....	179	.....	.....
Hayti	2,171	.....	1,042	.....	.....
Mexico	8,414	.....	4,814	.....	.....
Central Republic	3,495	.....	2,960	.....	.....
New Granada	24,389	.....	15,349	.....	.....
Venezuela	8,540	.....	4,770	.....	.....
Brazil	9,150	.....	4,544	.....	.....
Uruguay, or Cisplatine Republic	90,119	.....	43,396	.....	.....
Argentine Republic	63,917	.....	32,176	.....	.....
Chili	9,962	.....	4,406	.....	.....
Peru	5,324	.....	2,164	.....	.....
Ecuador	433	.....	177	.....	.....
Sandwich Islands	636	.....	3,067	.....	.....
Other islands in the Pacific
China
Total	2,167,924	\$1,248,234	2,378,603	\$1,216,635	169,226	\$120,011

IMPORTS OF SPIRITS INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Brandy		From Grain		From other Materials		Cordons	
	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.
Sweden and Norway	19	.....
Danish West Indies	113	.....
Hamburg	1,634	.....	23,012	.....	.....	.....	.....
Bremen	571	.....	404	.....	.....	.....	.....
Holland	2,738	.....	1,095,991	.....	.....	.....	.....
Dutch West Indies	813,382	.....	.....	.....	.....
Dutch Guiana
Dutch East Indies
Belgium	2,663	.....	3,949	.....	.....	.....	.....
England	18,059	.....	93,545	.....	.....	.....	.....
Scotland	17,699	.....	199,566	.....	.....	.....	.....
Ireland	1,102	.....	.....	.....	.....
Canada	5,040	.....	9,161	.....	.....	.....	.....
Other British N. American Poss.	45	.....	46	.....	.....	.....	.....
British West Indies	727	.....	1,762	.....	.....	.....	.....
British Honduras
British Guiana
British East Indies	15	.....	26	.....	.....	.....	.....
France on the Atlantic	1,455,190	.....	2,432,112	.....	.....	.....	.....
France on the Mediterranean	1,925	.....	2,393	.....	.....	.....	.....
Spain on the Atlantic
Spain on the Mediterranean	5,907	.....	7,251	.....	.....	.....	.....
Canary Islands
Cuba
Porto Rico
Sardinia
Tuscany
Papal States
Two Sicilies	23	.....	5	.....	.....	.....	.....
Austria
Hayti
Mexico
New Granada
Venezuela
Brazil
Peru
Sandwich Islands
China
Total	1,513,328	\$2,527,262	1,986,037	\$1,125,160	443,495	\$218,907	67,374	\$92,396

TABLE SHOWING THE TOTAL NUMBER OF GALLONS OF PROOF-SPIRIT DISTILLED IN ENGLAND, SCOTLAND, AND IRELAND RESPECTIVELY, DURING THE YEAR ENDING 5TH JANUARY, 1864.

	From Malt only	From a Mixture of		Total.
		Malt with unmalted Grain.	Sugar or Molasses with unmalted Grain.	
England	Gallons.	Gallons.	Gallons.	Gallons.
Scotland	5,330,744	6,319,660	983,010	7,308,670
Ireland	9,726	4,113,581	915,631	10,359,926
United Kingdom.	5,340,440	19,192,471	1,908,646	26,441,557

—See WINE.

Spithead, a celebrated roadstead, off the south coast of England, county of Hants, between Portsea island and the Isle of Wight. It communicates westward with the Solent and Southampton Water. It is so secure from all winds except the southeast, as to have been termed by sailors “the king’s bedchamber,” and it is a principal rendezvous of the British navy. Portsmouth and Ryde are on its opposite sides.

Splicing, among seamen, to join the two ends of a rope together, or to unite the end of a rope to any part thereof, by interweaving the strands in a regular manner. There are several methods of splicing, according to the services for which it is intended; all of which are distinguished by particular epithets. The term is also used in architecture.

Splinters, the pieces of a ship’s side, masts, decks, etc., which, being knocked off by a shot, acquire great velocity, and frequently do more damage among the men than the shot itself.

Splinter-netting, sennit made into webs, and nailed upon the inner parts of a ship’s sides, to lessen the effect of the splinters.

Sponge (Ger. *Schwamm*; Fr. *Eponge*; It. *Spugna*; Sp. *Esponja*), a soft, light, very porous, and compressible substance, readily imbibing water, and as readily giving it out again. It is found adhering to rocks, particularly in the Mediterranean Sea, about the islands of the Archipelago. It was formerly supposed to be a vegetable production, but is now classed among the zoophytes; and analyzed, it yields the same principles as animal substances in general. The inhabitants in several of the Greek islands have been trained from their infancy to dive for sponges. They adhere firmly to the bottom, and are not detached without a good deal of trouble. The extraordinary clearness of the water facilitates the operations of the divers. Smyrna is the great market for sponge. The price varies from 6 to 16 piastres per oke for ordinary and dirty, and from 80 to 100 piastres per oke for fine and picked specimens. Sponge is also fished for in the Red Sea.—*URE’s Dictionary*; *SAVARY’S Letters on Greece*. About 20 miles southeast from Napoli di Romania (Nauplia), in the gulf of that name, is the small town of Cranidi, the inhabitants of which are the principal sponge-fishers of the Archipelago and Levant. The fishery is carried on partly by spearing, and partly by diving; the latter securing the sponge free from injury, which is not the case with the former. The Cranidiots are most expert divers, and anecdotes approaching to the marvelous are told of their feats. After the sponge is fished up, when perfectly free from sand, and dry, it is so very light that large pieces of it are moved with the slightest breath of air. It is customary, however, to impregnate it with sand. This is done by stringing the sponges together, and laying them on the sand to allow the ripple of the sea to slush them with the finest particles. They are then placed in heaps under piles of stones which press them closely together, so that they become when dry hard and flat, and have to be beaten and sifted. But though this be done, and though they are sometimes further washed and sifted, they will, though apparently quite clean, weigh three or four times their original weight! It is, perhaps, need-

less to add that they are always sold by weight. The sponges found on the Florida coast are very good, and if the fishery was more extensively prosecuted would furnish us with our consumption.

Squill (Ger. *Meerzwiebel*; Fr. *Scille*, *Oignon marin*; It. *Scilla*, *Cipolla marina*; Sp. *Cebolla albarrana*), or, as it is sometimes denominated, the *Sea onion*, is a plant with a large bulbous root, which is the only part that is used. It grows spontaneously on sandy shores in Spain and the Levant; whence we are annually supplied with the roots. They should be chosen large, plump, fresh, and full of a clammy juice: some are of a reddish color, and others white; but no difference is observed in the qualities of the two sorts. The root is very nauseous, intensely bitter, and acrimonious; much handled, it ulcerates the skin. The bulbs are brought to market preserved fresh in sand. The acrimony of the roots, on which their virtue depends, is partially destroyed by drying and long keeping, and is completely destroyed by exposure to heat above 212°. Squill is one of the most powerful and useful remedies in the materia medica.—*LEWIS’S Materia Med.*; *THOMSON’S Dispensatory*.

Stade, a small city of Hanover, on the Schwinge, 22 miles west by north of Hamburg, lat. 53° 36’ 32’’ N., long. 9° 28’ 34’’ E. It has very little trade; and would be quite unworthy of notice in a work of this sort, except for the circumstance that a toll or duty, charged by the Hanoverian government on goods conveyed up the Elbe to Hamburg, whether for consumption or transit, used to be charged at the castle of Brunshausen, contiguous to this town. All vessels bound for Hamburg had to heave to (and those of some countries to anchor) in passing the guard-ship opposite to the castle, and send their papers, including manifests, bills of lading, cockets, etc., on shore, that the duty, which was in general about $\frac{1}{2}$ per cent. *ad valorem*, might be computed from them. This being done, the ship was allowed to proceed, and the duty was paid at Hamburg.—*See ELBE*. It is remarkable that an obstruction of this sort should have been tolerated for so long a period. The duties fell heavily on certain descriptions of goods, particularly on some manufactured articles; and were, at an average, decidedly higher than the duties charged in Hamburg. They are most objectionable, however, from their requiring many troublesome regulations to be complied with; the unintentional deviation from any one of which exposes the cargo to confiscation, and never fails to occasion a great deal of delay, trouble, and expense. As the principal part of the foreign trade of the Elbe is in our hands, we are, of course, principally affected by the Stade toll; and considering the source of the nuisance, it is not a little astonishing it should not have been abated long ago. The sum which the Hanoverian government derived from the duties is but trifling compared with the injury they inflicted on trade; it would, consequently, be good policy for the former to sell, and for the government to buy, an exemption from so vexatious a duty; and few things would do more to extend our trade with Hamburg than the completion of an arrangement of this sort. By an order from the Hanoverian government this duty has been abolished, and vessels are permitted to navigate the Elbe paying ordinary port dues.

Stained Glass. When certain metallic oxyds or chlorids, ground up with proper fluxes, are painted upon glass, their colors fuse into its surface at a moderate heat, and make durable pictures, which are frequently employed in ornamenting the windows of churches as well as of other public and private buildings. The colors of stained glass are all transparent, and are therefore to be viewed only by transmitted light. Many metallic pigments, which afford a fine effect when applied cold on canvas or paper, are so changed by vitreous fusion as to be quite inapplicable to painting in stained glass.—*See GLASS*.

Stamps, Stamp Acts. Stamps are impres-

sions made upon paper or parchment by the government or its officers for the purpose of revenue. They always denote the price of the particular stamp, or, in other words, the tax levied upon a particular instrument stamped, and sometimes they denote the nature of the instrument itself. If the instrument is written upon paper, the stamp is impressed in relief upon the paper itself; but to a parchment instrument the stamp is attached by paste and a small piece of lead, which itself forms part of the impression. These stamps are easily forged, and at various times forgeries of them upon a large scale have been discovered. The Stamp Act was one of the main causes of the American Revolution. In England all commercial paper must be stamped to give it validity. The State of Maryland passed a Stamp Act in 1845 as a source of revenue. By this act bills of exchange, promissory notes, bonds, mortgages, and lottery tickets, were to be stamped. The ordinary annual revenue of the State was from \$70,000 to \$80,000. The act was repealed in 1856. By the present British Stamp Act, the stamps on bills of exchange, and notes, drafts, etc., range from 1 penny to £2 5s.; on foreign bills, from 1 penny to 15s.; on wills, from 10s. to £270 or more.

Staple, "anciently written *estaple*, cometh," says Lork Coke, "of the French word *estape*, which signifies a mart or market." It appears to have been used to indicate those marts both in Great Britain and at Bruges, Antwerp, Calais, etc., on the continent, where the principal products of a country were sold. Probably, in the first instance, these were held at such places as possessed some convenience of situation for the purpose. Afterward they appear to have been confirmed, or others appointed for the purpose by the authorities of the country. All merchandise sold for the purpose of exportation was compelled either to be sold at the "staple," or afterward brought there before exportation. This was done with the double view of accommodating the foreign merchants and also enabling the duties on exportation to be more conveniently and certainly collected. Afterward the word staple was applied to the merchandise itself which was sold at the staple.—*Bohn's Cyclopedia*.

Starch (Ger. *Amidon*; Fr. *Amidon*; It. *Amodi*, *Amito*; Sp. *Amidon*, *Almidon*; Russ. *Kruchmal*), a substance obtained from vegetables. It has a fine white color, and is usually concreted in longish masses; it has scarcely any smell, and very little taste. When kept dry, it continues for a long time uninjured, though exposed to the air. It is insoluble in cold water; but combines with boiling water—forming with it a kind of jelly. It exists chiefly in the white and brittle parts of vegetables, particularly in tuberoses roots, and the seeds of the gramineous plants. It may be extracted by pounding these parts, and agitating them in cold water, when the *parenchyma* or fibrous parts will first subside; and these being removed, a fine white powder, diffused through the water, will gradually subside, which is the starch. Or the pounded or grated substance, as the roots of potatoes, acorns, or horse chestnuts, for instance, may be put into a hair sieve, and the starch washed through with cold water, leaving the grosser matters behind. Farinaceous seeds may be ground and treated in a similar manner. Oily seeds require to have the oil expressed from them before the farina is extracted.—*Thomson's Chem.*

IMPORTS OF STARCH INTO THE UNITED STATES FOR THE YEAR
ENDING JUNE 30, 1857.

Whence imported.	Pounds	Value.
Bremen	477	\$34
Holland	44,375	1614
England	14,655	1000
Scotland	51,494	3494
Cuba	1,891	136
Mexico	8,351	333
China	1,540	47
France and Canada	500	28
Total	118,853	\$6695

Stay, a strong rope from the mast head, leading forward to support it from falling aft. It takes the name of the mast, as the fore-stay, main-topmast stay, etc. *To stay*, means to tack. To be *in stays*, is to be in the act of tacking. *To miss stays*, signifies to fail in attempting to tack.

Steam Navigation. The statistics in regard to the steam navigation of the maritime nations of the world will be found under the heads of those countries. This article, therefore, will be limited, and be comprised under the following heads: I. Invention of the Steam-engine. II. Introduction and Statistics of Ocean Steam Navigation.

I. *Invention of the Steam-engine.*—The steam-engine is the most important power that the ingenuity of man has yet devised. The first idea of it was suggested by the Marquis of Worcester, in his Century of Inventions, as "a way to drive up water by fire." It does not, however, appear that this inventor ever derived any benefit or could interest the public in favor of his discovery. The following list includes the chronology of the most important inventions and improvements of the steam-engine.

Papin's digester invented	A.D. 1681
Captain Savery's engine constructed for raising water ..	1698
Papin's engine exhibited to the British Royal Society ..	1699
Atmospheric engine by Savery and Newcomen	1713
First idea of steam navigation set forth in a patent obtained by Hull	1736
Watt's invention of condensation steam	1765
Watt's first patent	1769
Watt's engines built on a large scale, and his patent renewed by Parliament	1775
Thomas Paine proposed the application of steam in the United States	1778
Engine made to give a rotary	1779
Watt's expansion engine	1778
Double acting engines proposed by Dr. Flock	1779
Watt's double engine constructed and patented	1781
Marquess Jouffroy constructed an engine on the Saone ..	1781
Fitch's experiments in steam navigation on the Delaware	1783-'84
Oliver Evans's experiments	1785-'86
Ramsay experiments in Virginia	1787
W. Symington made a passage on the Clyde Canal	1789
Chancellor Livingston built a steamer on the Hudson ..	1797
First experiment on the Thames	1801
Trevetrick's high pressure locomotive engine (see RAILROADS) first used	1803
Oliver Evans's experiments in locomotive engines in Pennsylvania	1804
Manufactories warmed by steam	1806
Fulton started a steamboat on the Hudson River, built by himself, named <i>The Clermont</i> ; engine by Boulton and Watt; passage to Albany in thirty-six hours.	
FIRST RECORD OF PRACTICAL STEAM NAVIGATION IN THE WORLD	1807
The steamboats next in order in the world were,	
<i>The Car of Neptune</i> , New York	1808
<i>The Paragon</i>	1811
<i>The Richmond</i>	1812
Steam power first used on railroads by Blenkinsop	1811
Steam vessels commenced plying on the Clyde (FIRST IN EUROPE)	1812
Five steam vessels in Scotland	1813
Steam used in printing <i>London Times</i>	1814
First steam vessel on the Thames, brought from Glasgow	
First steamer built in England	1815
Steamer <i>Savannah</i> , of 350 tons, made the first ocean voyage from New York to Liverpool, in twenty-two days	1819
First steamer in Ireland	1820
Captain Johnson obtained £10,000 for making the first steam voyage to India in the <i>Enterprise</i> , which sailed from Falmouth August 16	1825
Locomotive steam-carriages on railways at Liverpool, October	1829
Locomotives first used in the United States on the Mohawk and Hudson Railroad	1831
On the Baltimore and Ohio Railroad	1832
The <i>Great Western</i> arrived from Bristol at New York, and the <i>Strius</i> from Cork, Ireland, being their first voyages	1838
First steamer on the Cunard Line arrived at Boston, fourteen days eight hours, July 13	1840

—See HAYDN'S Dictionary of Dates; see FULTON.

II. *Introduction and Statistics of Ocean Steam Navigation.*—The first steamer that ever crossed the Atlantic was the *Savannah*, Captain Moses Rogers—a vessel that was built in New York, in 1818, by Fitchet & Crocket. The engine was built by Stephen Vail and Daniel Dod,

of New Jersey. It was a paddle-wheel steamer, of 350 tons burden and 90 horse power, and sailed from New York March 29, 1819, to Savannah, Georgia, where she was owned. She next went to Charleston to take the President, James Monroe, to Savannah, and from there, on the 25th of May, 1819, started for Liverpool, where she arrived safely in 22 days. She was a full-rigged ship, and a fast sailer; had steam up fourteen days of the voyage; and by steam alone could make eight knots an hour. Steamboats coming into general use on rivers, lakes, and coasting voyages soon after, it seems a little singular that no further attempts were made for nineteen years to cross the ocean by steam. The mere fact of this successful voyage seems to have been overlooked; the great philosopher, Dionysius Lardner, having proved—to his own satisfaction, at least—that steam vessels *never could* cross the Atlantic!

Finally, in Bristol, England—the very port that sent out John and Sebastian Cabot to make the first actual discovery of this continent—a line of steamers was projected, and the first vessel, the *Sirius*, arrived in New York on the 23d of April, 1838. The New York papers of that date say, “Myriads of persons crowded the Battery to have a glimpse of the first steam vessel which had crossed the Atlantic from the British Isles, and arrived safely in port.” The London *Times* had spoken of the project doubtfully. “There is really no mistake,” said the *Times*, “in this long-talked-of project of navigating the Atlantic Ocean by steam. There is no doubt of an intention to make the attempt, and to give the experiment, as such, a fair trial. The *Sirius* is absolutely getting under weigh for America.” Now, after a lapse of 20 years, there are 15 lines of steamers, numbering 46 ships, trading between this country and Europe; and 37 of these steamers run out of New York. The earliest vessels—the *Sirius*, the *Great Western*, *Royal William*, *City of Liverpool*, *British Queen*, and the *President*—were none of them long in the trade. The line established by the enterprising Samuel Cunard, and to this day bearing his name, was started in 1840, and was the first permanently successful line of transatlantic steamers ever set afloat. The first Cunard steamer (the *Britannia*) arrived at Boston July 18, 1840.

Of the transatlantic steamers eight have been lost. The *President*, the *City of Glasgow*, and the *Pacific* sailed, and, with all on board, “were never heard of more.” The *Arctic* was sunk in a collision with the French steamer *Vesta*, on the banks of Newfoundland, and but few lives were saved. The *Columbia*, the *Humboldt*, the *Franklin*, and the *City of Philadelphia* were all wrecked, but no lives were lost. Since the *Sirius* sailed from England to New York, in 1838, not far from 500,000 persons have crossed the Atlantic by steam—reckoning both passengers and crews, and the voyages both ways—and of this number about 1200 have been lost. This, in the doctrine of chances, is about one-third of 1 per cent., or one voyage in 300. With greater care, with the lessons of experience, and the

aid of practical science, the percentage of loss will in future undoubtedly be far less.

In comparing the screw with paddle-wheel steamers, the latter have always been considered the swiftest vessels, and have generally made the best time. Screw steamers have many advantages over those with paddle-wheels. As war vessels they are more secure, the propelling power, as well as the most of the machinery, being below the water-line, and out of the reach of shot. The engine and machinery are less expensive, take less fuel, occupy far less space, and consequently afford more room for passengers' and freight. They are not usually as rapid, nor are they as great favorites with the traveling public as paddle-wheel steamers. The motion of screw steamers is more unpleasant than those with paddle-wheels; there being nothing on the sides to balance and “trim” them, they have a lurching, rolling motion.

The ordinary time made by the Cunard and Collins paddle-wheel steamers between Liverpool and New York has been from 9 to 12 days. The monster steamer *Himalaya*—a British screw steamer of over 5000 tons burden—was sent under steam from Halifax to Southampton in about 9 days. Three other screw vessels—the *Emeu*, *Lebanon*, and *Alps*—steamed from Havre to New York, respectively, in 11 days 17 hours, 13 days 21 hours, and 13 days 12 hours. These passages are not far behind the usual speed of paddle-wheel steamers.

The following is the record of the various lines of transatlantic steamers, and the average time of passage going both east and west, during the year 1856. It can not be taken as positive proof of the comparative speed of the different lines, for sometimes one or two unfortunate trips will greatly increase the general average. The Boston branch of the Cunard line had longer voyages than the New York line, in consequence of the delay occasioned by putting into Halifax.

		Eastern Passages.		Western Passages.	
		Days.	Hrs.	Days.	Hrs.
Collins	Paddle-wheel,	12	03	12	16
Cunard, New York	“	11	03	11	22
Cunard, Boston	“	11	12	13	07
Bremen	“	14	12	15	00
Old Havre	“	13	16	14	18
Havre (Vanderbilt)	“	13	00	13	00
Havre (French)	Screw,	15	00	17	00
Glasgow	“	13	03	15	12
Hamburg	“	16	00	15	12

—PLINY MILES'S Report on Ocean Steam Navigation.

Great Britain.—To exhibit the extent of the employment of steam vessels in the British trade to the Mediterranean, India, and China, we give a summary of the steamers owned by the Peninsular and Oriental Company:

	Screw.	Paddle-wheel.	Total.
Number	21	19	40
Tonnage	30,022	22,715	52,737

The following tabular statement gives a full exhibit of the ocean mail service of Great Britain, now carried on almost exclusively by steamships:

Lines.	Number of Steamers.	Horse Power.	Tonnage.	Number of Men.	Services commenced.	How often.	Annual Compensation.
Liverpool and Isle of Man	4	790	2,089	91	1833	2 a week	\$4,250
England and Ireland	4	1,284	2,408	115	1850	2 a day	125,000
Scotland and Shetland	2	300	850	42	1840	1 a week	6,000
England, Spain, and Gibraltar	4	973	2,782	200	1852	3 a month	102,500
Mediterranean, India, and China	15	12,850	46,053	2877	1853	2 a month	1,121,500
England and the United States	9	6,418	18,406	922	1859	1 a week	866,700
North America (Colonial)	2	300	1,151	60	1854	1 a month	73,500
West Indies, Mexico, and South America.	20	9,308	29,454	1667	1851	3 a month	1,350,000
England, France, and Belgium	6	640	1,765	96	1854	1 a day	77,500
Channel Islands	5	797	1,852	107	1848	3 a week	20,000
West Coast of South America	7	2,896	6,719	373	1852	2 a month	125,000
Scotland and Orkney	1	60	250	16	1853	1 a day	6,500
West Coast of Africa	7	850	5,951	520	1852	1 a month	106,250
South America, Mauritius, and Calcutta.	5	2,009	8,000	575	1856	1 a month	205,000
England and Australia	7	3,290	13,410	671	1857	1 a month	925,000
Total.	121	42,254	140,139	8137	....	....	\$5,114,700*

* There are some lines not here noticed, which swell the sum to \$5,333,985.

1. The mail routes from Great Britain to Australia are shown as follows:

The route from Great Britain to her Australian colonies, via the Cape of Good Hope, includes the following distances and lengths of passage:

	Miles.	Days.
Southampton to the Cape	6,700	30
Cape to Adelaide	6,100	28
Adelaide to Sydney	1,080	5
Sydney to New Zealand	1,200	6
Total	15,080	69

2. The Suez and Singapore route is made up as follows:

	Miles.
Southampton to Gibraltar	1,150
Gibraltar to Alexandria	1,890
Alexandria to Ceylon	3,750
Ceylon to Singapore	1,700
Singapore to Sydney	4,800
Sydney to New Zealand	1,200
Total	14,490

3. The distances by way of Panama are:

	Miles.
Southampton to St. Thomas	3,620
St. Thomas to Panama	1,100
Panama to Tahiti	4,490
Tahiti to New Zealand	2,280
New Zealand to Sydney	1,200
Total	12,690

The comparative distances show a decided advantage by the Panama route, and prove that the course of trade from Great Britain to her colonies must eventually tend that way.

The ocean mail steamers of Great Britain run 2,532,231 miles per year, at a total cost to the Admiralty of £1,062,797, or \$5,333,985. The ocean mail steamers of the United States run 735,732 miles per year, at a total charge on the Post-office Department of \$1,329,733. The British steamers run three and a half times as many miles as ours do, and receive for it a sum more than four times as large. The average price paid to their principal companies, as the West India Royal Mail, the Cunard, the Australian, and the Peninsular and Oriental, including its Mediterranean coasting service, is 9s. 7d., or \$2 39 per mile; while the average price paid by us, or for the Collins, Havre, Bremen, Aspinwall, and Panama, San Francisco and

Oregon, is \$1 80½ per mile. The highest sum paid per mile by the British government is 11s. 4½d., or \$2 83½, to the Cunard Company, \$2 75 to the Australian, and \$2 46 to the West India; and the lowest, 6s. 1½d., or \$1 53½ to the Peninsular and Oriental, much of whose service is coasting. This is saying nothing of the Pacific and the African coasting lines. The highest sum which we pay is to the Collins line, \$3 10½ per mile; and the lowest to the Havre, \$1 00½ per mile; while the sums paid to all of the other companies range but little above the last figures. The lowest rate per mile paid to any of the lines under the contract was to the Pacific Mail, \$1 70. It must not be forgotten that the low rates per mile of the Havre and Bremen result from those lines taking the postages since their contracts expired—a sum by no means adjusted to the service done. They had ships that they could not let lie idle. Under their regular contracts the pay per mile of the Bremen line was \$2 08, and of the Havre \$1 76½. While the British government pays to four of her principal transmarine services an average of \$2 39 per mile, we pay to five of ours an average of \$1 80½ only, or but about two-thirds as much as she does. While our total annual expenditure for foreign mails is \$1,329,733, a sum by \$20,267 less than that paid to the single service of the West India Royal Mail Company, that of Great Britain is \$5,333,985. And while our total income from transmarine postages is \$1,035,740, a sum but little short of that paid in subsidy, taking the present Bremen and Havre services at the estimates of last year for sea and inland postages combined, the income from the whole transmarine service of Great Britain, including ocean and inland postage, was, when the last report was made in 1853, £591,573, or \$2,957,865; but little above half the sum paid in subsidy, and including the French, Belgian, and Dutch routes, where the postal yield was much greater than from the ocean lines. The estimates which we present below have been made with great care from distances and subsidies furnished us by the reliable First Assistant Postmaster-general, Hon. Horatio King, from the last report of the late Postmaster-general, and from the report of the British Postmaster-general, Lord Canning, before noticed. Every item is consequently authentic.

AMERICAN MAIL STEAMERS.

Lines.	Trips.	Distances.	Subsidy.	Gross Postage.	Total Miles.	Pay per Mile.
Collins	20	3,100	\$355,000	\$415,867	124,000	\$3 10½
Bremen	13	3,700	128,937	128,937	96,000	1 34
Havre	13	3,270	83,484	83,484	85,020	1 00½
Aspinwall	24	3,200	290,000	139,610	153,600	1 88½
Pacific	24	4,200	343,250	183,238	201,600	1 70
Havana	24	669	60,000	6,188	32,112	1 86½
Vera Cruz	24	900	29,062	5,960	43,200	67
Total .....	..	..	\$1,329,733	\$1,035,740	725,732	\$1 80½ average.

Total average per mile, \$1 80½. Average of five principal lines, \$1 80½.

BRITISH MAIL STEAMERS.

Lines.	Trips.	Distances.	Subsidy.	Gross Postage.	Total Miles.	Pay per Mile.
Cunard	52	3,100	£13,340	£143,667 10s.	304,000	11s. 4½d. \$2 38½
Royal Mail	24	11,402	270,000	106,905	547,266	9s. 10d. \$2 46
Peninsular and Oriental	24	"	244,000	178,186 11	796,687	6s. 1½d. \$1 73½
Australian	12	14,000	185,000	33,281 12	336,000	11s. \$2 75
Bermuda and St. Thomas	24	2,042	14,700	"	18,000	3s. \$0 75
Panama and Valparaiso	24	2,718	25,000	5,715	130,454	3s. 10d. \$0 96
West Coast Africa	12	6,245	28,250	3,196 2	143,880	2s. 6d. \$0 62½
Channel Islands	156	132	...	74,430 8	41,184	...
Holyhead and Kingston	730	64	...	36,158 9	93,440	...
Liverpool and Isle of Man	112	70	...	10,032 15	14,530	...
Shetland and Orkneys	52	200	...	"	20,800	...
Total .....	..	..	£1,062,797	£591,573 7s.	2,532,231	9s. 7d. \$2 39

Total average per mile, \$2 10½. Average of four principal lines, \$2 39.

* The Peninsular and Oriental Company run twice per month between Southampton and Alexandria, and between Suez and Calcutta and Hong Kong; twice per month between Marseilles and Malta; between Singapore and Sydney every two months; and three times per month between Southampton and Gibraltar, touching at Vigo, Oporto, Lisbon, and Cadiz.

It would hardly be expected that the lines of this country should run at cheaper rates than those of Great Britain, as the prime cost of ships and their repairs, fuel, wages, insurance, etc., are much cheaper there, and as they have more paying freights, in their manufactured goods. It only explains to us, what has al-

ways seemed a mystery, that while the regular companies in England were making money, nearly all of those in the United States not only had not made money, but were embarrassed more or less, and were selling their stock at 60 to 80 cents on the dollar.

The history of commercial nations admonishes us that no trading people can long maintain their ascendancy without using all of the most approved means of the age for prosecuting trade. Portugal was at one time the most powerful commercial nation of the globe; and at another Holland was the mistress of the seas. But while the latter is now only a fourth-rate commercial power, the former has sunk into obscurity, and is nearly forgotten of men. At that time England and France had but a limited foreign trade, and scarcely any commercial reputation. France could more easily maintain her existence without a foreign trade than could England; and yet her matured manufactures and her products of the soil became so valuable that she sought a foreign market. England, on the contrary, had not territory enough to remain at home and yet be a great power. She matured an immense manufacturing system, and needed a market, as well as the raw material, and food for her operatives. She began to stretch her arms to the outer world, and had made very considerable strides in foreign commerce side by side with France and the German States, and in the face of the steady young opposition of the American States.

It is interesting to trace this rapid progress of steam since its first application to purposes of mail transport in 1833. An intelligent writer says, "The rise and progress of the ocean steam mail service of Great Britain is second in interest to no chapter in the maritime history of the world;" and while we acknowledge a grateful pride in the triumphs of our transatlantic brethren, we must blush with shame at our dereliction in this great, and civilizing, and enriching service of modern times. The steam marine of the United States, postal, mercantile, and naval, is to-day so insignificant in extent that we do not feel entirely certain that it is a sufficient nucleus for the growth of a respectable maritime power. The few ships that we possess are among the fleetest and the most comfortable that traverse the ocean, and have excited the admiration of the world wherever they have been seen. But their number is so small, their service so limited, their field of operation so contracted, that our large commerce and travel are dependent, in most parts of the world, on British steam mail lines for correspondence and transport, or on the slow, irregular, and uncertain communications of sailing vessels. The question here naturally suggests itself: Have we progressed in ocean steam navigation in a ratio commensurate with the improvements of the age, or of our own improvement in every thing else? And has the government of the country afforded to the people the facilities of enterprise and commercial competition which are clearly necessary to enable them to enter the contest on equal terms with other commercial countries?

List of American Ocean Steamers.—The mail service has eight lines, and 21 steamers in commission, of 48,027 registered tonnage. Much of this tonnage belongs to supply-ships, as for instance those of the Pacific Mail Steamship Company.

Collins Line.—Three steamers, 9727 tons: *Adriatic*, 4144 tons; *Atlantic*, 2849 tons; *Baltic*, 2733 tons.

Havre Line.—Two steamers, 4548 tons: *Arago*, 2240 tons; *Fulton*, 2308 tons.

Vanderbilt Bremen Line.—Three steamers, 6523 tons: *North Star*, 1867 tons; *Ariel*, 1295 tons; *Vanderbilt*, 2360 tons.

United States Mail Steamship Company.—Six steamers, 8544 tons: *Illinois*, 2123 tons; *Empire City*, 1751 tons; *Philadelphia*, 1238 tons; *Granada*, 1053 tons; *Moses Taylor*, 1200 tons; *Star of the West*, chartered, 1172 tons.

Pacific Mail Steamship Company.—Thirteen steamers, 16,421 tons: *Golden Gate*, 2067 tons; *Golden Age*, 2280 tons;

J. L. Stephens, 2189 tons; *Sonora*, 1616 tons; *St. Louis*, 1621 tons; *Panama*, 1087 tons; *California*, 1065 tons; *Oregon*, 1099 tons; *Columbia*, 777 tons; *Republic*, 850 tons; *Northerner*, 1010 tons; *Fremont*, 576 tons; *Tobago*, 189 tons.

Charleston, Savannah, Key West, and Havana.—One steamer; *the Isabel*, 1115 tons.

New Orleans and Mexico.—One steamer; *the Tennessee*, 1149 tons.

The Coasting Service has eight lines, and 23 steamers, of 24,071 tons registered tonnage.

New York, Havana, and New Orleans.—Two: *The Black Warrior*, 1556 tons; *Cahuaba*, 1643 tons=3199 tons.

New York, Havana, and Mobile.—One: *The Quaker City*, 1428 tons.

New York and Savannah.—Four: *Alabama*, 1261 tons; *Florida*, 1261 tons; *Augusta*, 1310 tons; *Star of the South* (propeller), 960 tons=4798 tons.

New York and Charleston.—Four: *Columbia*, 1847 tons; *Nashville*, 1220 tons; *James Adger*, 1151 tons; *Marion*, 962 tons=4680 tons.

New York and Virginia.—Two: *Roanoke*, 1071 tons; *James-town*, 1300 tons=2371 tons.

Philadelphia and Savannah.—Two: *Keystone State* and *State of Georgia*, each about 1800 tons=2600 tons.

Boston and Baltimore.—Two: *Joseph Whitney*, 800 tons; *Unknown*, 800 tons=1600 tons.

New Orleans and Texas.—The *Charles Morgan*, *Texas*, *Mexico*, and *Atlantic*, averaging 600 tons each=2400 tons.

New Orleans and Key West.—The *General Rusk*, 600 tons, and the *Cathoun*, 400 tons=1000 tons.

There are also several propellers running: between New York and Charleston, New York and Portland, and between Philadelphia and the South. They are all, however, small, and irregular in their trade.

Steamers lying up, 18. Registered tonnage, 24,845 tons.

<i>Queen of the Pacific</i>	2801 tons.
<i>Washington</i>	1640 "
<i>Prometheus</i>	1207 "
<i>St. Louis</i>	1621 "
<i>Brother Jonathan</i>	1359 "
<i>Oregon</i>	1004 "
<i>Southerner</i>	900 "
<i>Herman</i>	1734 "
<i>Northern Light</i>	1747 "
<i>Uncle Sam</i>	1433 "
<i>California</i>	1058 "
<i>Northerner</i>	1012 "
<i>Ericsson</i>	1902 "
<i>Star of the West</i>	1172 "
<i>Daniel Webster</i>	1035 "
<i>Orizaba</i>	1450 "
<i>Panama</i>	1087 "
<i>Fremont</i>	576 "

—RAINEY'S Ocean Post.

The number of transatlantic steamers, the lines running to different ports, and the tonnage, are as follows:

STEAMSHIP LINES RUNNING TO NEW YORK.			
Lines.		No. of Vessels.	Tonnage.
Collins Line, Liverpool (paddle-wheel), American	British	3	9,727
Cunard Line, Liverpool	British	4	10,360
Scotch Line, Glasgow (screw),	"	3	6,612
Irish Line, Cork	"	2	2,600
Cunard Line, Havre	"	5	11,800
French Line, Havre	French	3	4,500
Old Havre Line, Havre (paddle-wheel), American	"	3	7,200
Vanderbilt Line, Havre	"	3	7,600
Independent Line, Havre	"	1	1,800
Belgian Line, Antwerp (screw)	Belgian	5	12,590
Bremen Line, Bremen (paddle-wheel), American	"	2	4,000
Hamburg Line, Hamburg (screw),	German	2	2,400
Total, running to New York, 12 lines.....		36	81,189
LIVERPOOL AND BOSTON STEAMERS.			
Cunard Line, Liverpool (paddle-wheel), British	"	4	8,100
LIVERPOOL AND PHILADELPHIA STEAMERS.			
Philadelphia Line, Liverpool (screw), British	"	3	6,856
LIVERPOOL AND PORTLAND STEAMERS.			
Portland Line, Liverpool (screw), British	"	2	8,000
Total, besides New York, 3 lines.....		9	17,556
Grand total, 15 lines.....		45	99,145

Here we have an aggregate of 15 steamship lines, comprising 45 steamers of 99,145 tons burden. Of these lines seven are British, five American, one German, one French, and one Belgian. Eight lines (23 steamers) are screw propellers; and seven (23 steamers) are paddle-wheel.—PLINY MILES'S *Ocean Steam Navigation*.

STATEMENT EXHIBITING THE NUMBER OF AMERICAN AND FRENCH STEAM AND SAILING VESSELS ENGAGED IN TRADE BETWEEN THE UNITED STATES AND FRANCE, AND VICE VERSA; ALSO THE NUMBER OF 200 HORSE-POWER AND UPWARD, TONNAGE, CREWS, AND THE AGGREGATE ENTERED AND CLEARED AT THE PORTS OF BOSTON, NEW YORK, AND NEW ORLEANS, DURING THE FISCAL YEAR ENDING JUNE 30, 1857.

Nationality.	Ports.	Steam Vessels.			Sailing Vessels.		
		Number of Vessels.	Tonnage.	Number of Crew Men.	200 Horse-power and upward.	Number of Vessels.	Tonnage.
American.....	Boston.....	..	..	..	..	8	1,890
"	New York	*14	†34,002	1472	†14	71	50,521
"	New Orleans.....	..	..	..	..	126	96,182
	Total.....	14	34,002	1472	14	205	148,702
French.....	Boston.....	..	..	..	..	1	147
"	New York	45	15,168	447	45	25	5,049
"	New Orleans.....	11	2,852	319	11	1,170	268
	Total.....	56	8,020	766	56	29	6,366
American excess		11	25,982	706	0	176	142,306

* But three vessels were engaged in making the fourteen trips: The *Fulton*, six voyages; the *Arago*, six; and the *Vanderbilt*, two.

† Of the above amount but 7967 tons were actually employed; but by repeated trips (see above note), the tonnage was increased to the figure given in the table.

‡ But four vessels engaged, one having made two trips.

§ All far above 200 horse-power.

|| Of this amount the actual tonnage was 4140, for reasons given in note †.

STATEMENT SHOWING THE STEAM TONNAGE OF THE SEVERAL DISTRICTS OF THE UNITED STATES ON THE 30TH OF JUNE, 1857.

Districts	Registered.	Enrolled.
Passamaquoddy.... Maine.	1,052	1,348
Portland.....	1,970	1,970
Portsmouth..... N. Hampshire.	417	417
Burlington..... Vermont.	4,491	4,491
Boston..... Massachusetts.	1,201	1,201
Fall River.....	7,396	7,396
New Bedford.....	1,321	1,321
Nantucket.....	660	660
Providence..... Rhode Island.	2,070	2,070
Newport.....	255	255
Middletown..... Connecticut.	2,237	2,237
New Haven.....	3,007	3,007
Champlain..... New York.	527	527
Oswego.....	3,715	3,715
Genesee.....	128	128
Oswegatchie.....	7,837	7,837
Buffalo Creek.....	42,009	42,009
Sag Harbor.....	124	124
New York.....	69,061	111,526
Dunkirk.....	3,759	3,759
Perth Amboy..... New Jersey.	8,746	8,746
Burlington.....	3,169	3,169
Camden.....	4,493	4,493
Newark.....	1,778	1,778
Philadelphia..... Pennsylvania.	22,307	22,307
Presque Isle.....	8,621	8,621
Pittsburgh.....	41,724	41,724
Wilmington..... Delaware.	1,057	1,057
New Castle.....	292	292
Baltimore..... Maryland.	17,984	17,984
Annapolis.....	150	150
Georgetown..... Dist. Columb.	3,971	3,971
Alexandria..... Virginia.	328	328
Norfolk.....	2,208	2,208
Petersburg.....	168	168
Richmond.....	1,979	1,979
Wheeling.....	10,814	10,814
Washington..... N. Carolina.	259	259
Newbern.....	127	127
Plymouth.....	590	590
Charleston..... S. Carolina.	2,218	2,218
Savannah..... Georgia.	6,584	6,584
Pensacola..... Florida.	376	376
St. Mark's.....	496	496
Mobile..... Alabama.	21,698	21,698
New Orleans..... Louisiana.	526	51,593
Teche.....	2,225	2,225
Nashville..... Tennessee.	6,126	6,126
Memphis.....	6,775	6,775
Louisville..... Kentucky.	25,643	25,643
Paducah.....	1,634	1,634
St. Louis..... Missouri.	44,547	44,547
Chicago..... Illinois.	7,851	7,851
Alton.....	155	155
Galena.....	4,563	4,563
Sandusky..... Ohio.	293	293
Cuyahoga.....	15,877	15,877
Cincinnati.....	33,916	33,916
Miami (Toledo).....	115	115
New Albany..... Indiana.	4,266	4,266
Milwaukee..... Wisconsin.	1,935	1,935
Detroit..... Michigan.	30,635	30,635
Michilimackinac.....	1,180	1,180
Galveston..... Texas.	3,330	3,330
Saluria.....	97	97
San Francisco..... California.	12,828	11,950
Total tonnage, June, 1857.....	86,973	618,910

STATEMENT SHOWING THE NUMBER OF STEAM VESSELS BUILT IN THE SEVERAL STATES AND TERRITORIES OF THE UNITED STATES FROM 1823 TO 1857, INCLUSIVE.—(YEAR ENDING JUNE 30.)

Years.	Steamers.	Years.	Steamers.
1823.....	15	1841.....	79
1824.....	26	1842.....	137
1825.....	35	1843.....	79
1826.....	45	1844.....	163
1827.....	38	1845.....	163
1828.....	33	1846.....	225
1829.....	43	1847.....	198
1830.....	37	1848.....	175
1831.....	34	1849.....	208
1832.....	100	1850.....	159
1833.....	65	1851.....	233
1834.....	68	1852.....	259
1835.....	30	1853.....	271
1836.....	124	1854.....	281
1837.....	135	1855.....	253
1838.....	90	1856.....	221
1839.....	125	1857.....	263
1840.....	64		

From this exhibit it is apparent that, in point of numbers, there has been no increase in the steam-vessels built since the year 1851. If, however, we take into consideration the increased size of the vessels built, or the aggregate tonnage, there has been a healthy increase corresponding to the growth of the country.

STATEMENT SHOWING THE NUMBER OF STEAM VESSELS BUILT IN EACH DISTRICT OF THE UNITED STATES DURING THE YEAR ENDING JUNE 30, 1857.

Districts.	Steamers.	Districts.	Steamers.
Bath..... Me.	1	Savannah..... Ga.	1
Boston..... Mass.	2	Mobile..... Ala.	1
Providence..... R. I.	2	New Orleans..... La.	4
Middletown..... Conn.	7	Teche.....	1
New London.....	1	Nashville..... Tenn.	1
New Haven.....	1	Memphis.....	1
Oswego..... N. Y.	1	Louisville..... Ky.	1
Buffalo Creek.....	23	St. Louis..... Mo.	10
New York.....	21	Cuyahoga..... Ohio	1
Camden..... N. J.	14	Sandusky.....	1
Philadelphia..... Penn.	1	Cincinnati.....	1
Pittsburgh.....	63	Toledo.....	1
Wilmington..... Dela.	10	Detroit..... Mich.	10
Baltimore..... Md.	1	San Francisco..... Cal.	3
Wheeling..... Va.	14	Total.....	263

From the sixth annual report of the board of supervising inspectors of steamers, made to the Secretary of the Treasury, we glean the following interesting statistics:

During the five years from 1848 to 1852, inclusive, prior to the establishment of the Board of Supervisors, there were 50 steamboat explosions, causing a loss of 1155 lives, and 475 persons wounded. By other disasters during the same period, 416 lives were lost, making a total loss of 1571 lives in the five years. During the four years from 1854 to 1857, inclusive, subsequent to the passage of the steamboat law, there have been seven explosions, and 132 lives lost. By other disasters, collisions, fire, sinking, etc., there have been lost during the same time 214 lives, making a total loss for the five years of 346.

By an examination of these statements we find that for five years prior to the passage of the steamboat act we have accounts of the loss of 1571 lives, and for the five years since said passage the total loss of life on the Western rivers is 846, leaving a difference of 1225 lives.

The total number of steamers inspected during the year in the United States was 1122, with an aggregate tonnage of 464,370 tons. The number of pilots is 2584, and number of engineers 2854. The total number of passengers carried by licensed steamers was 3,610,367.

STATEMENT SHOWING THE TONNAGE EMPLOYED IN STEAM NAVIGATION IN THE UNITED STATES FROM THE YEAR 1823 TO THE YEAR 1857, INCLUSIVE.

Years	Tonnage.	Years.	Tonnage.
1823	24,879	1841	175,088
1824	21,609	1842	229,601
1825	23,061	1843	236,867
1826	34,058	1844	273,179
1827	40,197	1845	326,018
1828	39,418	1846	547,893
1829	54,086	1847	404,841
1830	64,471	1848	427,591
1831	34,435	1849	462,894
1832	90,813	1850	525,946
1833	101,849	1851	583,607
1834	122,815	1852	643,240
1835	122,815	1853	514,097
1836	145,556	1854	676,607
1837	154,764	1855	770,285
1838	193,413	1856	673,077
1839	204,938	1857	705,784
1840	201,339		

To show the advantage which steam communication gives to a growing trade, it may be stated that "from 1840 to 1850 the total imports of Great Britain from Brazil made no increase. In 1855 they had advanced 150 per cent. on 1848; and in 1855 they had advanced over 1848—or the average of the ten years noticed—about 300 per cent. This, however, it must be recollected, was in coffee, for re-exportation; a trade which was lost to our merchants and to our shipping. Her total exports to Brazil from 1840 to 1850 were stationary at about two and a half million pounds sterling annually. In 1851—the first year after steam by the Royal Mail Company—they advanced 40 per cent.; and in 1854 they had advanced 102 per cent. on 1850. Thus her exports have doubled in five years, from a stationary point before the establishment of steam mail facilities; whereas ours have been thirteen years in making the same increase. The total trade between Brazil and Great Britain has increased in an unprecedented ratio. The combined British imports and exports up to 1850 averaged £3,645,833 annually; but in 1855 these had reached £8,162,455. Thus the British trade increased 225 per cent. in five years after the first line of steamers was established to Brazil."—*Brazil and the Brazilians.*

The many instances of our dereliction in the establishment of steam mail facilities, and the failure to establish locomotive accommodations for our merchants and other business classes, call loudly for a change in our affairs, and the establishment of a national steam policy in the place of the accidental and irregular support hitherto given to foreign steam enterprise.

The conclusions which Mr. Rainey arrived at in his late work on Ocean Steam Navigation are set forth in a clear summary, which we give as follows:

1. That steam mails upon the ocean control the commerce and diplomacy of the world; that they are essential to our commercial and producing country; that we have not established the ocean mail facilities commensurate with our national ability and the demands of our commerce; and that we to-day are largely dependent on, and tributary to our greatest commercial rival, Great Britain, for the postal facilities which should be purely national, American, and under our own exclusive control.

2. That fast ocean mails are exceedingly desirable for our commerce, our defenses, our diplomacy, the

management of our squadrons, our national standing, and that they are demanded by our people at large.

3. That fast steamers alone can furnish rapid transport to the mails; that these steamers can not rely on freights; that sailing vessels will ever carry staple freights at a much lower figure, and sufficiently quickly; that while steam is eminently successful in the coasting trade, it can not possibly be so in the transatlantic freighting business; and that the rapid transit of the mails, and the slower and more deliberate transport of freight, is the law of nature.

4. That high, adequate mail speed is extremely costly, in the prime construction of vessels, their repairs, and their more numerous employees; that the quantity of fuel consumed is enormous, and ruinous to unaided private enterprise; and that this is clearly proven both by theory and indisputable facts, as well as by the concurrent testimony of the ablest writers on ocean steam navigation.

5. That ocean mail steamers can not live on their own receipts; that neither the latest nor the anticipated improvements in steam shipping promise any change in this fact; that self-support is not likely to be attained by increasing the size of steamers; that the propelling power in fast steamers occupies all of the available space not devoted to passengers and express freight; and that steamers must be fast to do successful mail and profitable passenger service.

6. That sailing vessels can not successfully transport the mails; that the propeller can not transport them as rapidly or more cheaply than side-wheel vessels; that with any considerable economy of fuel and other running expenses, it is but little faster than the sailing vessel; that to patronize these slow vessels with the mails, the government would unjustly discriminate against sailing vessels in the transport of freights; that we can not in any sense depend on the vessels of the navy for the transport of the mails; that individual enterprise can not support fast steamers; and that not even American private enterprise can under any conditions furnish a sufficiently rapid steam mail and passenger marine: then it must be conceded,

I. That it is the duty of the government to its people to establish and maintain an extensive, well-organized, and rapid steam mail marine, for the benefit of production, commerce, diplomacy, defenses, the public character, and the general interests of all classes; that our people appreciate the importance of commerce, and are willing to pay for liberal postal facilities; that our trade has greatly suffered for the want of ocean mails; that we have been forced to neglect many profitable branches of industry, and many large fields of effort; and that there is positively no means of gaining and maintaining commercial ascendancy except through an ocean steam mail system.

II. That the government can discharge the clear and unquestionable duty of establishing foreign mail facilities only by paying liberal prices for the transport of the mails for a long term of years, by creating and sustaining an ocean postal system, by legislating upon it systematically, and by abandoning our slavish dependence upon Great Britain.

III. That the British ocean mail system attains greater perfection and extent every year; that instead of becoming self-supporting, it costs the treasury more and more every year; that English statesmen regard its benefits as far outweighing the losses to the Treasury; that so far from abandoning, they are regularly and systematically increasing it; that it was never regarded by the whole British public with more favor than at the present time; that it is evidently one of the most enduring institutions of the country; that it necessitates a similar American system; that without it our people are denied the right and privilege of competition; and that we are thus far by no means adequately prepared for that competition, or for our own development.

OCEAN STEAM LINES OF THE WORLD.

Lines.	Service.	Ships.	Tonnage.
Cunard, paddle-wheel.	Liverpool, New York, Boston, and Halifax	8	12,000
North Atlantic Steamship Co.	St. Johns and Portland	4	4,800
European and American Steamship Co.	Bremen, Antwerp, Southampton, and New York	3	4,800
London and Canada.	Bremen, Antwerp, Southampton, to Brazil	4	10,000
Liverpool and Canadian	London and Montreal	4	9,000
Liverpool, Philadelphia, and New York	Liverpool and Quebec	2	1,870
Glasgow and New York	Liverpool and New York	4	5,000
Belgian Transatlantic	Glasgow and New York	4	8,700
Hamburg and American.	Antwerp and New York	5	6,200
Hamburg and Brazilian	Antwerp and Brazil	4	8,800
Genoa and Brazilian	Hamburg and New York	5	6,500
Royal Mail Co.	Hamburg and Rio de Janeiro	4	7,300
Pacific Steam Navigation Co.	Genoa and Rio de Janeiro	2	4,500
Peninsular and Oriental Co.	Southampton, West Indies, Central America, and South America	4	8,000
European and Australian Royal Mail Co.	Southampton, Pernambuco, Rio, Bahia, and La Plata	18	21,510
Australian Royal Mail Co.	Panama to Valparaiso and intermediate	4	6,820
Rotterdam and Mediterranean.	Portugal, Spain, Malta, Alexandria, East Indies, China, and Australia	7	5,719
North of Europe Steam Navigation Co.	Southampton, Alexandria, Suez, and Sydney	39	49,416
Melver's	Transport and other	7	15,500
Bibby's	Rotterdam, Leghorn, and Trieste	4	7,800
Fowler's	African	4	1,900
Dixon's	Liverpool and Mediterranean	4	3,200
Liverpool and Australian.	Liverpool and Havre	10	9,000
London and Australian.	Liverpool and Mediterranean	2	2,000
African	Liverpool and Australia	11	11,700
Union Screw Co.	London and Australia	6	7,500
Luzo-Brazilera	London, Liverpool, and Africa	4	3,800
Austrian Lloyds	Southampton and Cape of Good Hope	2	7,000
Messageries Impériales.	Lisbon and Brazil	4	7,500
West Hartlepool Steam Navigation Co.	Very large Mediterranean service	4	8,000
Danube Steam Navigation Co.	Mediterranean, Black Sea, Levant	50	Unknown
Hamburg and Spanish	Hartlepool, Hamburg, and St. Petersburg	6	"
East India Company	Vienna, Galatz, and Constantinople	6	"
Spanish and Cuban	Hamburg, Southampton, and all Spanish ports	2	2,000
Companhia Brazilera.	Suez and India, and the Bombay Mail lines	12	11,471
Collins Company	Cadiz, Havana, and Mexico	5	9,000
Havre Steam Navigation Co.	Rio de Janeiro to the Amazon and La Plata	7	5,000
Cornelius Vanderbilt	New York and Liverpool	3	9,777
United States Mail Steamship Co.	New York, Southampton, and Havre	2	4,748
Pacific Mail Steamship Co.	New York, Southampton, and Bremen	3	6,528
New York and New Orleans.	New York, Havana, Aspinwall, and New Orleans	6	8,544
New York and Alabama.	Panama, California, and Oregon	13	16,421
Charleston and Havana.	New York, Havana, and New Orleans	2	3,198
Savannah Steamship Co.	New York, Havana, and Mobile	1	1,800
New York and Charleston Steamship Co.	Charleston, Key West, and Havana	1	1,115
New York and Virginia	New York and Savannah	4	4,793
Philadelphia and Savannah	New York and Charleston	4	4,680
Boston and Baltimore	New York, Norfolk, and Richmond	2	2,371
Texas Steamship Co.	Philadelphia and Savannah	2	2,600
Southern Steamship Co.	Boston and Baltimore	2	1,600
Mexican Steamship Co.	New Orleans and Galveston	4	2,440
	New Orleans and Key West	2	1,000
	New Orleans, Tampico, and Vera Cruz	1	1,600

* Building another steamer of 2500 tons for the Brazil line.

† These vessels average about 250 horse-power each. Their tonnage is large, probably 1200 tons each.

There are several other lines of ocean steamers in Europe; but it is almost impossible to ascertain any thing definite about them. The list above embraces all of the most important companies of the world. The lines are continually changing, while the vessels are passing into new hands almost every week.—See *articles TONNAGE and the UNITED STATES.*

Steel (Fr. *Acier*; Ger. *Stahl*; It. *Acciajo*; Lat. *Chalybs*; Russ. *Stal*; Sp. *Acero*; Swed. *Stål*), is iron combined with a small portion of carbon, and has been for that reason called carburated iron. The proportion of carbon has not been ascertained with much precision. It is supposed to amount at an average to 140 part. Steel is so hard as to be unmanageable while cold; or at least it acquires that property by being immersed, while ignited, in a cold liquid; for this immersion, though it has no effect upon iron, adds greatly to the hardness of steel. It is brittle, resists the file, cuts glass, affords sparks with flint, and retains the magnetic virtue for any length of time. It loses this hardness by being ignited, and cooled very slowly. It is malleable when red hot, but scarcely so when raised to a white heat. It may be hammered out into much thinner plates than iron. It is more sonorous; and its specific gravity when hammered is greater than that of iron—varying from 7.78 to 7.84. Steel is usually divided into three sorts, according to the method in

which it is prepared; as *natural steel*, *steel of cementation*, and *cast steel*. The latter is the most valuable of all, as its texture is the most compact, and it admits of the finest polish. It is used for razors, surgeons' instruments, and similar purposes. Steel is chiefly employed in the manufacture of swords, knives, and cutting instruments of all sorts used in the arts; for which it is peculiarly adapted by its hardness, and the fineness of the edge which may be given to it.—See **IRON.**

Steelyard and Steelyard Company. A most ancient instrument, the same that is translated balance in the Pentateuch. The *Statera Romana*, or Roman steelyard, is mentioned in 816 B.C. The Steelyard Company was a company of London merchants who had the steelyard assigned to them by Henry III. A.D. 1232. They were all Flemings and Germans, and the only exporters, for many years after, of the staple commodities of England.—HAYDN.

Steer, to keep the ship on a given direction. This is done by moving the rudder by the tiller, which last is moved from that side to which the ship's head is required to be moved.

Steerage, an apartment before the great cabin, from which it is separated by a partition or bulk-head. In merchant ships it is generally the habitation of the inferior officers and crew; but in ships of war it serves

only as a hall or ante-chamber to the great or captain's cabin.—*Steerage* is also used to express the effort of the helm.—*Steerage-way* implies a sufficient degree of motion communicated to a ship for her to become susceptible of the effects of the helm in governing her course.

Stem, a circular piece of timber into which the two sides of a ship are united at the fore end; the lower end of it is scarfed to the keel, and the bowsprit rests upon its upper end; the ends of the walls and planks of the sides and bottom are let into a groove or channel cut in the middle of its surface from top to bottom. The outside of the stem is usually marked with a scale of feet answering to a perpendicular from the keel. The use of this scale is to ascertain the draught of water.—*From stem to stern*, from one end of the ship to the other.

Steppe (from the Russian *step*, a desert; also a dry plain). The steppes of Russia, which are not unlike the *landes* of Guienne in France, and the heaths of northern Germany, are in part susceptible of cultivation, and they afford pasturage for the numerous herds of the nomadic tribes. In the extensive steppes of Astrakhan, between the Volga and the Ural, the Calmucs and the Nogay Tartars rove with their cattle. They produce several sorts of flowers, herbs, and are frequented by wild goats and birds.

Sterling, an old pound weight of geographical significance, named Easterling, divided into twelve ounces, was in use among the Anglo-Saxons some centuries before the Norman Conquest. The same weight, called the Tower and the Moneyers' pound, was styled by early French writers the Roman and the Rochelle pound; also known among the Germans as the Cologne pound. A simple system of *exchange*, by which a pound of silver money, in tale, was made to equal a pound in gross weight, had been arranged by Charles the Great, in France, toward the end of the 8th century. In Britain, under the first William of Normandy, an ordinance declared "the weights and measures throughout the kingdom shall remain as our worthy predecessors have established." An act of Henry the Third, in 1266, explains the primitive initials of these ancient British, Gallic, and German standards, to all which one common derivation is imputed. "By consent of the whole realm the measure of the king was made, that is to say, an English penny of silver, called a sterling, round and without any clipping, shall weigh thirty-two wheat corns, taken from the middle of the ear. And twenty pence of silver do make one ounce; and twelve ounces of silver do make one pound; and eight pounds of silver do make a gallon of wine; and eight gallons of wine do make a London bushel, which is the eighth part of a quarter." This general arrangement for money weights and measures was that of the Eastern nations, by which Europe had been overrun. The term "Easterling" of the Norman French was transmuted on the English tongue, first to "Easterling," and finally to "Sterling." Another pound weight, also divided into twelve ounces, had been brought from Cairo, in Egypt, to Troyes of Champagne, in France, during the Crusades. Carried into England by foreign goldsmiths, Lombard merchants, possibly from Venice, about the year 1496, it gradually superseded the old Easterling weights, and found access into the British Mint by decision of Henry the Eighth. Queen Elizabeth ordered the ounce of silver in England to be cut into sixty pennies, so that the penny, forming the twentieth of an ounce, thenceforth became the sixtieth part. From the termination of Queen Elizabeth's reign, the coinage of English silver has generally retained a *purity* of 925 thousandths, called the "Sterling standard."—See POUND and PENNY. See also *Bankers' Magazine*, N. Y., 1856, '57.

Stettin, a city of Prussia, on the left bank of the Oder, about 36 miles from its mouth, in lat. 53° 23' 20" N., long. 14° 33' E. It is well built, strongly fortified,

and had in 1846 a population of 42,000. Stettin is the seat of an extensive and growing commerce; and is now, indeed, the principal port of importation in Prussia. She owes this distinction mainly to her situation. The Oder, which flows through the centre of the Prussian dominions, is navigable as far as Ratibor, near the extreme southern boundary of Prussian Silesia; and is united, by means of canals, with the Vistula, the Elbe, the Spree, etc. Stettin is, consequently, the principal emporium of some very extensive and flourishing countries; and is not only the port of Frankfurt-on-the-Oder, Breslau, etc., but also of Berlin. A railway from the latter to Stettin has been completed. Hence at the proper seasons its wharves are crowded with lighters that bring down the produce of the different countries traversed by the river, and bring back colonial products, and other articles of foreign growth and manufacture. Vessels of considerable burden, or those drawing about seven or eight feet water, load and unload, by means of lighters, at the mouth of the river, at Swinemunde, the outport of Stettin, on the east coast of the isle of Usedom, in lat. 53° 55' N., long. 14° 15' 15" E. Formerly there were not more than seven feet water over the bar adjacent to Swinemunde; but the harbor of the latter has recently been so much improved, by the construction of piers and breakwaters, dredging, etc., that it is now the best on the Prussian coast, and admits vessels drawing from 18 to 19 feet water. A light-house has been erected at the extremity of the eastern pier. Stettin is a free port; that is, a port into and from which all sorts of goods may be imported and re-exported free of duty. Goods brought through the Sound and imported at Stettin, and entered for home consumption in the Prussian states, were formerly charged with 2½ per cent. less duty than if they had been imported through any other channel. This was intended to reimburse the merchant for the Sound duties, and to encourage importation by this direct route in preference to that carried on through Hamburg and Embden; but now that the Sound dues are abolished there no longer exists the necessity for the bounty. There is at Stettin a great wool fair in the month of June each year.

The intercourse with the United States is solely dependent on the regulations of the Zoll-Verein. There are no privileges in favor of any nation which are denied to the United States, nor any restrictions imposed upon the commerce of any other nations. The moneys, weights, and measures, etc., etc., in the ports of this consular district are the same as established by the law of the mother country. Commission, 2 per cent. Freight—no rates can be named for want of business. Insurance done in England or the United States. Bills at three months. There are no direct exchanges with the United States.

Steward, in *Naval affairs*, is an officer in a ship of war, appointed by the purser to distribute the different species of provisions to the officers and crew. The same officer is employed for steamships and all classes of vessels for similar purposes.

Stockholm, the capital city of Sweden, situated at the junction of the Lake Maelar with an inlet of the Baltic, in lat. 59° 20' 31" N., long. 17° 54' E.; a well-built, handsome city. Population in 1851, 93,070. The entrance to the harbor is intricate and dangerous, and should not be attempted without a pilot; but the harbor itself is capacious and excellent, the largest vessels lying in safety close to the quays. Stockholm possesses from a third to a half of the foreign trade of Sweden; but this is confined within comparatively narrow limits. The government has long been accustomed to endeavor to promote industry by excluding foreign products; latterly, however, this system has been considerably relaxed, with great advantage to the trade of the country, and the well-being of the people. Iron, timber, and deals form the great articles of export. Swedish iron is of very superior quality, and is

rather extensively used in Great Britain; the imports of it amounting in ordinary years to about 16,000 tons exclusive of 600 tons of steel. In addition to the above leading articles, Stockholm exports pitch, tar, copper, etc. The timber is inferior to that from the southern ports of the Baltic. The imports principally consist of colonial products, cotton, dye-stuffs, salt, British manufactured goods, hides, fish, wine, brandy, wool, fruit, etc. In seasons of scarcity corn is imported, but it is generally an article of export.

Pilotage.—Vessels bound for Stockholm take a pilot at the small island of Oja. Lands-hort light-house is erected on the southern extremity of this island, in lat. 58° 44' 30" N., long. 17° 52' 15" E. It is painted white, and is furnished with a fixed light, elevated 158 feet above the level of the sea, which may be seen under favorable circumstances five leagues off. The signal for a pilot is a flag at the fore top-mast head, or firing a gun.

The following table exhibits the commercial movements at the port of Stockholm during the year 1851, compared with the two preceding years:

Years.	Vessels entered	Tonnage.	Vessels cleared.	Tonnage.	Total Vessels.	Total Tonnage
1849	669	70,728	790	79,118	1459	149,846
1850	711	71,892	783	77,478	1494	149,370
1851	851	94,218	905	95,236	1756	189,454

The following table shows the countries from which the vessels comprised in the foregoing table for 1851 cleared, and to which they sailed:

Countries.	No. of Vessels.	Tonnage.
Finland	572	44,528
Great Britain	191	36,714
Russia	173	19,790
Prussia	155	12,122
France	72	11,634
Portugal	59	10,742
Denmark	150	9,016
Hanse Towns	126	8,434
Norway	93	8,414
Brazil	27	6,526
United States	17	5,016

The following comparative table shows the values of imports and exports into and from the port of Stockholm during the years designated:

Years.	Imports. Francs.	Exports. Francs.	Total Trade. Francs.
1849.....	21,579,000	17,342,000	38,920,000
1850.....	20,462,000	14,054,000	34,516,000
1851.....	23,809,000	14,014,000	37,823,000

VALUE AND DESCRIPTION OF MERCHANDISE IMPORTED INTO, AND EXPORTED FROM, THE PORT OF STOCKHOLM IN 1851.

IMPORTS.	
Articles.	Francs.
Cereals	3,221,000
Sugar	3,481,000
Coffee	1,759,000
Fish	7,363,000
Wines and spirits	1,173,000
Tallow	1,223,000
Raw silk	1,019,000
Tissues	2,145,000
EXPORTS.	
Iron and steel	10,450,000
Copper	1,824,000
Pitch and tar	311,000
Timber and lumber	187,000

The following table exhibits the countries which participated in the general commercial movements of 1851, and the value of imports and exports assigned to each:

Year 1851.	Imports. Francs.	Exports. Francs.	Total. Francs.
Norway	1,097,000	31,000	1,128,000
Denmark	875,000	1,638,000	2,413,000
Russia	2,923,000	243,000	3,166,000
Finland	1,037,000	1,211,000	2,248,000
Prussia	960,000	2,374,000	3,334,000
Hanse Towns	6,306,000	1,807,000	7,613,000
Great Britain	2,260,000	2,297,000	5,157,000
Netherlands	598,000	281,000	867,000
France	785,000	747,000	1,532,000
Portugal	431,000	707,000	1,138,000
Brazil	4,026,000	299,000	4,325,000
United States	302,000	1,806,000	1,608,000
East Indies	1,434,000	100,000	1,534,000

Besides the countries included in the preceding table, Stockholm extends its commercial transactions to Spain, Italy, Austria, Malta and Gibraltar, Mecklenburg, Hanover, Oldenburg, Belgium, the Cape of Good Hope, and the Antilles.

It may be remarked that during this year the general commerce of Sweden exhibited an advancing tendency. This was owing, in a great measure, to the liberal policy which characterized the commercial legislation of England, dating from January 1, 1850—a policy the wisdom of which could not be more appositely illustrated than by the fact that while the total trade of Sweden with all foreign nations during this year reached as high as 55,000,000 rix dalers,* the trade with England alone covered 14,543,000 rix dalers, or more than one-fourth of the whole.

In 1852 official returns show a slight falling off in the general trade of Stockholm. It will be seen from the annexed table, from Swedish official sources, that the entire trade, imports and exports united, represents in value \$6,559,027, or about \$487,970 less than the total trade of 1851. This diminution affected imports, especially grains, fish, and brandies, to the extent of 1,523,494 francs, while coffee and sugar increased in value 838,816 francs; and in the export trade it was felt in the falling off the preceding year of 1,044,770 francs, chiefly on iron, steel, and copper, while the exportation of timber and pitch increased over that of 1851. In 1852 a new article of commerce entered into the export trade of Sweden. The metal *nickel* figures for the first time in the returns for this year to the amount of 101,520 francs, or \$18,882 72, chiefly sent to the Hanse Towns. The navigation of the port of Stockholm during 1852 presented a total tonnage of 167,686 tons: viz., entered, 81,874 tons; cleared, 85,812 tons. This is a falling off from 1851 of 21,768 tons.

Exports.—It is unnecessary to present a detailed statement of exports, inasmuch as iron, steel, and copper constitute the articles of chief value exported from the port of Stockholm. Other exports consist principally of timber (boards), pitch, and tar. These amounted in value, in 1852, to \$107,593, to which is to be added for miscellaneous, not enumerated, \$230,048. The total value of iron, steel, and copper exported in 1852 was: iron and steel, \$1,747,545; copper, \$327,213. Value of iron and steel exported from Stockholm to the United States in 1852, \$8102. Great Britain, the Hanse Towns, and Denmark occupy the first rank in the order in which they are given as exporters from Stockholm. Prussia, Finland, Portugal, France, and the United States come next.

STATEMENT EXHIBITING THE GENERAL FOREIGN TRADE OF STOCKHOLM, SHOWING THE QUANTITIES AND VALUES OF IMPORTS AND EXPORTS, RESPECTIVELY, DURING THE YEAR 1853.

IMPORTS.	
Description of Merchandise.	Value in Francs.
Coffee	2,901,000
Sugar	2,419,000
Cereals	1,760,000
Fish	1,040,000
Wines and spirits	688,000
Tallow	1,159,000
Tissues	1,933,000
Raw silk	862,000
EXPORTS.	
Iron and steel	10,403,000
Copper	1,840,000
Wood and lumber	241,000
Pitch and tar	314,000

During the year 1853 there was a great scarcity of vessels to carry off the freight to foreign markets. The number that entered the port of Stockholm was 589, with an aggregate of 76,226 tons; and the number cleared was 927, with an aggregate of 81,916 tons. The total number entered and cleared was 1516 vessels; aggregate tonnage, 158,142 tons. The number of vessels was greater, but the tonnage was less by 9500 tons than in 1852.

* The rix daler is equivalent to 59½ cents.

Money.—Accounts are kept here, in Gottenburg, and generally throughout Sweden, in paper money, consisting of rix dollars *banco*, one rix dollar being equal to 48 skillings, and one skilling to 12 rundstycks. The exchange with London is at about 12 rix dollars *banco* per £, so that the rix dollar is worth about 1s. 8d. sterling. Rix dollars *banco* may be exchanged for specie rix dollars at the rate of $2\frac{1}{2}$ the former for one of the latter. But there are very few coins, except of copper, in circulation, the currency consisting almost wholly of notes, varying from 5 skillings to 500 rix dollars *banco*.

Weights and Measures.—The *virtuali* or commercial weights are pounds, lippunds, and skippunds; 20 pounds being equal to 1 lispund, and 20 lispunds=1 skippund. 100 lbs. Swedish commercial weight=93½ lbs. *avoirdupois*=42½ kilograms=87½ lbs. of Hambur.

The iron weights are three-fifths of the *virtuali*, or commercial weights; 20 marks=1 mark pund; 20 mark pounds=1 mark skippund; and 7½ skippunds=1 ton English. Hence 100 pounds Swedish iron weight=75 lbs. *avoirdupois*, and 100 lbs. *avoirdupois*=183½ lbs. Swedish iron weight.

In corn measure, 4 quarts=1 spann; 2, spann=1 tun, or barrel; 1 tun=4½ Winchester bushels; a last of rye from Riga=18 tuns; a last of rye from Liebau=19½ tuns; a last of rye from Stettin=22½ tuns; a last of rye from Stralsund=24 tuns. The tun of 32 kappor contains 4½ Winchester bushels.

In liquid measure, 2 stup=1 kanna; 15 kannor=1 anker; 2 ankers=1 eimer; 2 eimers=1 ahm; 1½ ahm=1 oxhoft; 2 oxhoft=1 pipe. The pipe=124½ English wine gallons; and, consequently, the ahm=41½ English wine gallons, and 100 kannor=69½ English gallons.

The Swedish foot=11.684 English inches; the ell, or *alna*,=2 feet; the fathom=8 ells; the rod=8 ells.

In estimating by lasts, 1 last of pitch, ashes, etc.,=12 barrels; 1 last of tar, oil, etc.,=13 barrels; 1 last of hemp, flax, tallow, etc.,=6 skippunds; 1 ton of Liverpool common salt=7 tons Swedish.

Port Charges at Stockholm.—The total port charges for a vessel of 500 tons (250 lasts) amount to about \$277, including all expenses, in and out. For an unprivileged vessel this amount is nearly doubled.

Port Charges at Gothenburg.—Tonnage, pilotage, and all other dues and port charges on a vessel of 300 tons, amount at this port to about \$167.—*Com. Relat. U. S.*

Stockings, as every one knows, are coverings for the legs. They are formed of only one thread entwined, so as to form a species of tissue, extremely elastic, and readily adapting itself to the figure of the part it is employed to cover. This tissue can not be called cloth, for it has neither warp nor woof, but it approaches closely to it; and for the purpose to which it is applied it is very superior. Silk stockings were first worn by Henry II. of France, in 1547. In 1560 Queen Elizabeth was presented with a pair of black silk stockings by her silk-woman, Mrs. Montague, and she never wore cloth ones any more.—HOWELL. He adds, "Henry VIII. wore ordinary cloth hose, except there came from Spain by great chance a pair of silk stockings; for Spain very early abounded with silk." Edward VI. was presented with a pair of Spanish silk stockings by his merchant, Sir Thomas Gresham; and the present was then much taken notice of.—HOWELL. Others relate that William Rider, a London apprentice, seeing at the house of an Italian merchant a pair of knit worsted stockings from Mantua, ingeniously made a pair like them, which he presented to the Earl of Pembroke, the first of the kind made in England, in 1564.

It is well known that the Romans and other ancient nations had no particular clothing for the legs. During the Middle Ages, however, hose or *leggings*, made of cloth, began to be used; and at a later period the art of knitting stockings was discovered. Unluckily, nothing certain is known as to the individual by whom, the place where, or when this invention was made.

It would appear from this circumstantial account that the art of knitting stockings, or at least that the first specimens of knit stockings, had been introduced into England from Spain about the middle of the 16th century; and such seems to have been the general opinion, till an allusion to the practice of knitting, in the pretended poems of Rowley, forged by Chatterton, made the subject be more carefully investigated. The result of this investigation showed clearly that the practice of knitting was well known in England, and had been referred to in acts of Parliament a good many years previously to the period mentioned by Howell. But it had then, most probably, been applied only to the manufacture of woolen stockings; and the general use of cloth hose shows that even these had not been numerous. There is no evidence to show whether the art is native to England or has been imported.—*See BECKMANN'S Inventions, article STOCKINGS.*

It is singular that the stocking-frame, which, even in its rudest form, is a very complex and ingenious machine, that could not have been discovered accidentally, but must have been the result of deep combination and profound sagacity, should have been discovered so early as 1589—before, in fact, the business of knitting was generally introduced. The inventor of this admirable machine was Mr. William Lee, of Woodborough, in Nottinghamshire. He attempted to set up an establishment at Calverton, near Nottingham, for the manufacture of stockings, but met with no success. In this situation he applied to the queen for assistance; but, instead of meeting with that remuneration to which his genius and inventions so well entitled him, he was discouraged and disheartened! It need not, therefore, excite surprise that Lee accepted the invitation of Henry IV. of France, who, having heard of the invention, promised him a magnificent reward if he would carry it to France. Henry kept his word, and Lee introduced the stocking-frame at Rouen with distinguished success; but after the assassination of the king, the concern got into difficulties, and Lee died in poverty at Paris. A knowledge of the machine was brought back from France to England by some of the workmen who had emigrated with Lee, and who established themselves in Nottinghamshire, which still continues to be the principal seat of the manufacture.—*See BECKMANN'S Inventions, vol. iv.; and Letters on the Utility and Policy of Machines, London, 1780.*

IMPORTS OF HOSIERY AND ARTICLES MADE ON FRAMES INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Cotton Hosiery.	Silk Hosiery.	Woolen Hosiery.
Hamburg.....	\$864,091	\$23,024	\$37,755
Bremen.....	1,637,384	64,886	199,169
England.....	1,112,385	503,130	1,372,722
France.....	59,369	284,619	66,772
Other places.....	37,053	13,640	64,411
Total year 1857.	\$3,210,287	\$839,299	\$1,749,829

—*See articles COTTON, SILK, and WOOL.*

Stock-jobber. It was about the year 1688 that the word stock-jobber was first heard in London. In the short space of four years a crowd of companies, every one of which held out to subscribers the hope of immense gains, sprang into existence; the Insurance Company, the Paper Company, the Lute-string Company, the Pearl-fishery Company, the Glass-bottle Company, the Alum Company, the Blythe Coal Company, the Sword-blade Company. There was a Tapestry Company, which would soon furnish pretty hangings for all the parlors of the middle class, and for all the bed-chambers of the higher. There was a Copper Company, which proposed to explore the mines of England, and held out a hope that they would prove not less valuable than those of Potosi. There was a Diving Company, which undertook to bring up precious effects from shipwrecked vessels, and which announced that it had laid in a stock of wonderful machines resembling complete suits of armor. In front of the helmet was a huge glass eye like that of a cyclop; and

out of the crest went a pipe through which the air was to be admitted.

The process was exhibited on the Thames. Fine gentlemen and fine ladies were invited to the show, were hospitably regaled, and were delighted by seeing the divers in their panoply descend into the river and return laden with old iron and ships' tackle. There was a Greenland Fishing Company, which could not fail to drive the Dutch whalers and herring busses out of the Northern Ocean. There was a Tanning Company, which promised to furnish leather superior to the best that was brought from Turkey or Russia. There was a society which undertook the office of giving gentlemen a liberal education on low terms, and which assumed the sounding name of the Royal Academies Company. In a pompous advertisement it was announced that the Directors of the Royal Academies Company had engaged the best masters in every branch of knowledge, and were about to issue twenty thousand tickets at twenty shillings each.

There was to be a lottery; two thousand prizes were to be drawn; and the fortunate holders of the prize were to be taught, at the charge of the Company, Latin, Greek, Hebrew, French, Spanish, conic sections, trigonometry, heraldry, japanning, fortification, book-keeping, and the art of playing on the theorbo. Some of these companies took large mansions, and printed their advertisements in gilded letters. Others, less ostentatious, were content with ink, and met at coffee-houses in the neighborhood of the Royal Exchange. Jonathan's and Garraway's were in a constant ferment with brokers, buyers, sellers, meetings of directors, meetings of proprietors. Time-bargains soon came into fashion. Extensive combinations were formed, and monstrous fables were circulated, for the purpose of raising or depressing the price of shares.—MACAULAY.

Stocks. The public funding system originated in Venice in the 12th century, and was introduced into Florence in the year 1340. The English funding system may be said to have had its rise in 1672-94. In the United States the term *stocks* includes United States funded loans and State loans, and the stocks or shares in various corporations, such as railroad companies, banks, funded debts of cities, etc.

In England the term *stocks* is applied mainly to government funded debt—such as consols, Bank of England stock, etc.; and the term *shares* is used when applied to the capital or joint stock of railroad, banking, and mining companies.—See article FUNDS.

The difficulties in which individuals are involved by their real wants, but often by their unruly passions, are the source of their debts. The debts of [European] nations have not a different origin. When the ordinary resources of a country were insufficient to carry into effect the private views or *impolitic wars* of the despots who ruled, or the ministers who directed it, they simply resorted to the expedient of borrowing; but when the sums loaned were inadequate to the increased expenditure, they had recourse to all sorts of *schemes, deceptions, and contrivances*, the better to delude the lenders, and allure their avarice. Such is the origin of the British funding system. Among states, debt may be considered a national disease; and, like other diseases in our day, has made the tour of Europe, and, we may add, of many of the new nations of America.

One set of British writers maintain that "debt and wealth are synonymous;" that "increase of debt is a true increase of riches;" that no happiness can exist without a national debt. The domestic [*i. e.*, the national] debt, says one of the highest authorities (COLQUHOUN), dispenses protection and *happiness*, by forming mutual advantages between the rich and the poor. It has produced the rapid increase of public and private buildings, and of the trade, commerce, and navigation of the country. Another, more audacious than the rest, declares that "a part of the industry, a part of the wages, and a part of the land, belong to the stock-

holders; and that by thirty millions of expenditure being in the hands of the stockholders or *dissipators*, consumption is highly stimulated." The extinction of the national debt of Great Britain, in the opinion of these economical writers, would, of course, bring misfortune and evil. "It would," says Colquhoun, "be attended with greater inconveniences than at present are experienced."

Another class of British writers, with more truth, with greater force of argument, and with more evidence of facts, contend that "poverty, misery, and the national debt, are also synonymous and identical terms;" that "taxation incurred to pay its annual interest (swallowing up thirty millions out of sixty millions of revenue, to satisfy the fund-holders), oppresses the people, destroys industry, and is equal to the curse of heaven on the agriculture, commerce, and manufactures of the nation." (McCulloch): "To maintain that this enormous taxation enriches the nation, because it abstracts a portion of its riches, is both a plain contradiction and an absurdity; taxation being always an engine of destruction to all the productive classes." "To attribute to the debt the increase of business, improvements, etc., during the late war, is an error of the most miserable kind. It is to be attributed not to the increase of debt, but to the monopoly of commerce, to the discoveries of Arkwright and Watt, and to various other causes. The nation did not improve because of the debt, but in spite of it; as it gave birth to the nefarious practice of stock-jobbing, begetting a spirit of gambling, destructive of public morals, disgraceful to the nation, and hostile to the pursuit of sober industry." "No wages, no part of the lands, belongs to the stockholders or *dissipators*; nor was any specified property pledged for the greatest part of the debt contracted. The lenders had not at the time any property mortgaged to them; consequently, they can not have at present more specified rights than they possessed when they loaned their money. To maintain the contrary is a dangerous and arbitrary assumption." "They advanced money when its value was depreciated on an average of *fifteen per cent.* They never entertained the idea of receiving payment at par, when the loans were contracted at exceedingly low prices." "It would be both folly and injustice to compel the nation to pay one hundred ounces of gold to the fund-holders, when they loaned less than eighty." "It is equally unjust to exempt this sort of property from the alteration in value to which every other kind of property in the kingdom is subject; and, consequently, the reduction of the debt—that millstone which destroys the industry and vigor of the people, *doubles* taxes, and spreads pauperism, crime, and wretchedness throughout the country—can be effected without any violation of the public faith." "The nation must not suffer on account of the errors of party or ministerial men. The happiness of twenty-four millions of British subjects ought not to be postponed for the sake of an insignificant portion—two hundred and eighty thousand stockholders."

Before we enter more fully on the subject, we have thus drawn a brief summary of the leading arguments and opinions of the contending parties for and against the existence of the present British national debt. It is not difficult to anticipate the American side of the argument; but on the opposite side what can we expect, where the infection of gambling is so strong that Pope, who knew his countrymen well, declared—

"Statesman and patriot ply alike the stocks;
Peers and butler share alike the box;
And judges job, and bishops bite the town,
And mighty dukes pack cards for half a crown."

In the 12th century, Richard I. pawned the revenues of the crown for the payment of moneys borrowed to defray the expenses of the fanatical conquest of the Holy Land. Henry III. pawned the crown jewels and regal ornaments and robes of state. Edward I. borrowed money to pay the debts of his father, in order

to get his soul "out of purgatory," as the record states. Richard II. was deposed for extorting £1,100,000 sterling, under pretext of borrowing, which was never repaid. This was one of the chief causes of the York and Lancaster wars. In 1346, Edward III. ordered a sum of money to be lent to him. Henry IV. obliged the rich men of the kingdom to lend him money upon the growing taxes. Henry VIII. escaped the punishment he so justly merited for defrauding his creditors. He compelled Parliament to pass two acts, offering him "all the money he had received in loans;" thus discharging him of all obligations he had come under, and all suits that might arise thereupon. In money matters in Elizabeth's time, the people insisted upon the payment of the sums advanced to her predecessors—a demand she was wise enough to comply with. Burleigh counseled her to lay the foundation of public credit. The commonwealth contracted a large debt: at Cromwell's death it amounted to £2,474,290. Charles, by closing the exchequer in 1672, defrauded the creditors of the state of the sum of £2,800,000; but an arrangement took place, by which the sum of £664,226 was left at an interest of £19,027 18s. 6d. *This was the origin of the present national debt, and its whole amount before the English Revolution.*

In former times, says a British writer, loans were generally contracted for short periods. It was, moreover, an established practice that the funds assigned for the repayment should be sufficient to pay the principal and interest, and that within a certain number of years. The British system, in practice, is quite the reverse. Their ministers are satisfied if they provide for the payment of the interest, without a thought on providing for the discharge of the principal; or if they do, it is in conformity to the maxim of Linguet and Terney, "to cancel the capital by a general bankruptcy, in order to bring the state home." This maxim of Terney and Linguet was practically adopted in France some centuries ago. Brissot, in his history, enumerates five national bankruptcies; but in the financial history of that country may be found a great many more. The new system originated in the republics of Venice and Genoa; and being imported by William III., has been carried by the British to the highest perfection.

After the Irish Revolution, to supply deficiencies, William had recourse to the *long annuities* which were created in 1692. £881,498 were raised on annuities of 99 years, bearing interest at 10 per cent. until 1700, and at 7 per cent. after that year, with benefit of survivorship for the lives of the nominees of those who contributed. The *short annuities* began in 1693. Eight millions was borrowed by this expedient; every subscriber receiving 14 per cent. for sixteen years, besides a lottery ticket. At this moment the scheme of the Bank of England was contrived by Patterson: The bank loaned William £1,200,000, at 8 per cent. interest; thus at the very outset taking advantage of the public distress, and setting a usurious example to their successors, who, like true Shylocks, have ever since profited by the example. Chancellor Montague about this period, to aid his sovereign, invented the scheme of issuing exchequer bills. Their issue has been at intervals ever since. The most exorbitant premiums were given for money, and the public debt was greatly increased. Public credit sunk so low, that out of five millions granted to carry on a war only two and a half, in Davenant's opinion, ever reached the exchequer. One of the constituent parts of the *funding system* is the reduction of interest from the higher to the lower denomination. This expedient, which has played so conspicuous a part in our day, was originally resorted to in 1699, when the higher interests were reduced to 5 per cent. It was the destiny of King William's reign to create, improve, and to complete *all the essential parts of the funding system* as in practice at this day. William left a national debt at the close of his

reign of £16,894,702. This sum formed the nucleus of the present national debt. (These facts are chiefly collected from British parliamentary history.)

The history of the Stock Exchange a century ago is its history at the present day. "The centre of jobbing," says a writer of that time, "is the kingdom of 'Change Alley.'" The enormous profits made by the association, the malpractices of the greater part of its members, and the insolence of the richer ones, excited the just alarm of a steady and reflecting nation unaccustomed to such manœuvres, and the public writers began to attack their increasing power. "The villainy of stock-jobbing is called a mystery or machine of trade," says one of these writers. "This destructive hydra, this new corporation of hell," exclaims another; while one of them gives directions, in order to besiege and bring to surrender "that infamous place, 'Change Alley,'" "to storm it," etc. Another writer declares that "the general cry against stock-jobbing has been so long, and it has been so justly complained of as a public nuisance, that these people are hardened in crime; all their art is a mere system of cheat and delusion; their characters are as dirty as their employments; and the best thing that can be said of them is, that there *happen* to be two honest men among them." "Their employment becomes a crime. This set of men are more dangerous than all national enemies abroad." "Exchange Alley is, in fact, as dangerous to the public safety as a magazine of gunpowder to a populous city."

However, all these invectives did not obstruct the progress of the establishment; on the contrary, it became more powerful, and increased in proportion as the government was more extravagant and careless of the public money. It became, in short, an indispensable engine of the government itself; but the latter was compelled, by public opinion against the detested operations of the Exchange, and in order to keep up appearances, to pass several acts against the very operations and the very gambling it was so deeply, though secretly, fomenting. Avarice, idleness, and the hope of becoming rich in a short time without industry, eluded and evaded all the laws of British wisdom, and sometimes disregarded even the common law of the land. By a variety of measures has the power of this corporation reached its present height. Its members have not only become the exclusive masters of the British money market, but have acquired the immense power of secretly controlling and regulating the funds and money market of all Europe, and, we may add, all America. No financial operation whatever can be safely undertaken in any of those markets without consulting and obtaining the approbation of the Committee of the Stock Exchange. The agents of the Bank of England have surpassed their principals. A mere decision of a committee, composed of individuals unknown beyond their own immediate circle, is more powerful, and will produce more effect in regard to any loan or financial measure than all the laws of the sovereigns of Europe put together. However, the importance of the Stock Exchange has somewhat declined since the failure of its gigantic operations on this side of the Atlantic; and since the immense losses sustained by the British public on that occasion, it has been less attended; the number of its members being reduced at one time as low as 400.

Funding System.—The first operation of the funding system, after the peace of 1815, in consequence of the rise of public securities, was to reduce the interest on exchequer bills (1817) from $5\frac{1}{4}$ to $3\frac{1}{4}$ per cent.; and while only three millions were added to the debt, above twenty-three millions were canceled. The interest of a portion of the public funds was transferred from a lower to a higher denomination; the 3 per cent. stock was converted into $3\frac{1}{4}$ per cent., thereby effecting a reduction of the debt, by inducing the holders of the former stock to buy in the latter at a higher price. Thus the small sum of £3000 was created, while more

than nineteen millions of the national debt were redeemed in 1818. The next measure was the reduction of the five per cents into fours. The bank at that time had thirteen millions in their vaults; and they increased the circulation by throwing a large amount of paper into market, and by lowering the rate of interest from 5 to 4 per cent. By the union of government and banking powers, the enormous sum of £140,250,828 of 5 per cents was readily converted into £147,263,328 of 4 per cents, at an annual saving of interest of £1,222,000 at a small increase of capital only. In 1824, 4 per cents to the amount of £76,806,882 were changed into an equal amount of stock bearing an interest of $3\frac{1}{2}$ per cent. This operation, besides effecting an annual saving of £381,034, had the advantage of making no addition to the capital of the debt. In 1827, £8,500,000 of debt were created, while £2,866,528 were redeemed. In 1828 the sinking fund was destroyed. On the 11th of July, it was enacted that for the future "the amount of the sinking fund be the actual surplus of the revenue over the expenditures." (Came into operation 5th July, 1829.) At that time there were no surpluses, but a large deficiency of revenue.

But although one of the three elements of the funding system was thus lost, the action of that system was not on that account discontinued. A prospective operation was contrived in May, 1830, to transfer into $3\frac{1}{2}$ per cents the fours created at the reduction of the fives in 1822. One of the conditions was, that the new stock should not be subject to redemption at any time before January 5, 1849; and an option was offered to the holders to receive £70 of the new fives, or £100 of the $3\frac{1}{2}$ per cents, for every £100 of 4 per cent. annuities. This operation was called prospective, because the advantage of the plan is, that when the stipulated term shall have expired, as much relief may be obtained by the nation from every payment of £70 employed in canceling 5 per cents as by the payment of £100 when applied to the discharge of $3\frac{1}{2}$ per cents, both being redeemable at par: annual saving of this step, £700,000. In 1829, £4,900,000 were created, and £6,000,000 reduced; £154,000,000 were created in 1830, and £168,000,000 reduced; but what was the result? The committee of 1828 state, that "in a few years [says the 4th report] which preceded the virtual abandonment of the system, one hundred and twenty millions had been added to the capital of the national debt, while the purchases of the commissioners had fallen so far short of that sum that the unredeemed capital of the unfunded debt was greater at the commencement of 1823 than it had been in 1818, by the sum of twenty-five millions." In 1819 twelve millions, and in 1820 thirteen millions, were unwarrantably taken from the sinking fund. The actual reduction during the peace is, according to the Finance Committee, who declare "that the total reduction effected from 1816 to 1828 in the national debt was only three millions and a half."

The writer from whom we have abridged the preceding facts concludes: "It appears that this enormous debt (which he states at eight hundred and sixty-four millions) has been chiefly raised by means of the Bank and the Stock Exchange, aided by the *delusion of the sinking fund*; and that it has been principally expended in wars, most of them undertaken against the true interests of the nation, whose topographical situation renders her independent of continental broils and quarrels. Its amount has been immensely increased in time of war, while the reductions effected in time of peace have been exceedingly limited. In the first period, of twelve years peace, ten millions were reduced; in the second, which lasted ten years, only four and a half millions; and in the last and longest, near thirty years, the amount of reduction has been so trifling that it seems almost incredible. When we consider the very inconsiderable reduction effected

during so long an interval of peace, the most alarming forebodings arise for the future. The British Legislature, the economists, and the reflecting men, so numerous in England, have in this subject an unbounded field for the most serious reflection." These wars were conducted through the agency of *paper money* and the funding system. Pope has very happily hit the expedients of the British ministry in the following lines:

"Bless'd paper credit! last and best supply,
That lends corruption lighter wings to fly;
Gold imp'd by thee can compass hardest things,
Can pocket slates—can fetch or carry kings;
A single leaf shall waft an army o'er,
Or ship off senates to some distant shore."

—Compiled from *Hamilton, Bailey, Pebrer, Parliamentary authorities, and on the authority of manuscript tables obtained from the office of the British Controller in London.*

Stoppage in Transitu is the seizure by the seller of goods sold on credit, during the course of their passage (transitus) to the buyer. This principle is said to have been established about 1690 in the Court of Chancery (2 Vern, 203); and it has since been acknowledged in the courts of common law. The transitus is defined to be the passage of the goods to the place agreed upon by the buyer and seller, or the place at which they are to come into the possession of the buyer. This definition does not mean that the term transitus implies continual motion; goods are in transitu while they are at rest, if they are still on the road to the place to which they have been sent. This doctrine of stoppage in transitu entitles a seller, in case of the insolvency or bankruptcy of the buyer, to stop the goods before they come into the buyer's possession. The right of stoppage in transitu is not confined to cases of buying and selling. A factor either at home or abroad, if he consigns goods to his principal by the order of the principal, and has got the goods in his own name or on his own credit, has the same right of stoppage in transitu as if he were the seller of the goods. Questions of stoppage in transitu sometimes involve difficult points of law. The right of stoppage implies that the goods are in the possession of the seller or factor when he exercises this right. Accordingly, the law of stoppage involves the law of possession of movable things. —BOHN'S *Cyclopedia*; ABBOTT on *Shipping*; CROSS on *Lien and Stoppage in Transitu*; SMITH'S *Leading Cases*; RUSSELL'S *Treatise on the Laws relating to Factors and Brokers*.

If the buyer has in good faith and for value sold the goods, and indorsed and delivered the bill of lading, this second purchaser holds the goods free from the first seller's right to stop them. But if the goods and bill are transferred only as a security for a debt due from the first purchaser to the transferee, the original seller may stop the goods, and hold them subject to this security, and need pay only the specific advances made on their credit or on that very bill of lading, and not a general indebtedness of the first purchaser to the second. The question has been much agitated whether the right of stoppage in transitu was a right to rescind the sale for non-payment, or only an extension of the common-law lien of the buyer on the thing sold for his price. And it seems now quite well settled, both in England and in this country, that it is the latter; that is, an extension of the lien. Important consequences might flow from this distinction. If the seller, by stopping the goods in transitu, rescinds the sale, he has no further claim for the price, nor any part of it; nor can the buyer, or any one representing him, pay the price and recover the goods against the will of the seller. If, however, he only exercises his right of lien, he holds the goods as the *property* of the buyer; and they may be redeemed by him or his representatives by paying the price for which they are a security; and if not redeemed, they become absolutely the seller's, in the same way as a pledge might become his; and if he fails

to obtain from them the full price due, he has a claim for the balance upon the buyer. All of this is not positively determined by adjudication, but it would seem to be deducible from the principle that the act of stoppage in transitu is only the exercise of a lien on the goods for their price.—*PARSONS'S Mercantile Law*, p. 63; see also *KENT'S Comm.*, vol. ii.

Storax. See BALSAM.

Stores, Military and Naval, include arms, ammunition, etc.—See NAVAL STORES.

Stores, in *Commercial navigation*, the supplies of different articles provided for the subsistence and accommodation of the ship's crew and passengers.

Stranding, in *Navigation*, the running of a ship on shore, or on the beach.

It is important to define accurately what shall be deemed a stranding. But this is no easy matter; and much diversity of opinion has been entertained with respect to it. It would, however, appear that merely striking against a rock, bank, or shore, is not a stranding; and that, to constitute it, the ship must be upon the rock, etc., for some time (how long?). Mr. Justice Park has the following observations on this subject: "It is not every touching or striking upon a fixed body in the sea or river that will constitute a stranding. Thus Lord Ellenborough held that, in order to establish a stranding, the ship must be *stationary*; for that merely striking on a rock, and *remaining there a short time* (as in the case then at the bar, about a minute and a half), and then passing on, though the vessel may have received some injury, is not a stranding. Lord Ellenborough's language is important. *Ex vi termini* stranding means lying on the shore, or something analogous to that. To use a vulgar phrase, which has been applied to this subject, if it be *touch and go* with the ship, there is no stranding. It can not be enough that the ship lie for a few moments on her beam ends. Every striking must necessarily produce a retardation of the ship's motion. If by the force of the elements she is run aground, and becomes stationary, it is immaterial whether this be on piles, on the muddy bank of a river, or on rocks on the sea-shore; but a mere *striking* will not do, *wherever* that may happen. I can not look to the consequences without considering the *causa causans*. There has been a curiosity in the cases about stranding not creditable to the law. A little common sense may dispose of them more satisfactorily."

This is the clearest and most satisfactory statement we have met with on this subject; still, however, it is very vague. Lord Ellenborough and Mr. Justice Park hold that, to constitute a stranding, the ship must be *stationary*; but they also hold that if she merely remain upon a rock, etc., for a *short time*, she is not to be considered as having been stationary. Hence every thing turns upon what shall be considered as a short time. And we can not help thinking that it would be better, in order to put to rest all doubts upon the subject, to decide either that every striking against a rock, the shore, etc., by which damage is done to the ship, should be considered a stranding; or that no striking against a rock, etc., should be considered as such, provided the ship be got off within a *specified time*. Perhaps a *tide* would be the most proper period that could be fixed. The English insurance companies exclude the words, "*or the ship be stranded*," from the memorandum.—See INSURANCE [MARINE], ABANDONMENT, and AVERAGE.

If the ship be voluntarily stranded, to escape danger from tempest or chase of an enemy, the damages from that act are to be borne by a general average, if the ship be afterward recovered and perform her voyage. But if the ship be wholly lost or destroyed by the act of running her ashore, it has been a question much discussed, and different opinions maintained, whether the cargo saved was bound to contribute to bear the loss of the ship. In the United States the general

conclusion seems to be that the loss is not to be borne by general average of cargo; while the decisions in Europe go to establish the opposite.—*KENT'S Comm.*, vol. iii. p. 306. It is understood that the mere stranding a ship is not of itself to be deemed a total loss, yet it may be attended with circumstances that will justify an abandonment, even though the hull of the ship should not be materially damaged; if, for instance, the cost of removal would exceed the worth of the ship.—See *KENT'S Comm.*, vol. iii. p. 402.

Sturgeon Fishery. The sturgeon is a large, valuable, and well-known fish, of which there are several species: viz., the sturgeon, properly so called, or *Accipenser sturio*; the beluga, or *Accipenser huso*; the sevruga, or *Accipenser stellatus*, etc. The sturgeon is plentiful in the North American rivers, and on the southern shores of the Baltic; and is met with in the Mediterranean, etc. But it is found in the greatest abundance on the northern shores of the Caspian, and in the rivers Wolga and Ural; and there its fishery employs a great number of hands, and is an important object of national industry. Owing to the length and strictness of the Lents in the Greek Church, the consumption of fish in Russia is immense; and from its central position, and the facilities afforded for their conveyance by the Wolga, the products of the Caspian fishery, and those of its tributary streams, are easily distributed over a vast extent of country. Besides the pickled carcasses of the fish, caviar is prepared from the roes; and isinglass, of the best quality, from the sounds. The caviar made by the Ural Cossacks is reckoned superior to any other; and both it and isinglass are exported in considerable quantities. The belugas are sometimes of a very large size, weighing from 1000 to 1500 lbs., and yield a good deal of oil. The seal-fishery is also pretty extensively prosecuted in the Caspian. The reader will find a detailed account of the mode in which the fishery is carried on in the Caspian, and in the rivers Wolga and Ural, in *TOOKE'S Russia*.—See FISHERIES.

Sub-treasury. The sub-treasury system is one peculiar to the general government of the United States; whereby the separate and safe-keeping of the public funds is intrusted to special officers appointed for this purpose. From the year 1789 to the year 1846 the public funds were entrusted as deposits in numerous banking institutions throughout the Union. The failures of many of these during the years 1837–1842 led to the establishment, on the 6th August, 1846, of the Independent Treasury, or Sub-treasury. By this law of Congress, the "rooms prepared and provided in the new treasury building at the seat of government (Washington), for the use of the Treasurer of the United States, his assistants and clerks, and occupied by them, and also the fire-proof vaults and safes erected in said rooms for the keeping of the public moneys in the possession and under the immediate control of said treasurer, and such other apartments as are provided for in this act as places of deposit of the public money, are hereby constituted and declared to be the Treasury of the United States." The sub-treasuries for the reception of the public funds are at Boston, New York, Philadelphia, and other cities; generally in the buildings used and known as the custom-houses. The assistant treasurers receive the following salaries: Boston, \$2500; New York, \$4000; Philadelphia, Charleston, New Orleans, St. Louis, \$2500 each. After the 1st January, 1847, all duties, taxes, sales of public lands, postage, and all other revenue, were made payable in gold or silver coin only; and all disbursements by or for account of the Treasury were by law made payable in the same medium.

Succory. See CHICORY.

Suez Canal. If we compare the mean distances between the ports of Europe and India, by the Cape of Good Hope on the one hand, and by the intended channel between the two seas on the other, we shall find an

enormous difference in favor of this latter route. This difference will be still greater if we remember that a straight line on the chart of navigation is far from being the shortest distance from one port to another, and the seaman can only reach the point for which he is steering by following a certain number of successive courses, approaching as near as possible the arc of a great circle. Thus, far from making directly for the Cape of Good Hope, vessels leaving Europe or the Atlantic ports of North America, *en route* for India, must steer for the Canaries or Azores, in order to find the trade-winds of the northern hemisphere, to make the coast of Brazil, and sight Cape Frio, or put into harbor at Rio Janeiro. This is generally the route for the Cape of Good Hope, more justly, perhaps, called the Cape of Storms. They then cross the Agulhas Bank, reach Bourbon or Mauritius, and from thence steer for India, following the routes allowed by the monsoons. Vessels in the Mediterranean again have to contend with still greater disadvantages. It often takes them fifteen days to reach the Straits of Gibraltar, westerly winds generally prevailing in this quarter, where we also find a rapid flow of the ocean waters into the Mediterranean. Thus the voyage to India takes at least five months, or five months and a half, the voyages home being rather more direct, without being sensibly shorter. Ships then run nearer to the African shore, by reason of the trade-winds of the southern hemisphere; the place of call in this case being St. Helena.

If we now examine the facilities for navigation in the three seas near the Canal of Suez, namely, the Mediterranean, the Red Sea, and the Gulf of Oman, we find:

That in the Mediterranean the winds blow from the north during the greater part of the year, change south-east in the spring, and return to the north, passing by the west and northwest.

That nearly the same takes place in the Red Sea, where the north, which is the prevailing wind, heaps the waters in the direction of Babelmandel, so that during a calm we observe a current setting northward, evidently arising from the elevated waters in the south endeavoring to recover their level. Southerly winds generally succeed a calm.

The Gulf of Oman has two monsoons—the northeast monsoon, which generally continues during the winter, and southwest monsoon, which lasts during the summer, and is frequently stormy. The change from one monsoon to the other is there, as elsewhere, accompanied by a series of storms and gales.

The considerable reduction of the distance of European ports from those of India would not be the only advantage to trade from adopting the canal between the two seas; for not only would vessels reach their point of destination much sooner, but they would find places of anchorage throughout the entire route, and also, what is of more importance still, they would meet with good markets. The navigator, after having followed the usual easy routes of the Mediterranean, would dispose of part of his cargo in the Canal of Suez, or at Djedda, would purchase ivory at Massarva, Souaken, or Derbera, which he would exchange in India for opium to take to China in exchange for silk and tea. He would complete his home cargo in colonial merchandise from Manilla, the Isles of Sunda and Ceylon; in cotton of India and Egypt; in coffee of Abyssinia or Yemen; the gum of Soudon or Hedjaz; the corn of Lower Egypt, or rice of Damietta; and these numerous operations, which now require years, would be accomplished rapidly and without danger with small capital and small vessels. In short, by reducing the time necessary for the operations of commerce, we reduce the general expense.

All nations would take advantage of the importance of the trade with India, China, and the islands of the ocean. Trade with the Red Sea, although less considerable, deserves attention; but as there is scarcely

any carried on at present, it is very little known, and could only acquire importance by the opening of a canal between the two seas. The Red Sea, which is so near to us in a straight line, becomes far distant when we have to double the Cape. Babelmandel is as far from us as Pondicherry, and Souaken as far as Batavia; Suez, farther still, by this route becomes as near as Beyrout by the canal; in short, the two routes, measured from the Straits of Gibraltar to Souaken, are in the proportion of one to five.

Very few European vessels are now met with in the Red Sea. Every year we see a few belonging to the Parsees of Bombay, and manned by Lascars. The internal trade of this sea is now carried on by Arabian barks, called *dows*, or *boutres*, constructed at Suez, Djeddo, Kossair, Souaken, or Mocha, with wood from India to Singapore. These vessels are of a very small tonnage, are very sharp, and have a handsome sheer; a heavy poop, which hinders their working, and lowers it at the stern; they carry one mast, rigging a square sail; this sail and yard are struck to the foot when they lay to; about thirty men are required to hoist it again, and this operation can not be performed in less than half an hour. The tacking of these ships is as difficult as it is dangerous. The dows only sail in the daytime; they get under way about seven o'clock in the morning, sail till about four in sight of the coast, then anchor by a grappling-iron, or run aground on the sand.—*London Nautical Magazine*. See also *Southern Quarterly Review*, ix. 57.

Messrs. Conrad, A. Renaud, Megrilli J. M'Lean, and Lieussou, the members of the international commission for cutting a canal through the Isthmus of Suez, have terminated their investigations in Egypt, and given in to the viceroy a brief preliminary report. They found insuperable obstacles to directing the canal on Alexandria, and unexpected facilities for establishing a port in the Gulf of Pelusium. They are therefore unanimously of opinion that a direct canal from Suez toward the Gulf of Pelusium is the only solution of the problem of the junction of the Red Sea and the Mediterranean. "The execution thereof is easy, the success certain, the results immense for the commerce of the world." The expense of the canal and of the works connected with it will not, it is added, exceed 200,000,000 francs.

Sugar (Fr. *Sucre*; Ger. *Zucker*; It. *Zucchero*; Russ. *Sachar*; Sp. *Azucar*; Arab. *Sukhir*; Malay, *Soola*; Sans. *Sarkarâ*), a sweet granulated substance, too well known to require any particular description. It is every where in extensive use, and in this country ranks rather among the indispensable necessities of life than among luxuries. In point of commercial importance, it is second to very few articles. It is chiefly prepared from the expressed juice of the *Arundo saccharifera*, or sugar-cane; but it is also procured from an immense variety of other plants, as maple, beet-root, birch, parsnep, etc.

Species of Sugar.—The sugar met with in commerce is usually of four sorts; brown, or muscovado sugar; clayed sugar; refined, or loaf sugar; and sugar-candy. The difference between one sort of sugar and another depends altogether on the different modes in which they are prepared.

Brown, or Muscovado Sugar.—The plants or canes being crushed in a mill, the juice, having passed through a strainer, is collected in the clarifier, where it is first exposed to the action of a gentle fire, after being "tempered" (mixed with alkali), for the purpose of facilitating the separation of the liquor from its impurities. It is then conveyed into the large evaporating copper, and successively into two others, each of smaller size; the superintending boiler freeing it during the process from the scum and feculent matters which rise to the surface. The sirup then reaches the last copper vessel, called the "striking tache," where it is boiled till sufficiently concentrated to be capable of granulating in the cooler, whence it is transferred with the least

possible delay, to prevent charring. Here it soon ceases to be a liquid; and when fully crystallized, is put into hogsheds (called "potting"), placed on their ends in the curing-house, with several apertures in their bottoms, through which the molasses drain into a cistern below. In this state they remain till properly cured, when the casks are filled up and prepared for shipment.

Clayed sugar is prepared by taking the juice, as in the case of muscovado sugar, when boiled to a proper consistency, and pouring it into conical pots with the apex downward. These pots have a hole at the lower extremity, through which the molasses and sirup are allowed to drain. After this drain has continued for some time, a stratum of moistened clay is spread over the surface of the pots; the moisture of which, percolating through the mass, is found to contribute powerfully to its purification.

Refined sugar may be prepared from muscovado or clayed sugar by redissolving the sugar in water, and, after boiling it with some purifying substances, pouring it, as before, into conical pots, which are again covered with moistened clay. A repetition of this process produces *double refined sugar*. But a variety of improved processes are now resorted to.

Sugar-candy.—Solutions of brown or clayed sugar, boiled until they become thick, and then removed into a hot room, form, upon sticks or strings put into the vessels for that purpose, into crystals, or candy.

Historical Notice.—The history of sugar is involved in a good deal of obscurity. It was very imperfectly known by the Greeks and Romans. Theophrastus, who lived about 320 years before the Christian era, the first writer whose works have come down to us by whom it is mentioned, calls it a sort of "honey extracted from canes or reeds." Strabo states, on the authority of Nearchus, Alexander's admiral, that "reeds in India yield honey without bees." And Seneca, who was put to death A.C. 65, alludes to sugar in a way which shows how little was then known respecting it (Epist. 84): *Atunt, says he, inveniri apud Indos mel in arundinum foliis, quod aut ros illius celi, aut ipsius arundinis humor dulcis et pinguior gignat*. Of the ancients, Dioscorides and Pliny have given the most precise description of sugar. The former says, it is "a sort of concreted honey, found upon canes, in India and Arabia Felix; it is in consistence like salt, and is, like it, brittle between the teeth." And Pliny describes it as "honey collected from canes, like a gum, white and brittle between the teeth; the largest is of the size of a hazel-nut: it is used in medicine only."—*Saccharum et Arabia fert, sed laudatius India; est autem mel in arundinibus collectum, gummi modo candidum, dentibus fragile, amplissimum nucis avellane magnitudine, ad medicinæ tantum usum*.—Lib. xii. c. 8. It is evident, from these statements, that the knowledge of the Greeks and Romans with respect to the mode of obtaining sugar was singularly imperfect. They appear to have thought that it was found adhering to the cane, or that it issued from it in the state of juice, and then concreted like gum. Indeed, Lucan expressly alludes to Indians near the Ganges—

Quique bibunt tenerâ dulces ab arundine succos.

—Lib. iii. l. 287.

But these statements are evidently without foundation. Sugar can not be obtained from the cane without the aid of art. It is never found native. Instead of flowing from the plant, it must be forcibly expressed, and then subjected to a variety of processes. It is not, however, quite so clear, as has been generally supposed, that the Romans were wholly unacquainted with the mode of procuring sugar. The remarkable line of Statius,

Et quas percoquit Ebusia cannas—Sylv. lib. i. v. 15,

has been conjectured, apparently on good grounds, to refer to the boiling of the juice of the cane. But the pas-

sage has been differently read, and is too enigmatical to be much depended on. Dr. Moseley conjectures, apparently with much probability, that the sugar described by Pliny and Dioscorides, as being made use of at Rome, was sugar-candy obtained from China. This, indeed, is the only sort of sugar to which their description will at all apply. And it would seem that the mode of preparing sugar-candy has been understood and practiced in China from a very remote antiquity; and that large quantities of it have been in all ages exported to India, whence, it is most probable, small quantities found their way to Rome.—*Treatise on Sugar*. This, as well as Dr. Moseley's *Treatise on Coffee*, is a very learned and able work. Europe seems to be indebted to the Saracens not only for the first considerable supplies of sugar, but for the earliest example of its manufacture. Having, in the course of the 9th century, conquered Rhodes, Cyprus, Sicily, and Crete, they introduced into them the sugar-cane, with the cultivation and preparation of which they were familiar. It is mentioned by the Venetian historians that their countrymen imported, in the 12th century, sugar from Sicily at a cheaper rate than they could import it from Egypt.—*Essai de l'Histoire du Commerce de Venise*, p. 100. The crusades tended to spread a taste for sugar throughout the Western World; but there can be no doubt that it was cultivated, as now stated, in modern Europe antecedently to the era of the crusades; and that it was also previously imported by the Venetians, Amalphitans, and others, who carried on a commercial intercourse from a very remote epoch with Alexandria and other cities in the Levant. It was certainly imported into Venice in 996.

The art of refining sugar, and making what is called loaf-sugar, is said by Dr. Moseley to be a modern European invention, the discovery of a Venetian about the end of the 15th, or the beginning of the 16th century.—MOSELEY, p. 66. But this is doubtful, for Le Grand D'Aussy has shown that white, or, as he calls it, refined sugar (*sucre blanc ou raffiné*), had been introduced into and used in France for more than a century and a half previously to the date assigned for the discovery of the process of refining in Venice. But white sugar is not necessarily, as Le Grand D'Aussy seems to suppose, refined; it may be merely clayed, like Havana sugar, which is as white as refined sugar. Loaf or lump sugar is unknown in the East, sugar-candy being the only species of refined sugar that is made use of in India, China, etc. The manufacture of sugar-candy is carried on in Hindostan, but the process is extremely rude and imperfect. In China, however, it is manufactured in a very superior manner, and large quantities are exported. When of the best description, it is in large white crystals, and is a very beautiful article. Two sorts of sugar-candy are met with at Canton, viz., Chinchew and Canton; the former being the produce of the province of Fokien, and the latter, as its name implies, of that of Canton. The Chinchew is by far the best, and is about 50 per cent. dearer than the other. Chinese sugar-candy is extensively consumed by Europeans at the different settlements throughout the East. The exports of sugar-candy from Canton in 1846 for British India and Australia amounted to 38,584 piculs, or 2296 tons. Within the last four or five years raw sugar has begun to be rather largely exported from China to England, the shipments for the latter in 1846 having amounted to 18,520 tons. But the speculation did not turn out well; and it is doubtful whether the sugar of China will be able to withstand the competition of that of Brazil and Cuba.—*Vie Privée des François*, ii. 198, ed. 1815. This sugar was imported from Egypt principally by Italians; and the probability is, that the latter were the first Europeans who practiced the art, which, however, would appear to have originated in the East. The cane had, as already seen, been introduced into Sicily, and its culture practiced previously to the middle of the 12th cen-

tury. It also was carried to Spain and cultivated by the Saracens soon after they obtained a footing in that country. The first plantations were at Valencia; but they were afterward extended to Granada and Murcia. Mr. Thomas Willoughby, who traveled over the greater part of Spain in 1664, has given an interesting account of the state of the Spanish sugar plantations, and of the mode of manufacturing the sugar. Plants of the sugar-cane were carried by the Spaniards and Portuguese to the Canary Islands and Madeira, in the early part of the 15th century; and it has been asserted by many that these islands furnished the first plants of the sugar-cane that ever grew in America.

Barbadoes is the oldest settlement of the English in the West Indies. They took possession of it in 1627, and so early as 1646 began to export sugar thence to England. The trade of Barbadoes attained its maximum in 1676, furnishing, it is said, employment, at that period, for 400 sail of vessels, averaging 150 tons burden; but this statement is most probably exaggerated.

Jamaica was discovered by Columbus in his second voyage, and was first occupied by the Spaniards. It was wrested from them by an expedition sent against it by Cromwell in 1656; and has since continued in the possession of the English, forming by far the most valuable of their West Indian colonies. At the time when it was conquered, there were only three small sugar plantations upon it. But, in consequence of the influx of English settlers from Barbadoes and the mother country, fresh plantations were speedily formed, and continued rapidly to increase.

The sugar-cane is said to have been first cultivated in San Domingo, or Hayti, in 1506. It succeeded better there than in any other of the West Indian islands. Peter Martyr, in a work published in 1530, states that in 1518 there were 28 sugar-works in San Domingo, established by the Spaniards. "It is marvelous," says he, "to consider how all things increase and prosper in the island. There are now 28 sugar-presses, wherewith great plenty of sugar is made. The canes or reeds wherein the sugar groweth are bigger and higher than in any other place, and are as big as a man's wrist, and higher than the stature of a man by the half. This is more wonderful, that whereas in Valencia, in Spain, where a great quantity of sugar is made yearly, whensoever they apply themselves to the great increase thereof, yet doth every root bring forth not past 5 or 6, or at most 7 of these reeds; whereas in San Domingo one root beareth 20, and oftentimes 30."

Sugar from San Domingo formed, for a lengthened period, the principal part of the European supplies. Previously to its devastation in 1790, no fewer than 65,000 tons of sugar were exported from the French portion of the island.

Introduction and Cultivation of the Sugar-cane in America.—Sugar-cane occurs in a wild state on many of the islands of the Pacific, but in no part of the American Continent, notwithstanding a contrary opinion has been expressed. Its cultivation and the manufacture of sugar were introduced into Europe from the East by the Saracens, soon after their conquests in the 9th century. It is stated by the Venetian historians, that their countrymen imported sugar from Sicily, in the 12th century, at a cheaper rate than they could obtain it from Egypt, where it was then extensively made. The first plantations in Spain were at Valencia, but they were extended to Granada, Murcia, Portugal, Madeira, and the Canary Islands, as early as the beginning of the 15th century. From Gomeira, one of these islands, the sugar-cane was introduced into the West Indies by Columbus, in his second voyage to America, in 1493. It was cultivated to some extent in San Domingo in 1506, where it succeeded better than in any of the other islands. In 1518 there were twenty-eight plantations in that colony, established by the Spaniards, where an abundance of sugar was made, which for a long period formed the principal part of

the European supplies. Barbadoes, the oldest English settlement in the West Indies, began to export sugar in 1646, and in the year 1676 the trade required four hundred vessels, averaging 150 tons burden.

The introduction of sugar-cane into Florida, Texas, California, and Louisiana, probably dates back to their earliest settlement by the Spaniards or French. It was not cultivated in the latter, however, as a staple product before the year 1751, when it was introduced with several negroes, by the Jesuits, from San Domingo. They commenced a small plantation on the banks of the Mississippi, just above the old city of New Orleans. The year following, others cultivated the plant, and made some rude attempts at the manufacture of sugar. In 1758 M. Dubreuil established a sugar estate on a large scale, and erected the first sugar-mill in Louisiana, in what is now the lower part of New Orleans. His success was followed by other plantations, and in the year 1765 there was sugar enough manufactured for home consumption; and in 1770 it had become one of the staple products of the colony. Soon after the Revolution, a large number of enterprising adventurers emigrated from the United States to Lower Louisiana, where, among other objects of industry, they engaged in the cultivation of cane, and by the year 1803 there were no less than eighty-one sugar estates on the Delta alone. Since that period, while the production of cane sugar has been annually increasing at the South, the manufacture of maple-sugar has been extending in the North and West.

The common sugar-cane is a perennial plant, very sensitive to cold, and is therefore restricted in its cultivation to regions bordering on the tropics, where there is little or no frost. In the Eastern hemisphere its production is principally confined to situations favorable to its growth, being between the fortieth parallel of north latitude and a corresponding degree south. On the Atlantic side of the Western Continent it will not thrive beyond the thirty-third degree of north latitude and the thirty-fifth parallel south. On the Pacific side it will perfect its growth some five degrees farther north or south. From the flexibility of this plant, it is highly probable that it is gradually becoming more hardy, and will eventually endure an exposure, and yield a profitable return, much farther north, along the borders of the Mississippi and some of its tributaries, than it has hitherto been produced. In most parts of Louisiana the canes yield three crops from one planting. The first season it is denominated "plant cane," and each of the subsequent growths "ratoons." But sometimes, as on the prairies of Attakapas and Opelousas, and the higher northern range of its cultivation, it requires to be replanted every year. Within the tropics, as in the West Indies and elsewhere, the ratoons continue to yield abundantly for twelve, fifteen, and even twenty-four years, from the same roots.

The cultivation of this plant is principally confined to the West Indies, Venezuela, Brazil, Mauritius, British India, China, Japan, the Sunda, Philippine, and Sandwich islands, and to the southern districts of the United States. The varieties most cultivated in the latter are the striped blue, and yellow ribbon, or Java; the red ribbon, or violet, from Java; the Creole crystalline, or Malabar; the Otaheite, the purple, the yellow, the purple-banded, and the gray canes. The quantity of sugar produced on an acre varies from 500 to 3000 lbs., averaging, perhaps, from 800 to 1000 lbs.

Hitherto the amount of sugar and molasses consumed in the United States has exceeded the quantity produced, consequently there has been no direct occasion for their exportation. In the year 1815 it was estimated that the sugar made on the banks of the Mississippi alone amounted to 10,000,000 lbs. In 1818 the entire crop of Louisiana was only 25,000,000 lbs.; in 1850 it had reached the enormous quantity of 226,001,000 lbs., besides about 12,000,000 gallons of

molasses. According to the census of 1840, the amount of cane and maple sugar was 155,100,800 lbs., of which 119,947,720 lbs. were raised in Louisiana. By the census of 1850 the cane sugar made in this country was 247,581,000 lbs., besides 9,700,606 gallons of molasses; maple-sugar, 84,249,886 lbs., amounting to 281,830,886 lbs., showing an increase in ten years of 126,730,077 lbs.—*United States Patent Office Report, 1850.*

Adulteration.—Sugar is an article which is especially liable to adulteration; and its high price during the last few years, coupled with the high duty, has given a powerful stimulus to this nefarious practice. Perhaps we might not be far from the mark were we to estimate the quantity of foreign matters intentionally mixed up with sugar, and sold as such in England, previously to the late reduction of duties, at 10,000 or 12,000 tons a year! Sage and potato flour are the articles which have been most extensively used for this purpose. When mixed with sugar they give it a whiter and finer appearance, and, unless the dose be overdone, increase its price about 4s. a cwt. It is extremely difficult to deal with an abuse of this sort. No doubt the fall in the price of sugar following the placing of the trade on a proper footing, and the reduction of the duty, have lessened the temptation to adulterate. But they have not wholly removed it, the materials employed to adulterate being decidedly cheaper than sugar, however supplied. In this, as in most cases of the sort, the best security against adulteration is to deal only with grocers of the highest character.

Failure of the Sugar-cane in Louisiana.—The culture of sugar-cane in Louisiana has been subject, from the period of its introduction in 1751 up to the present time, to certain unfavorable vicissitudes to which it is not liable in more southern climes. The past has been more marked, perhaps, than any preceding season, both in respect to the amount produced and to the diseases and condition or degeneracy of the cane. The spring of 1854 is represented to have been so extraordinarily dry that most of the cuttings put into the ground perished, even after they had vegetated. Indeed, some few sections only of the sugar-growing parishes were favored even with occasional vernal showers, and the crops in these sections gave better promise than those in other parts of the State. But yet in these the yield was not abundant, as the summer and fall proved otherwise unfavorable to the growth and maturity of the cane; and many planters, who had crops of fair appearance, found, upon grinding and boiling, that the actual yield of sugar to the acre was unusually small. The plant-cane, upon which the cultivators mainly depend, seems to have been a general failure throughout the State; and the small crop made was mostly saved from the stubbles or ratoons. The securing of the crop was also very unfavorable to the planter. At the commencement of the grinding there appeared to be little or no crystallizable sugar in the juice. The cane was not ripe, and the cold and unusually wet winter, which consequently required a large amount of fuel for boiling, was a great drawback; so much so that many of the planters lost a good portion of their crops by not being prepared for these exigencies, while others, rather than grind their immature cane, preferred to let it stand in the fields, even at the risk of losing a part, and did not commence boiling before the 20th of December.

The deterioration, or falling off of the crop, has been attributed to presumed causes, one of which is that based upon the theory of Mr. Knight, of Herefordshire, in England, in the latter part of the last century, namely, that plants propagated by cuttings, or slips, deteriorate and become extinct, unless regenerated from time to time by the production of fresh stocks directly from the seeds. Mr. Knight, it would seem, based his hypothesis upon the fact that certain varieties of the apple in his neighborhood were believed to be running through their natural course, and named as instances

the "Golden Pippin" and the "Nonpareil." But the particular cases thus cited failed to sustain his assumption, for the Golden Pippin is believed still to thrive well at Madeira, on many parts of the Continent of Europe, and in England, as well as the Nonpareil, just as they did in the days of Queen Anne.

The cultivated sugar-cane very rarely produces seeds, although this is said sometimes to occur even in the Southern States of this Union; but it has not been shown that the seeds have vegetated when sown; yet there is, no doubt, some country in which the course of nature is followed in this respect. Moreover, it has been averred that there is no region in which the cultivators attempt to resort to this mode of propagation, their dependence being always and entirely upon the cuttings. The theory, therefore, of the insufficiency of this means of propagating the sugar-cane, is without the least foundation, unless it can be shown that a general tendency to decay and extinction is manifested in it throughout the globe—a fact that has not been assumed, and that certainly does not exist.

That the propagation of plants, by their seeds, is the natural method, seems like an infallible proposition; and to the inquiry it naturally suggests respecting their design, if not for this use, it may be difficult to find a conclusive reply. But the vegetable kingdom presents to the mind of the observer so many apparent anomalies, that the student who refuses to progress farther until each in succession is made plain to his understanding, is not likely to proceed far in this most interesting and profitable pursuit.

It is an unfortunate, though very prevalent error, to attribute the diseases of plants to other than the real causes, since by doing so we deprive ourselves of the ability to apply the remedy appropriate to each case. A deficiency or excess of rain, heat or cold, the electric state of the atmosphere, and, what is still more likely, an unfavorable condition of the soil, doubtless more or less induce the diseases or debility of plants; and these may be either local or general. In the case of the sugar-cane of Louisiana, for instance, although it is highly desirable to introduce cuttings of new, and, if possible, better varieties, than are now cultivated in that State, there is a probable cause of deterioration to which the attention of planters has not been effectually directed. It is known that the continued production of a single species of plant upon almost any soil will eventually exhaust that soil of those elements especially required as the pabulum of that plant, if those elements be not carefully ascertained and systematically returned. Is not this probably the case with respect to the sugar-fields of Louisiana? Chemical analyses have shown that nearly one half of the inorganic matter contained in the cane itself is phosphate of lime, and nearly a fourth silica. The bare statement of this fact must assuredly suggest to every mind a prominent cause of the evil. In the continued culture of sugar upon the same lands, as of every thing else, a judicious system of rotation, with a liberal supply of guano, or other animal and phosphated manure, in connection with a due supply of well decomposed vegetable matter, is essential; and, as has been intimated, the latter must be of the kinds specially indicated.

That there has been a degeneracy in the cane, caused by exhaustion of the soil, and injudicious rotation, is obvious, from the fact that the same lands which have been under cultivation for a long period have yielded more than three times the amount of sugar to the acre in some years than in others, the productiveness having been in those cases in which the soil was in its primitive fertility, or when enriched by guano or other appropriate manures. For instance, the British and French West India Islands, some sixty or seventy years ago, yielded from 3000 to 6000 pounds of sugar to the acre. At present they do not yield a third of this amount without manure. The product in Louisiana,

formerly, often reached as high as 8000 or 4000 pounds; and in some cases even to 6000 pounds; but for the last few years it has often ranged as low as from 500 to 1000 pounds to the acre. According to Commodore Perry, in his "Expedition to Japan," before the introduction of guano into Mauritius, the product of sugar on that island was from 2000 to 2500 pounds to the acre; but the increase since the application of this fertilizer has been so extraordinary as to be scarcely credible. In ordinary seasons the product has been from 6000 to 7000 pounds, and under peculiarly favorable circumstances it has even reached 8000 pounds to the acre.

The amount of raw sugar as a gross produce to the acre, in several countries of the globe, from good authorities, is as follows:

Mauritius	6000 pounds.
Brazil	5000 "
Cuba	4000 "
Isle of Bourbon	5300 "
Guadaloupe	2000 "
Vera Cruz	1900 "
Martinique	1700 "
Bengal	1600 "
St. Domingo	1100 "
Louisiana	1000 "

In order to show the fluctuations of the sugar-crop in Louisiana, we have compiled from our records the annexed statement of the sugar product of Louisiana for the past twenty-three years, showing the amount of each year's crop in hogsheads and pounds, with the gross average value per hogshead and total, the proportions taken by Atlantic ports and Western States, and the date of the first receipt of each crop. By this statement it will be seen that the total product of Louisiana from 1834 to 1856 inclusive, a period of twenty-three years, was 3,972,716 hogsheads, valued at \$204,131,223, and that of this quantity the Atlantic ports took 1,317,883 hogsheads, and the Western States 1,974,103 hogsheads. The crops from 1828 (which is as far back as our estimates extend) to 1833 summed up 281,000 hogsheads; which would make the total product in a period of twenty-seven years 4,253,716 hogsheads, or 4,477,668,000 pounds. We would here remark that up to 1848 the product in hogsheads is estimated, and 1000 pounds taken as the average weight per hogshead, but for the crop since that date we have taken the figures of Mr. P. A. Champonier, as we find them in his annual statements.

Years.	Total Crop.		Average Price per Hogshead.	Total Value.	Exports from New Orleans		First Receipts of New Crop
					Exported to Atlantic Ports.	Exported to Western States.	
	Hogsheads.	Pounds.			Hogsheads.	Hogsheads.	
1834	100,000	100,000,000	\$60 00	\$6,000,000	45,500	44,500	October 15.
1835	30,000	30,000,000	90 00	2,700,000	1,500	23,500	November 5.
1836	70,000	70,000,000	60 00	4,200,000	26,300	35,000	November 1.
1837	65,000	65,000,000	62 50	5,062,500	24,500	32,500	November 1.
1838	70,000	70,000,000	62 50	4,375,000	26,500	32,500	October 17.
1839	115,000	115,000,000	50 00	5,750,000	42,600	58,000	October 13.
1840	87,000	87,000,000	55 00	4,785,000	38,500	46,500	October 14.
1841	90,000	90,000,000	40 00	3,600,000	28,000	50,000	October 13.
1842	140,000	140,000,000	42 50	4,750,000	63,000	60,000	October 12.
1843	100,000	100,000,000	60 00	6,000,000	34,000	52,000	October 22.
1844	200,000	200,000,000	45 00	9,000,000	101,000	70,000	October 3.
1845	186,650	186,650,000	55 00	10,265,750	79,000	75,000	October 4.
1846	140,000	140,000,000	70 00	9,800,000	45,500	70,000	October 7.
1847	240,000	240,000,000	40 00	9,600,000	84,000	115,000	October 2.
1848	220,000	220,000,000	40 00	8,800,000	90,000	108,000	October 5.
1849	247,923	247,923,000	50 00	12,396,150	90,000	125,000	October 11.
1850	211,303	211,303,000	60 00	12,678,180	45,000	123,000	October 17.
1851	236,547	236,547,000	50 00	11,827,350	42,000	149,000	October 19.
1852	321,931	321,931,000	45 00	15,452,685	82,000	206,000	October 9.
1853	449,324	449,324,000	35 00	15,726,340	166,000	185,000	October 6.
1854	346,635	346,635,000	52 00	18,025,020	122,000	143,000	October 4.
1855	231,427	231,427,000	70 00	16,199,890	39,133	131,027	October 10.
1856	73,976	81,373,000	110 00	8,137,360	1,850	39,576	November 3.
Total	3,972,716	4,196,668,000	.....	204,131,223	1,317,883	1,974,103	.....

In seeking a remedy for the evil here complained of in Louisiana, the minds of many have very naturally been turned to the project of replenishing the cane-fields of that State by the importation of a fresh supply of cuttings, of such varieties as may be found best suited to the soil and climate. Resort to this means of restoration should be promptly made on a liberal and extensive scale, so that the experiment may be thorough, and, if possible, effectual in its results. An intelligent agent should be selected for the purpose, well acquainted with the character of the cane, and the nature of the soils and climates in which it grows, as well as with the best modes of packing and transporting it to distant parts, either by land or sea; and, what would add much to his qualifications, one who is also acquainted practically with the culture of the plant and the manufacture of sugar.

Among the points on this continent from which the cuttings could be obtained might be instanced the valley of Aragua, in Venezuela, British Guiana, or some favorable locality on the coast of Brazil. On or near the Eastern continent, perhaps British India or the islands of Mauritius and Java might prove suitable positions for the procurement of the varieties desired. The agent thus employed should be accurately informed or instructed with reference to the soil, climate, and elevation above the sea, of the sugar districts of these countries, as well as to the age and healthiness of the canes from which the cuttings are to be taken, the parts of the plants from which they are to be obtained,

and the proper seasons of procuring them and delivering them at some accessible point in the United States near where they are intended to grow.

The varieties of cane which have hitherto been most cultivated in Louisiana are the Striped-blue Ribbon; the Green Ribbon; the Yellow Ribbon, or Java; the Red Ribbon, or Violet; the Reddish Violet; the Red striped; the Creole; Crystalline, or Malabar; the Otahite; the Purple; the Yellow; the Purple-banded; the Gray; the Grayish White.

The Red-striped cane, which was originally brought from the Dutch colony of Java, and the Violet or Reddish Violet, which is only a variation from the former, are believed to be the only two varieties that will generally prosper under the climate of the sugar districts of the Southern States. All the other descriptions are too sensitive to cold, except in the warmer parts of the delta of the Mississippi, Florida, and Texas. When planted in new ground, it gives a certain amount of white canes, or those the outside of which is of a grayish white. When cultivated in old soil, however, it furnishes a good yield of violet-red cane. Again, on new ground, a part, say, from one-tenth to one-fifteenth, of the striped cane becomes white, or a dirty grayish white. There are also to be found more or less red stripes on some portions of the stalk, or on the joints; but all the rest of the stalk is entirely gray. On old ground, on the contrary, the red-striped gives red or violet red canes in about the same proportion as above. The tendency of this cane to degenerate rapidly is re-

markable in every part of America. The other varieties are not so liable to deteriorate. After once degenerating, these canes never recover their original color.—*Patent Office Report, 1855.*

Sources whence the Supply of Sugar is derived.—The West Indies, United States, Java, Brazil, Bengal, Mauritius, Siam, the Isle de Bourbon, and the Philippines, are the principal sources whence the supplies required for the European and American markets are derived. The quantities exported in 1857 from these countries, exclusive of molasses, may be estimated as follows:

British Colonies.		Tons.	Tons.
West Indies.....		180,000	
Mauritius.....		75,000	
British India.....		75,000	380,000
Spanish Colonies.			
Cuba.....		350,000	
Porto Rico.....		50,000	
Philippines.....		25,000	425,000
Dutch Colonies.			
Java.....		75,000	
Guiana.....		25,000	100,000
French Colonies.			
Martinique.....			80,000
Guadeloupe.....			
Isle de Bourbon, etc.....			
Danish and Swedish Colonies.			
St. Thomas.....			10,000
St. Cruz, etc.....			
Brazil.....			95,000
United States.....			100,000
China, Siam, and all other parts.....			40,000
Production of beet-root sugar in the world.....			200,000
Production of sorghum and maple-sugars, principally in the United States.....			200,000
Aggregate tons.....			1,580,000

Consumption of Sugar in the World.—In the aggregate we shall not, perhaps, be far wrong in estimating the consumption of exported colonial and tropical sugar for the year 1857 as follows:

	Tons.	Tons.
The United Kingdom.....		420,000
France.....		165,000
The Netherlands, Belgium, Germany, Prussia, Austria, Hungary, and Austrian Italy, per Dutch ports, deducting re-exports to Russia and other countries.....	125,000	
Per Hanse Towns.....		40,000
Per Antwerp.....		15,000
Per Rostock, Stettin, Königsberg, and other ports on the Baltic, excluding the imports from Holland and the Hanse Towns.....	15,000	
Trieste, Venice, Fiume, etc.....	55,000	
Spain.....		50,000
Portugal.....		10,000
Russia.....		70,000
Denmark and Sweden.....		25,000
Italy, Sicily, Malta, Turkey, Greece, and the Levant generally.....		60,000
United States.....		435,000
Canada, Australia, Cape of Good Hope, etc.....		95,000
Total tons.....		1,580,000

In the estimate for the United States, the production of cane sugar is included.

STATEMENT OF THE TOTAL QUANTITY OF RAW AND REFINED SUGAR ENTERED FOR HOME CONSUMPTION IN GREAT BRITAIN IN EACH OF THE FIVE YEARS ENDING 1856.

Year ending	Tons.	Tons.
July 5, 1852.....	365,875	increase, 55,072
" 1853.....	365,239	decrease, 3,636
" 1854.....	384,102	increase, 18,863
June 30, 1855.....	426,203	increase, 42,101
" 1856.....	372,626	decrease, 53,577

The imports have, in a partial degree, corresponded with the fluctuations in consumption, and these tables show, notwithstanding the large quantities received from the Continent toward the close of last year, and the earlier arrivals from the colonies in the present, that the imports in the year ending the 30th June last were nearly 20,000 tons less than in the preceding twelve months.

STATEMENT OF THE TOTAL QUANTITY OF RAW AND REFINED SUGAR IMPORTED INTO GREAT BRITAIN IN EACH OF THE FIVE YEARS ENDING 1856.

Year ending	Tons.	Tons.
July 5, 1852.....	396,261	increase, 25,726
" 1853.....	354,138	decrease, 42,123
" 1854.....	333,438	increase, 30,300
June 30, 1855.....	428,819	increase, 95,441
" 1856.....	400,226	decrease, 10,658

AVERAGE PRICES OF BROWN SUGAR IN THE MONTHS OF JANUARY, MARCH, MAY, JULY, SEPTEMBER, AND NOVEMBER IN THE PORT OF HAVANA DURING THE FOLLOWING TEN YEARS—WITH THE YEARLY AVERAGE VALUE—PRICES IN REALS

Years.	Jan.	March.	May.	July.	Sept.	Nov.	Aver.
1846	6 $\frac{9}{10}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	6 $\frac{1}{4}$	6 $\frac{1}{4}$	5.86
1847	5 $\frac{9}{10}$	6 $\frac{1}{8}$	6 $\frac{1}{8}$	6 $\frac{1}{8}$	6 $\frac{1}{8}$	6 $\frac{1}{8}$	6.18
1848	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	4 $\frac{1}{2}$	5 $\frac{1}{2}$	4.50
1849	5	5	5 $\frac{3}{8}$	5 $\frac{3}{8}$	6 $\frac{1}{8}$	7 $\frac{1}{2}$	5.61
1850	5	5 $\frac{3}{8}$	5 $\frac{1}{10}$	5 $\frac{1}{10}$	6 $\frac{1}{2}$	7	5.77
1851	6 $\frac{1}{2}$	5 $\frac{3}{8}$	5 $\frac{3}{10}$	5 $\frac{1}{2}$	5 $\frac{1}{2}$	4 $\frac{9}{10}$	5.37
1852	4 $\frac{3}{8}$	4 $\frac{3}{8}$	5 $\frac{1}{10}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5.10
1853	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5.61
1854	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5 $\frac{1}{2}$	4 $\frac{9}{10}$	5 $\frac{3}{8}$	5 $\frac{1}{10}$	5.37
1855	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	6 $\frac{1}{2}$	7 $\frac{1}{2}$	8	6.65
Average	5.62	5.40	5.30	5.41	5.81	6	5.60

Consumption in the United States.—The consumption of sugar in the United States has been very variable, and the increase of consumption in the last half-dozen years—since the price has been low—is very great. This will be seen in the following tables. We shall first show the importation of foreign sugar. In this account we have subtracted from the quantity imported the amount re-exported, so that the statement below gives the prime quantity imported and used in the country for the years given.

FOREIGN SUGAR IMPORTED AND CONSUMED.

Years.	Pounds.	Years.	Pounds.
1837.....	96,141,352	1848.....	244,139,753
1840.....	110,941,297	1850.....	194,433,629
1842.....	160,863,475	1853.....	443,400,644
1845.....	99,752,969	1855.....	440,000,000

It will be seen from this that since 1845, a period of ten years, the importation of sugar has quadrupled.

It will also be seen that from 1837 to 1839, and from 1850 to 1853, in each period, the importation of sugar doubled. There can be no doubt, from the exhibition of the above figures, that the reduction of prices has had great influence on the importation of sugar. Let us now turn from the foreign to the domestic supply; and first the production of Louisiana and Texas.

The *New Orleans Price Current* furnishes the number of hogsheads raised in the United States for a series of years. Reducing it to pounds, at 1000 lbs. to the hogshead, we have the following result since 1837:

Years.	Pounds.	Years.	Pounds.
1837.....	65,000,000	1848.....	220,000,000
1840.....	87,000,000	1850.....	211,503,000
1842.....	140,000,000	1853.....	449,824,000
1845.....	186,650,000	1855.....	231,427,000

We find from the table that the production of cane sugar has doubled in the last ten years, and quadrupled in fifteen. In addition to this, the common maple-sugar averages about thirty millions of pounds per annum.

Now, taking the aggregate of sugar imported, and that made in the country, we have the following supply, estimated in pounds, for successive years:

TOTAL SUGAR SUPPLY.

Years.	Pounds.	Years.	Pounds.
1837.....	191,141,352	1848.....	494,129,753
1840.....	227,941,297	1850.....	435,736,629
1842.....	330,863,475	1853.....	927,424,644
1845.....	316,402,969	1855.....	671,427,000

It may safely be assumed that the average consumption of sugar in the United States is now equal to nine hundred millions of pounds per annum. Deducting from the population of the United States three millions of slaves, who probably use very little sugar, we have the consumption of sugar equal to about 40 lbs.

average for each person. But this consumption of sugar has actually trebled in ten years! This is certainly a very extraordinary fact, and indicates a great change in the habits of living among the people of the United States. That it is a real, absolute change in the habits of life, can not be doubted. Let us show its magnitude by comparing the increase of population with the increase of sugar:

Years.	Increase Population.	Increase Sugar.
1840 to 1845	16 per cent.	50 per cent.
1845 to 1850	16 "	54 "
1850 to 1855	16 "	100 "
1840 to 1855	48 "	300 "

We then see that the consumption of sugar far outruns the increase of population. In 1840 the consumption of sugar was but 16 lbs. per individual. In 1855 it is 40 lbs.

In the period of twelve years, from 1843 to 1854 inclusive, there has been a steady diminution in the price of sugar, but not enough to account for the change we see here. The change of prices in New Orleans sugar has been as follows:

1843 to 1846	\$58 per hoghead.
1847 to 1850	47 "
1851 to 1854	46 "

The price of sugar to the consumer in the West has diminished much more rapidly than this. The increase of steamboats and the rapid decline of freights has produced a great reduction in the price of tropical products in the West; which has been steadily going on for thirty years. The effect of this, together with the increase of population at the West, has produced an extraordinary increase in the consumption of sugar, and especially in the valley of the Ohio. This increase in the Western States is quite remarkable. We find, by a statement in the New Orleans *Price Current*, that in twenty years, from 1834 to 1854, the export of sugar from New Orleans to the Western States amounted to one million eight hundred thousand hogheads, or about ninety thousand hogheads per annum; but when we examine the detail, we find the average annual increase to be very rapid. Taking the aggregate of each five years, we have the following result:

1835 to 1839, inclusive	181,500 hogheads.
1839 to 1844	278,500 "
1845 to 1849	493,000 "
1850 to 1854	806,000 "
1839 to 1844	53 per cent.
1845 to 1849	80 "
1850 to 1854	70 "

The present consumption of Louisiana sugar in the Western States, to which it is carried by steamboats, amounts to an average of 160,000 hogheads per annum. This is mainly distributed through the three great distributing points of the West—Cincinnati, Louisville, and St. Louis.

Another remarkable fact in the commerce in sugar is the increase of American refined sugar. At the present time the amount of refined sugars imported is not half what it was twenty years since; while the amount of sugar exported is four times as much.

Bounty on Exportation of refined Sugar.—Sugar refined in the United States, the growth and production of any other country, is entitled to an allowance of drawback equal to the amount of duties paid on the raw article, on due exportation thereof to any foreign port or place, subject only to the provisions that no drawback shall be allowed on any exportation when such drawback shall not amount to twelve dollars or more. To entitle the exporter to the benefit of said allowance of drawback, such exporter, at least six hours previous to the putting or lading any of the said refined sugar on board any vessel or other conveyance for exportation, shall lodge with the collector of the customs, for the district from which such importation is to be made, an entry setting forth his intention to export the same, and describing the marks, numbers, and packages, and designating the place where depos-

ited, and the name of the vessel or other conveyance in or by which, and the port or place to which, the same is intended to be exported. This entry must be according to form, and, upon presentation, be verified by the oath or affirmation of the owner or agent, or other proper officer of the manufactory in which such sugar may have been refined. If any of such sugar, after it shall have been shipped for exportation, shall be unshipped for any purpose whatever, either within the limits of the United States or within four leagues of the coast thereof, or shall be relanded within the United States from on board the vessel wherein the same shall have been laden for exportation, unless the voyage shall not be proceeded on, or shall be altered from necessity or distress, to save the ship and goods from perishing, which shall be immediately made known to the collector of the nearest district; then the sugar so unshipped, together with the vessel, her boats and equipment, shall be forfeited, and may be seized by any officer of the customs or inspection.

SUGAR TRADE OF THE UNITED STATES.

IMPORTS INTO, EXPORTS FROM, AND CONSUMPTION OF FOREIGN SUGAR IN THE UNITED STATES FOR THE FIVE YEARS ENDING THE 30TH OF JUNE, 1855.—(FROM TREASURY REPORTS.)

Years.	Imports.	Exports.	Consumption.
	Pounds.	Pounds.	Pounds.
1851.....	385,000,000	6,000,000	379,000,000
1852.....	457,000,000	9,000,000	448,000,000
1853.....	464,000,000	18,000,000	446,000,000
1854.....	455,000,000	52,000,000	403,000,000
1855.....	473,000,000	33,000,000	440,000,000

PRODUCT OF SUGAR IN THE UNITED STATES—EXPORT AND CONSUMPTION THEREOF.—(FROM CHAMPELIER'S AND TREASURY REPORTS.)

Years.	Products.	Exports.	Consumption.
	Pounds.	Pounds.	Pounds.
1851.....	457,000,000	2,000,000	255,000,000
1852.....	379,000,000	6,000,000	373,000,000
1853.....	503,000,000	10,000,000	493,000,000
1854.....	393,000,000	11,000,000	382,000,000
1855.....	263,000,000	(no data)	263,000,000

SUGAR CROP IN TEXAS, 1855.

Countries.	Number of Hogheads.
Brazoria	675
Matagorda	950
Wharton	320
Fort Bend	920
Total	5899

Thus Texas produced in the year 1855 a much better crop than the preceding one, say 9,887,900 pounds against 7,513,000 pounds during the previous season.

EXPORTS OF SUGAR OF DOMESTIC PRODUCTION FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Districts.	Brown Sugar.		Refined Sugar.	
	Pounds.	Value.	Pounds.	Value.
Passamaquoddy	850	\$0	....	....
Portland and Falmouth	500	46	....	....
Vermont	192,158	10,944	9,700	970
Salem and Beverley .....	....	....	19,367	2,644
Boston and Charlestown	16,873	1,964	1,947,866	227,374
New Bedford	6,500	500	3,600	330
Providence .....	....	....	7,707	963
New London	19,222	1,970	....	....
Stonington	5,000	600	....	....
Genesee	36,672	3,732	....	....
Oswego	558,342	57,342	414,096	48,487
Niagara	150,346	14,199	....	....
Buffalo Creek	20,961	2,042	28,213	3,140
Oswegatchie	1,600	80	....	....
New York	72,890	6,666	52,183	6,183
Champlain	552,228	61,648	9,660	1,032
Philadelphia	150	42	42,544	5,451
Baltimore	299,577	24,917	587,562	68,495
Norfolk .....	....	....	400	57
Charleston	545	78	....	....
New Orleans	19,252	2,025	810	99
Detroit	7,850	654	37	42
Chicago	921	110	....	....
San Francisco .....	....	....	12,600	2,171
Minnesota	6,675	343	4,850	718
Total	2,196,412	190,012	3,141,835	368,206

EXPORTS OF SUGAR OF FOREIGN PRODUCTION FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Brown.		White, clayed, or powdered.		Loaf and other refined.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Russia on the Baltic and North Seas.....	251,253	\$25,728	440,415	\$44,042		
Russian Possessions in North America.....	20,912	1,125			65,560	\$7,040
Danish West Indies.....					70,447	9,205
Hamburg.....					5,000	548
Holland.....	6,013	601				
Dutch West Indies.....	1,500	198			30,001	3,670
Belgium.....	1,025,578	92,261			150,000	17,000
England.....	131,886	12,302	1,600	200		
Malta.....	40,780	3,697				
Canada.....	8,463,397	577,142	422	47	57,245	5,136
Other British North American Possessions.....	140,394	13,025			244,755	28,582
British West Indies.....	1,150	50			22,293	2,599
British Honduras.....					56,484	6,779
British Possessions in Africa.....	10,319	1,160	3,840	480		
Other ports in Africa.....	6,843	834			10,472	1,315
French North American Possessions.....	95,727	8,887	1,950	254		
French West Indies.....					1,790	178
Porto Rico.....					11,054	1,369
Azores.....					3,880	383
Sardinia.....	33,474	2,551				
Turkey in Asia.....	96,730	7,512				
Hayti.....	2,077	244	8,485	994	239,454	29,575
San Domingo.....	1,934	220			1,797	215
Mexico.....	40	9			6,800	611
Central Republic.....	6,350	513				
New Granada.....	5,635	450			397,932	49,682
Venezuela.....					13,853	1,891
Brazil.....					107,713	12,499
Uruguay, or Cisplatine Republic.....					37,619	4,514
Buenos Ayres, or Argentine Republic.....					303,294	34,364
Chili.....	1,796,547	134,183			253,246	30,664
Ecuador.....					2,050	226
Sandwich Islands.....	11,920	1,164			3,257	458
China.....					8,999	964
Whale-fisheries.....	6,900	731			1,500	180
Total, year 1856-'7.....	12,168,659	\$884,593	436,712	\$46,017	2,106,430	\$249,653
From warehouse.....	7,018,266	\$493,583	3,840	\$480	978,603	\$112,514
Not from warehouse.....	5,150,393	391,060	432,872	45,537	1,127,827	136,739

IMPORTS OF FOREIGN SUGAR INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Loaf and other refined.		Candy.		Sirup of Sugar-cane.		Brown.		White, clayed, or powdered.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Swedish West Indies.....							3,564	\$209		
Danish West Indies.....							446,683	29,311		
Hamburg.....	65,560	\$7,040	530	\$70			1,912	159		
Bremen.....			2,773	395						
Holland.....	271,998	26,983					325	62	187,073	\$21,844
Dutch West Indies.....							375,088	23,952		
Dutch Guiana.....							5,353,900	253,978		
Dutch East Indies.....							2,529,745	136,069		
Belgium.....	373,305	34,232	5,423	465						
England.....			2,900	304			9,962	481		
Scotland.....							16,152	1,892		
Ireland.....							800	48		
Canada.....							62,729	3,044		
Other British N. Am. Possessions.....							227,310	16,143		
British West Indies.....							17,714,663	1,028,662		
British Guiana.....							13,725,408	710,440		
British East Indies.....							8,288,636	354,670		
France on the Atlantic.....			4,570	503	1,029	\$93				
France on the Mediterranean.....	7,950	701								
French West Indies.....							2,500	178		
French Guiana.....							480,044	14,790		
Philippine Islands.....							21,488,937	875,543		
Cuba.....					521	33	599,513,865	33,188,936	703,704	45,355
Porto Rico.....					37,344	1359	81,054,212	4,702,897		
Madeira.....									100	6
Sardinia.....			390	45						
Two Sicilies.....							626	49		
Hayti.....					65,272	1774	1,064	100		
San Domingo.....							31,960	1,558		
Mexico.....							31,821	1,737		
Central Republic.....							200	10		
Venezuela.....							37,816	1,915		
Brazil.....							19,101,751	1,079,340	327,307	19,615
Chili.....					100	50				
Sandwich Islands.....					11,154	1006	578,409	40,164		
China.....			2,267	105			3,576,598	168,327		
Total, year 1856-'7.....	718,843	\$68,906	18,353	\$1887	115,420	\$4284	774,931,815	\$42,614,604	1,218,184	\$86,820

The comparative consumption of sugar in Europe and America is a subject of interest. Mr. McCulloch, the political economist, estimated the consumption of sugar in Great Britain at 24 lbs. per individual, and says this is much more than is consumed in France or any part of the continent. At present the consumption in the United States is 40 lbs. per individual; and thus we see it is much greater than in Europe, or probably any part of the world. This fact is conclusive,

if no other could be had, that the people of the United States live more comfortably, and even luxuriously, than any other people in the world, because they have more real income to expend in subsistence and its comforts. High prices tend to diminish consumption. But, on the other hand, the capacity to consume was never so great as at present, owing to the general prosperity. A rapid increase of population will also have a tendency to prevent much reduction in the importation of sugar.

RECEIPTS OF FOREIGN SUGAR IN THE UNITED STATES.

FROM 1ST JANUARY TO 31ST DECEMBER, 1856.	Hhds. and Tensers.	Barrels.	Boxes and Cases.	Bags, Mats, and Baskets.	Total Tons of 2240 Pounds.
At New York.....	231,602	23,941	108,759	261,336	171,156
At Boston.....	28,033	1,509	73,800	180,245	88,677
At Philadelphia.....	28,902	2,331	16,294	24,957	22,182
At Baltimore.....	23,855	8,019	16,982	8,357	19,196
At New Orleans.....	7,026	1,533	31,202	.....	11,579
At other ports.....	19,673	3,203	8,942	.....	12,892
Total receipts.....	339,151	41,556	264,039	491,933	275,662
Add stock at all the ports, January 1, 1856.....	5,104	.....	15,767	.....	5,950
Total supply.....	344,255	41,956	279,806	491,933	281,612
Deduct exports and shipments inland to Canada from all the ports in 1856.....	12,555	198	46,669	455	9,501
Deduct stock at all the ports, January 1, 1857.....	331,700	41,758	266,894	491,478	272,111
Total consumption of foreign.....	13,770	.....	46,669	4,000	16,819
FROM 1ST JANUARY TO 31ST DECEMBER, 1857.	317,930	41,758	220,225	487,478	255,292
At New York.....	246,106	24,897	99,200	175,995	161,942
At Boston.....	24,712	1,647	36,223	200,366	31,720
At Philadelphia.....	28,639	5,173	6,330	63,181	22,802
At Baltimore.....	27,831	9,506	1,561	18,394	15,080
At New Orleans.....	34,506	1,010	14,760	8,297	20,349
At other ports.....	24,166	3,226	3,089	1,256	14,287
Total receipts.....	386,768	45,459	161,163	468,289	269,180
Add stock at all the ports, January 1, 1857.....	13,770	.....	46,669	4,000	16,819
Total supply.....	400,538	45,459	207,832	472,289	285,999
Deduct exports and shipments inland to Canada from all the ports in 1857.....	39,468	746	26,037	30,273	28,705
Deduct stock at all the ports, January 1, 1858.....	361,070	44,713	181,795	442,016	257,294
Total consumption of foreign.....	23,410	.....	13,139	10,312	15,529
Total consumption of foreign.....	337,630	44,713	168,656	421,704	241,765
Consumption of foreign in 1856, as above.....					255,292
Consumption of foreign in 1855.....					192,607
Increase in 1856.....					62,685
Consumption of foreign in 1856.....					255,292
Add crop of 1855-'56, of Louisiana, Texas, Florida, etc., the bulk of which came to market in 1856, and assuming the stock 1st January each year to be equal.....					123,468
Would make the total consumption of cane sugar in the United States in 1856.....					378,760
Total consumption of domestic and foreign in 1855.....					377,752
Increase in 1856.....					1,008
Consumption of foreign in 1857, as above.....					241,765
Consumption of foreign in 1856.....					255,292
Decrease in 1857.....					13,527
Consumption of foreign in 1857.....					241,765
Add crop of 1856-'57 of Louisiana, Texas, Florida, etc., the bulk of which came to market in 1857, and assuming the stock 1st January each year to be equal.....					39,000
Would make the total consumption of cane sugar in the United States in 1857.....					280,765
Total consumption of foreign and domestic in 1856.....					378,760
Decrease in 1857.....					97,995

"The foregoing statistics present in a clear and concise view the extent of this branch of our commerce for the past year. It will be seen that the total receipts of foreign unrefined sugar into the United States, during the year ending December 31, 1857, were 269,180 tons, against receipts in 1856 of 275,662 tons, and in 1855 of 205,064 tons; and the quantity of this description taken for consumption in 1857 was 241,765 tons, against 255,292 tons in 1856, and 192,607 tons in 1855, being a decrease in the consumption of foreign in 1857, as compared with 1856, of 13,527 tons, or $5\frac{2}{7}$ per cent.; while the total consumption of foreign and domestic in 1857 was 280,765 tons, against a total consumption in 1856 of 378,760 tons; in 1855, 377,752 tons; in 1854, 385,298 tons; in 1853, 372,989 tons; in 1852, 315,217 tons; and in 1851, 288,485 tons—making a decrease in the total deliveries for consumption in 1857, as compared with 1856, of 97,995 tons, or $25\frac{2}{3}$ per cent. If we discard entirely the Melado, etc., the deficiency in the consumption of 1857 will be considerably greater, as it would then stand—Consumption of foreign, 220,644 tons, against a consumption of foreign in 1856 of 255,292 tons, decrease $13\frac{3}{4}$ per cent.; or, total consumption of foreign and domestic cane sugar in 1857, 259,644 tons, against a total consumption in 1856 of 378,760 tons, being the large decrease of $31\frac{4}{5}$ per cent.

"We reduce our estimate of the quantity of sugar made from molasses during the past year; the high and very unusual prices which prevailed during the largest part of it made the business an unprofitable one. After the heavy decline in the price of molasses,

which took place in October, manufacturing was resumed with considerable vigor, but not to a sufficient extent to repair the previous large deficiency. An intelligent observer estimates the quantity of sugar made from molasses in 1857 at 10,300 tons, yielded from 46,000 hhds. molasses, against 11,875 tons, from 53,000 hhds. in 1856; 11,160 tons, from 50,000 hhds. in 1855; and 14,923 tons, from 66,500 hhds. in 1854; if we add to this the product of the maple-tree the past year, say 35,000 tons, and the estimated consumption of California and Oregon, 6000 tons, would make the total consumption of raw sugar in the United States in 1857, 332,065 tons, against a total consumption in 1856 of 412,135 tons—making the decrease in the consumption of all kinds, say $19\frac{1}{10}$ per cent. The quantity of foreign sugar consumed in 1857 by the several ports (not including the coastwise receipts, they being embraced in the calculation at the original port of entry), was—New York, 142,187 tons; Boston, 28,111; Philadelphia, 21,157; Baltimore, 18,869; New Orleans, 20,448; and other ports, 10,993: total, 241,765 tons.

"A somewhat novel feature in this trade has been the large importation during the past year of the article known as melado, etc., the receipts into the country having reached equal to about 70,000 hhds.—say 23,400 tons sugar (deducting 50 per cent. from weight, to make them equal to ordinary grades sugar, which, it will be observed, we have done throughout the statement in all cases of receipts, stocks, and exports). We understand, however, that the importation of this article has proved far from lucrative, and the proba-

bilities are that the commerce in these goods for the year now entered upon will be comparatively small.

"Mercantile enterprise seems to have ransacked the 'utmost parts of the earth' to procure supplies of this article, so essential to the comfort of the human family; and not only the 'highways,' but the 'by-ways' of commerce have been diligently explored, and scarce a field left ungleamed; hence we have seen within the twelve-month cargoes and invoices landed here from parts of the globe hitherto scarcely known as sugar-producing countries.

"The very extraordinary prices that sugar has commanded during the past two or three years, but especially the first half of last year, has been the means of transferring this article from the catalogue of the necessities to that of the luxuries of life, and the consumption, as we have seen, has been greatly curtailed. If we add to this the partial, and in many parts of the country the entire failure of the fruit crops (very large quantities of sugar being usually consumed, when fruits are abundant, in the manufacture of preserves, jellies, etc.), together with the intense and almost unparalleled money panic, and rigid economic contraction, which supervened from early autumn till now, the great diminution in the consumption is readily accounted for. Bread, and a few other articles of daily use, are very difficult to economize in, at almost any valuation; but the case is different with sugar—it assumes the character of a luxury, or necessity, according to its cost.

"A by no means insignificant cause aiding the reduction of the consumption of cane sugar in this country the past year, may be traced to the unusual, and, we believe, unprecedented yield of sugar made from the maple-tree. The season was one of the most favorable remembered, extending over a period of nine weeks (three to four weeks being the usual length), and the farmers, stimulated by the prices that were current for sugar, labored indefatigably at the sap kettles; and the result is, that the product of the United States, the past season, of this description of sugar, is set down at 36 @ 38,000 tons. There are, unfortunately, no reliable data to determine the extent of the crop, but after carefully collating the information in our possession, we have no doubt that the yield was fully up to 35,000 tons—a very important item in our consumption, and contributing in no inconsiderable degree to the relief of the last year's deficiency in the product of the sugar-fields of Louisiana.

"The sanguine expectations that were entertained by many in the early part of the year with regard to the sorgo, or African and Chinese imphee, have not been realized. The experiment of cultivating this plant for its sugar properties has been entered into the past season quite extensively in many parts of the country, but, as far as we can gather, though there have been a few isolated cases of success, the general result has been unsatisfactory. A very fair quality of molasses has been produced, but there seems to be a difficulty in concentrating and granulating the sirup, owing either to a deficiency of saccharine qualities, or an ignorance in treating the juice of the cane; at all events, we believe it is generally conceded that crystallizable sugar can not be obtained here from the imphee in sufficient quantities to repay the labor and expense of cultivating it, even when sugars rule at a high currency.

"The supply of foreign needed, is governed in agreeable measure by our domestic crop, and hence there is a general interest felt as to the probable extent of the yield. In our last annual statement we said that the Louisiana crop, then coming forward, was estimated at from 80,000 to 120,000 hhds.; the actual out-turn was only 73,976 hhds., against 449,324 hhds. in 1853, the large crop year."—*N. Y. Price Current*, January, 1858.

The present crop of Louisiana, concerning which such high expectations were entertained during the

early part of last year, while yet growing, has again proved a comparative failure, notwithstanding a larger breadth of land was placed under cultivation. Planters having been greatly stimulated by the high currency, and having during the fall and winter months of 1856 and 1857, little or no sugar to make, were enabled to place all their laborers into their fields, and put them into a very high state of cultivation; but a late spring, a dry summer and fall, and a heavy and unexpected frost occurring on the 20th November, disappointed their hopes, and the yield will not, according to the best authorities, exceed 250,000 hhds., and it may not reach that figure. The consumption of the valley of the Mississippi, including New Orleans and neighborhood, with sugars at a moderate price, is estimated at 150,000 @ 160,000 hhds. (it has reached 208 @ 210,000 hhds. when low rates prevailed), leaving available for shipment to the Gulf and Atlantic ports 80,000 @ 90,000 hhds.

The preceding tables show that the receipts into this port direct, of foreign unrefined sugar, for the year ending December 31, 1857, were 161,942, against an import of 171,156 tons in 1856, 126,844 in 1855, and 99,491 in 1854; and the quantity of foreign taken from here for consumption in 1857 was 142,892 tons, against a consumption of foreign in 1856 of 161,455; in 1855, 121,356; and in 1854, 92,500.

The port of New York has received and delivered for consumption 58.81 per cent. of the whole quantity of foreign imported into the United States during the past year.

It having been ascertained at an early period of the season that the crop of Louisiana sugar would prove not only deficient, but almost an entire failure, and that the fields of Cuba would scarcely return an average yield, an impetus was immediately given to the foreign trade, seldom if ever before witnessed, and the importation of the first six months was without a parallel in its history. The extreme and unusual prices soon told, however, with unerring effect upon the consumption, and the contrast between the departure of the year 1857 and its commencement is sharply defined; buoyancy, elasticity, and confidence marked the opening months—depression, languor, and timidity the closing ones.

The past year will be long remembered by those engaged in the sugar trade as one of unparalleled excitement, great fluctuations, and no little disaster, stamping it as far the most eventful one, at least in the present century. The prices of this article, which had been steadily advancing for nearly three years, reached in early summer their maximum, and the decline since then has been rapid and extreme; there are, however, but few interests that have suffered so greatly from the effects of the financial hurricane, that has devastated almost the whole commercial world during the past four months, as the one now under review, and the number is also still less that have withstood the storm more bravely; this fact seems to warrant the belief that the trade rests on a more than ordinary substantial basis. The losses that have been sustained, though considerable, have fallen in a great measure upon the planters and speculators of Cuba, on whose account the bulk of the stock here was held, and they having during the preceding two years realized large advances by the rapid appreciation in prices which have ruled in all the marts of the world, and which placed them in a very strong position, have been enabled to support these losses, it is believed, with comparatively little inconvenience.—*Ibid.*

At the commencement of the year the stock of foreign at this port was 9816 tons, against a stock of 3049 tons, January 1, 1856. During the early part of the month of January, the demand was quite moderate from the trade, and the refiners being generally engaged, according to custom, in making their annual repairs, etc., to their machinery, the business was

small; this dullness, however, was soon followed by an increased activity. It having been satisfactorily ascertained that the crop of Louisiana would be a very small one, refiners entered the market with spirit, and prices advanced on all kinds $\frac{1}{4}$ @ $\frac{1}{2}$ of a cent. A firm, buoyant feeling prevailed throughout the month, though at the close a falling off in the demand was observable; full prices were, however, realized without difficulty, holders having constantly the advantage. On the 18th, the first arrival of new crop melado reached here, and sold at 7 $\frac{1}{2}$ cents; and on the 15th, 37 hhds. new Cuba muscovado arrived, and was placed at 10 @ 10 $\frac{1}{2}$ cents, the opening price the previous year

being 7 $\frac{1}{2}$ @ 8 cents. The sales and resales for the month were 75 hhds. New Orleans, 4800 hhds. and 18,600 boxes; Cuba, 1850 hhds.; Porto Rico, 230 hhds.; English Island, 286 cases and 4328 bags Brazil, and 613 hhds. melado.—For further information, see *De Bow's Review*, vii. 56 (R. S. McCulloch), iii. 244, 294, x. 218, xii. 646, xiii. 57, 176, iv. 229, 383, 511, v. 349; *Southern Quarterly Review*, iii. 329; *North American Review*, xl. 415; *Edinburgh Review*, i. 426.

The following table shows the range of prices of sugar in New York each month, and average value of the various descriptions of sugar each year, for the past four years:

THE RANGE OF PRICES OF SUGAR AT NEW YORK DURING FOUR YEARS—1854-57.

Years.	New Orleans.	Cuba Muscovado.	Porto Rico.	Havana, white.	Havana, brown.	Manilla.	Brazil, white.	Brazil, brown.
1854.								
January.....	4 @ 5 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 5 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 6	6 $\frac{1}{2}$ @ 7	5 $\frac{1}{2}$ @ 6 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 5	6 $\frac{1}{2}$ @ 6	5 @ —
February.....	4 @ 6	4 $\frac{1}{2}$ @ 5 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 6	6 $\frac{1}{2}$ @ 7	5 @ 6 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 5	6 $\frac{1}{2}$ @ 6 $\frac{1}{2}$	5 @ —
March.....	4 @ 6 $\frac{1}{2}$	4 @ 5 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 6	6 $\frac{1}{2}$ @ 7	5 @ 6 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 5	6 $\frac{1}{2}$ @ 6 $\frac{1}{2}$	5 @ —
April.....	5 $\frac{1}{2}$ @ 6	3 $\frac{1}{2}$ @ 5 $\frac{1}{2}$	4 @ 6	6 $\frac{1}{2}$ @ 7	4 $\frac{1}{2}$ @ 6 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 5	6 $\frac{1}{2}$ @ 6 $\frac{1}{2}$	5 @ —
May.....	3 $\frac{1}{2}$ @ 5 $\frac{1}{2}$	4 @ 5 $\frac{1}{2}$	4 @ 5 $\frac{1}{2}$	6 $\frac{1}{2}$ @ 7	5 @ 6 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 5	.....	.....
June.....	3 $\frac{1}{2}$ @ 5 $\frac{1}{2}$	4 @ 5 $\frac{1}{2}$	4 @ 5 $\frac{1}{2}$	6 $\frac{1}{2}$ @ 7	5 @ 6 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 5	.....	.....
July.....	3 $\frac{1}{2}$ @ 5 $\frac{1}{2}$	4 @ 5 $\frac{1}{2}$	4 @ 5 $\frac{1}{2}$	6 $\frac{1}{2}$ @ 7	5 @ 6 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 5	.....	.....
August.....	4 $\frac{1}{2}$ @ 6	4 $\frac{1}{2}$ @ 5 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 6 $\frac{1}{2}$	7 @ 7 $\frac{1}{2}$	5 @ 6 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 5	.....	.....
September.....	4 $\frac{1}{2}$ @ 6	4 $\frac{1}{2}$ @ 5 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 6 $\frac{1}{2}$	7 @ 7 $\frac{1}{2}$	5 @ 6 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 5 $\frac{1}{2}$	.....	.....
October.....	4 @ 6 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 6	5 @ 6 $\frac{1}{2}$	7 @ 7 $\frac{1}{2}$	5 @ 6 $\frac{1}{2}$	5 @ 5 $\frac{1}{2}$	.....	.....
November.....	5 @ 6 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 6	5 @ 6 $\frac{1}{2}$	7 @ 7 $\frac{1}{2}$	5 @ 7	5 $\frac{1}{2}$ @ 5 $\frac{1}{2}$	.....	.....
December.....	4 $\frac{1}{2}$ @ 6	4 @ 5 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 6 $\frac{1}{2}$	7 @ 7 $\frac{1}{2}$	— @ 7	5 $\frac{1}{2}$ @ 5 $\frac{1}{2}$	.....	.....
Average for the year ..	\$4.99	\$4.83	\$5.33	\$7.00	\$5.88	\$5.02	\$6.50	\$5.00
1855.								
January.....	4 $\frac{1}{2}$ @ 5 $\frac{1}{2}$	4 @ 5 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 6	6 $\frac{1}{2}$ @ 7	5 @ 6 $\frac{1}{2}$	5 $\frac{1}{2}$ @ 5 $\frac{1}{2}$	.....	— @ 5 $\frac{1}{2}$
February.....	4 @ 6	4 @ 5 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 6	6 $\frac{1}{2}$ @ 7	5 @ 6 $\frac{1}{2}$	5 $\frac{1}{2}$ @ 5 $\frac{1}{2}$	.....	— @ 5 $\frac{1}{2}$
March.....	4 @ 6	4 @ 5 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 6	6 $\frac{1}{2}$ @ 7	5 @ 6 $\frac{1}{2}$	5 $\frac{1}{2}$ @ 5 $\frac{1}{2}$	— @ 6 $\frac{1}{2}$	— @ 5 $\frac{1}{2}$
April.....	4 $\frac{1}{2}$ @ 6	4 $\frac{1}{2}$ @ 5 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 6 $\frac{1}{2}$	6 $\frac{1}{2}$ @ 7 $\frac{1}{2}$	5 @ 6 $\frac{1}{2}$	5 $\frac{1}{2}$ @ 5 $\frac{1}{2}$	— @ 6 $\frac{1}{2}$	.....
May.....	4 $\frac{1}{2}$ @ 6 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 6 $\frac{1}{2}$	5 @ 6 $\frac{1}{2}$	6 $\frac{1}{2}$ @ 7 $\frac{1}{2}$	4 $\frac{1}{2}$ @ 7 $\frac{1}{2}$	5 $\frac{1}{2}$ @ 5 $\frac{1}{2}$	— @ 6 $\frac{1}{2}$	.....
June.....	5 $\frac{1}{2}$ @ 6 $\frac{1}{2}$	5 @ 6 $\frac{1}{2}$	5 $\frac{1}{2}$ @ 6 $\frac{1}{2}$	7 $\frac{1}{2}$ @ 7 $\frac{1}{2}$	5 @ 7 $\frac{1}{2}$	5 $\frac{1}{2}$ @ 5 $\frac{1}{2}$	.....	.....
July.....	5 @ 6 $\frac{1}{2}$	5 $\frac{1}{2}$ @ 6 $\frac{1}{2}$	5 @ 6 $\frac{1}{2}$	7 $\frac{1}{2}$ @ 8	5 $\frac{1}{2}$ @ 7 $\frac{1}{2}$	.....	.....	.....
August.....	5 $\frac{1}{2}$ @ 8	5 $\frac{1}{2}$ @ 7 $\frac{1}{2}$	6 @ 8	7 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	6 @ 8	6 $\frac{1}{2}$ @ 6 $\frac{1}{2}$	— @ 7 $\frac{1}{2}$	— @ 6 $\frac{1}{2}$
September.....	6 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	6 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	7 @ 8 $\frac{1}{2}$	8 $\frac{1}{2}$ @ 9	6 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	6 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	.....	.....
October.....	6 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	6 $\frac{1}{2}$ @ 8	6 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	8 @ 9	6 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	6 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	.....	.....
November.....	6 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	6 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	6 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	8 @ 8 $\frac{1}{2}$	6 $\frac{1}{2}$ @ 8	6 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	.....	.....
December.....	7 $\frac{1}{2}$ @ 9	5 $\frac{1}{2}$ @ 8	7 @ 8 $\frac{1}{2}$	8 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	7 @ 8	7 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	.....	— @ 7 $\frac{1}{2}$
Average for the year ..	\$6.25	\$6.04	\$6.37	\$7.66	\$6.54	\$6.54	\$6.46	\$5.97
1856.								
January.....	8 @ 9	7 @ 8	7 @ 8 $\frac{1}{2}$	8 $\frac{1}{2}$ @ 9 $\frac{1}{2}$	7 @ 8 $\frac{1}{2}$	7 $\frac{1}{2}$ @ —	.....	7 $\frac{1}{2}$ @ —
February.....	7 $\frac{1}{2}$ @ 9	7 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	7 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	9 @ 9 $\frac{1}{2}$	7 $\frac{1}{2}$ @ 9	.....	.....	7 $\frac{1}{2}$ @ —
March.....	7 @ 9	6 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	7 @ 9	9 @ 9 $\frac{1}{2}$	7 $\frac{1}{2}$ @ 9 $\frac{1}{2}$	.....	.....	.....
April.....	6 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	6 @ 8	7 @ 9	9 $\frac{1}{2}$ @ —	7 @ 9 $\frac{1}{2}$	7 $\frac{1}{2}$ @ —	.....	7 $\frac{1}{2}$ @ —
May.....	6 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	6 @ 8 $\frac{1}{2}$	6 $\frac{1}{2}$ @ 9	9 @ 9 $\frac{1}{2}$	7 @ 9 $\frac{1}{2}$	7 @ 7 $\frac{1}{2}$	.....	7 $\frac{1}{2}$ @ —
June.....	6 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	6 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	7 @ 9 $\frac{1}{2}$	9 @ 10	7 $\frac{1}{2}$ @ 9 $\frac{1}{2}$	.....	.....	7 $\frac{1}{2}$ @ 8
July.....	7 $\frac{1}{2}$ @ 9	7 $\frac{1}{2}$ @ 9 $\frac{1}{2}$	7 $\frac{1}{2}$ @ 9 $\frac{1}{2}$	10 @ 10 $\frac{1}{2}$	7 $\frac{1}{2}$ @ 11	8 $\frac{1}{2}$ @ —	.....	7 @ 8 $\frac{1}{2}$
August.....	8 @ 9 $\frac{1}{2}$	8 @ 9	8 $\frac{1}{2}$ @ 10	.....	8 $\frac{1}{2}$ @ 11	8 $\frac{1}{2}$ @ —	10 @ 10 $\frac{1}{2}$	8 $\frac{1}{2}$ @ —
September.....	8 @ 9 $\frac{1}{2}$	7 $\frac{1}{2}$ @ 9 $\frac{1}{2}$	7 $\frac{1}{2}$ @ 10	11 @ 12	8 $\frac{1}{2}$ @ 10 $\frac{1}{2}$	.....	9 $\frac{1}{2}$ @ 10	8 $\frac{1}{2}$ @ —
October.....	8 @ 10	7 $\frac{1}{2}$ @ 9 $\frac{1}{2}$	8 @ 10	11 @ 12	8 $\frac{1}{2}$ @ 10 $\frac{1}{2}$	8 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	9 $\frac{1}{2}$ @ 9 $\frac{1}{2}$	8 $\frac{1}{2}$ @ —
November.....	8 @ 10 $\frac{1}{2}$	7 $\frac{1}{2}$ @ 10 $\frac{1}{2}$	8 @ 10 $\frac{1}{2}$	11 @ 12 $\frac{1}{2}$	9 @ 10 $\frac{1}{2}$	9 @ —	.....	.....
December.....	8 @ 11	7 $\frac{1}{2}$ @ 10 $\frac{1}{2}$	8 $\frac{1}{2}$ @ 10 $\frac{1}{2}$	11 $\frac{1}{2}$ @ 12 $\frac{1}{2}$	9 @ 11	8 $\frac{1}{2}$ @ 9	.....	.....
Average for the year ..	\$5.33	\$5.02	\$5.52	\$10.23	\$8.90	\$8.05	\$9.53	\$7.84
1857.								
January.....	9 @ 11	8 @ 10 $\frac{1}{2}$	8 $\frac{1}{2}$ @ 11	11 $\frac{1}{2}$ @ 12 $\frac{1}{2}$	8 $\frac{1}{2}$ @ 11 $\frac{1}{2}$	8 $\frac{1}{2}$ @ 9 $\frac{1}{2}$	.....	— @ 9 $\frac{1}{2}$
February.....	9 $\frac{1}{2}$ @ 11	8 $\frac{1}{2}$ @ 10 $\frac{1}{2}$	9 @ 11	12 @ 12 $\frac{1}{2}$	9 @ 11 $\frac{1}{2}$	— @ 9 $\frac{1}{2}$	.....	— @ 9 $\frac{1}{2}$
March.....	.....	8 $\frac{1}{2}$ @ 10 $\frac{1}{2}$	9 @ 11	12 @ 12 $\frac{1}{2}$	9 @ 11 $\frac{1}{2}$	9 $\frac{1}{2}$ @ 9 $\frac{1}{2}$	.....	— @ 9 $\frac{1}{2}$
April.....	.....	8 $\frac{1}{2}$ @ 11 $\frac{1}{2}$	9 $\frac{1}{2}$ @ 11 $\frac{1}{2}$	12 @ 14	9 $\frac{1}{2}$ @ 12 $\frac{1}{2}$	9 $\frac{1}{2}$ @ 10 $\frac{1}{2}$	.....	— @ 9 $\frac{1}{2}$
May.....	.....	9 $\frac{1}{2}$ @ 11 $\frac{1}{2}$	9 $\frac{1}{2}$ @ 12 $\frac{1}{2}$	13 @ 14	10 @ 12 $\frac{1}{2}$	— @ 10 $\frac{1}{2}$	.....	9 $\frac{1}{2}$ @ 10 $\frac{1}{2}$
June.....	.....	9 $\frac{1}{2}$ @ 11 $\frac{1}{2}$	10 @ 12	13 @ 14	10 $\frac{1}{2}$ @ 12 $\frac{1}{2}$	10 $\frac{1}{2}$ @ 10 $\frac{1}{2}$	.....	— @ 10 $\frac{1}{2}$
July.....	.....	7 $\frac{1}{2}$ @ 10 $\frac{1}{2}$	8 $\frac{1}{2}$ @ 11 $\frac{1}{2}$	12 @ 14	9 $\frac{1}{2}$ @ 12 $\frac{1}{2}$	9 @ 10 $\frac{1}{2}$	.....	.....
August.....	.....	6 $\frac{1}{2}$ @ 10 $\frac{1}{2}$	8 @ 11 $\frac{1}{2}$	11 $\frac{1}{2}$ @ 13	7 $\frac{1}{2}$ @ 11 $\frac{1}{2}$	8 @ 9 $\frac{1}{2}$	.....	.....
September.....	.....	6 $\frac{1}{2}$ @ 9 $\frac{1}{2}$	7 @ 10 $\frac{1}{2}$	10 $\frac{1}{2}$ @ 12 $\frac{1}{2}$	6 @ 11	— @ 8	.....	.....
October.....	.....	6 @ 8 $\frac{1}{2}$	6 $\frac{1}{2}$ @ 9 $\frac{1}{2}$	10 @ 11	6 @ 10	6 $\frac{1}{2}$ @ 6 $\frac{1}{2}$	.....	.....
November.....	.....	4 $\frac{1}{2}$ @ 8	5 $\frac{1}{2}$ @ 9	8 $\frac{1}{2}$ @ 10 $\frac{1}{2}$	5 $\frac{1}{2}$ @ 9	6 $\frac{1}{2}$ @ —	.....	.....
December.....	5 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	5 @ 7 $\frac{1}{2}$	5 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	8 $\frac{1}{2}$ @ 9 $\frac{1}{2}$	5 $\frac{1}{2}$ @ 8 $\frac{1}{2}$	— @ 6 $\frac{1}{2}$	.....	.....
Average for the year ..	\$9.04	\$8.69	\$9.41	\$11.574	\$9.69	\$8.58	.....	\$9.74

—See *Shipping and Commercial List*, New York.

Beet-root Sugar.—The manufacture of sugar from beet-root is carried on to a very considerable extent in several parts of the Continent, particularly in France and the north of Germany. It began in France during the exclusion of colonial products in the reign of Napoleon, and received a severe check at the return of peace, by the admission of West India sugars at a reasonable duty. It is probable, indeed, that it would long since have been entirely extinguished but for the additions made to the duties on colonial and foreign sugars in 1820 and 1822. After the last-mentioned epoch, however, the production of beet-root sugar began rapidly to increase; and such was its progress, that though, in 1828, its produce did not exceed

4,000,000 kilograms, it amounted in 1838 to 39,199,408 kilograms.

Up to the middle of the 18th century the cane was the only plant known to contain sugar. In 1747 M. Marggraf, director of a department of the Royal Academy of Sciences in Berlin, first called attention to the saccharine substance in the parsnep, the birch juice, and carrot. At a later period, Parmentier discovered the same ingredient in the composition of corn and chestnuts. But the chemical experiments made by these savans accomplished no practical result. Yet, even before Napoleon I. had imposed on Europe the principle of absolute prohibition, the necessity of a substitute for the expensive colonial sugar was urgently felt. As

ductiveness of the land, and its lower price in the colonies, are more than counterbalanced in Europe by the lower rates of interest on the capital required for the purchase of these lands, and the erection of the factories; the more intelligent, efficient, and cheaper labor; the greater abundance and cheapness of the important item of fuel; the advantages of a home market; and the accessory profits derived from the culture of beet-root, in the shape of fodder for cattle, we reserve for a concluding article, together with a review of the practical inducements offered to the cultivators of beet-root, and the manufacture of sugar, by the conditions of the Northern and Middle States of the Union.

Maple-sugar.—A species of maple (*Acer saccharinum*, Linn.) yields a considerable quantity of sugar. It grows plentifully in the United States and in Canada, and in some districts furnishes the inhabitants with most of the sugar they make use of. Though inferior both in grain and strength to that which is produced from the cane, maple-sugar granulates better than that of the beet-root, or any other vegetable, the cane excepted. It is produced from the sap, which is obtained by perforating the tree in the spring to the depth of about two inches, and setting a vessel for its reception. The quantity afforded varies with the tree and the season. From two to three gallons may be about the daily average yield of a single tree; but some trees have yielded more than twenty gallons in a day, and others not more than a pint. The process of boiling the juice does not differ materially from what is followed with the cane juice in the West Indies. It is necessary that it should be boiled as soon after it is drawn from the tree as possible. If it be allowed to stand above twenty-four hours, it is apt to undergo the vinous and acetous fermentation, by which its saccharine quality is destroyed.—BOUCHETTE'S *British America, Timber Trees and Fruits*, Library of Entertaining Knowledge. See article MAPLE-SUGAR.

Chinese Sugar-cane.—This new plant seems to be destined to take an important position among our economical products. Its seeds were sent some six years ago from the north of China, by M. de Montigny, to the Geographical Society of Paris. From a cursory examination of a small field of it, growing at Verrieres in France, in the autumn of 1854, Mr. D. J. Browne, then on a mission from the U. S. Patent Office for collecting agricultural information and products, was led to infer that, from the peculiarity of the climate in which it was growing and its resemblance to Indian corn, it would flourish in any region wherever that plant would thrive. From this source he obtained some 200 pounds of the seed, which was distributed in small packages among members of Congress, with the view of experimenting with it in all parts of the Union, and thereby ascertaining its adaptation to the soil and climate, and its economical value in the United States. In numerous instances the results proved highly satisfactory, as it attained the height of twelve or fifteen feet as far north as St. Paul, Minnesota, and matured its seeds at various points in Massachusetts, New York, Pennsylvania, and Illinois. The following year, while in France on a similar mission as above, Mr. Browne obtained several bushels of the seed of this plant, grown from that reputed to have been brought from South Africa by Mr. Leonard Wray, of London, and which has since proved to be identical with that obtained in 1854.

There appears to be a doubt among many in Europe, as well as in this country, as to the true botanical name of this plant. M. Louis Vilmorin, a scientific cultivator of Paris, provisionally gave it the name of *Holcus saccharatus*, which had previously been applied to the common broom-corn, if not to other species, or at least varieties, of some allied plant. He also conjectured that it might be the *Sorghum vulgare* (*Andropogon sorghum* of others), and thought that it might comprehend a variety, as well as *Andropogon cafra*,

bicola, etc., of Kunth. Mr. Wray, who has devoted much time and attention to the cultivation of this plant, with the view of extracting sugar from its juice, at Cape Natal and other places, states that in the southeast part of Caffraria there are at least fifteen varieties of it, some of them growing to a height of twelve and fifteen feet, with stems as thick as those of the sugar-cane (*Saccharum officinale*). M. Vilmorin also says that, in a collection of seeds sent to the Museum of Natural History at Paris in 1840, by M. d'Abadre, there were thirty kinds of sorghum, among the growth of which he recognized several plants having stems of a saccharine flavor. Others are of the opinion that the common broom-corn (*Holcus saccharatus*), the chocolate or Guinea corn (*Sorghum vulgare*), and the Chinese sugar-cane (*Sorghum saccharatum*), all of which contain more or less saccharine matter, belong to the same species, but are variations caused by differences of soil and climate, or by a disposition to sport after the manner of Indian corn, and other plants under cultivation. The Chinese sugar-cane differs from the others in containing a far larger proportion of juice, and consequently is more valuable for fodder and other economical uses.

In 1766 a plant analogous to the one in question was experimented upon at Florence, in Italy, by Pietre Arduino, for the extraction of sugar; yet it must have been of a very different variety, as he describes its seeds as of a clear brown color, while those of the Chinese sugar-cane are of a shining jet black, and in appearance identical with those of the *Sorghum vulgare* of the old collections.

Description and Habit of its Growth.—The Chinese sugar-cane, when cultivated on ordinary land in the United States, somewhat after the manner of broom-corn, grows to a height of from eight to sixteen feet, while in Europe it does not attain more than half this altitude. Its stems are straight and smooth, often covered with a white bloom or down, having leaves somewhat flexuous, falling over and greatly resembling in appearance those of Indian corn, but more elegant in its form. Where cultivated in hills, containing eight or ten stalks each, it puts forth at its top a conical pinnacle of dense flowers, green at first, but changing into violet shades, and finally into dark purple, at maturity. In France, and in the central and northern sections of the United States, it has thus far proved an annual; but from observations made by M. Vilmorin, as well as some experiments in our Southern States, it is conjectured that, from the vigor and fullness of the lower part of the stalks in autumn, by protecting them during the winter, they would produce new plants the following spring. It stands dearth far better than Indian corn, and will resist the effects of considerable frost without injury, after the panicles appear, but not in its younger and more tender state. If suffered to remain in the field after the seeds have ripened and been removed, when the season is sufficiently warm and long, new panicles will shoot out at the topmost joints one or more to each stalk, and mature a second crop of seeds. The average yield of seed to each panicle is at least a gill.

Sulphur, or Brimstone (Fr. *Soufre*; Ger. *Schwefel*; It. *Zolfo*, *Solfo*; Sp. *Azufre*; Arab. *Kibreet*), a crystallized, hard, brittle substance, commonly of a greenish yellow color, without any smell, and of a weak though perceptible taste; its specific gravity is from 1.9 to 2.1. It burns with a pale blue flame, and emits a great quantity of pungent, suffocating vapors. In some parts of Italy and Sicily it is dug up in a state of comparative purity. That which is manufactured in England is obtained by the roasting of pyrites. It is denominated *rough* or *roll sulphur*, from its being cast in cylindrical moulds, and contains 7 per cent. of orpiment. The Italian roll sulphur does not contain more than 3 per cent. of a simple earth; and is, therefore, in higher estimation than the English. When

ro. sulphur is purified, it receives the name of *sublimed sulphur*, and is in the form of a bright yellow powder. —Thomson's *Chemistry*, etc.

Sumatra, the most western of the Sunda islands, Asiatic Archipelago, and, next to Borneo, the largest in the eastern seas, between lat. $5^{\circ} 40' N.$, and $6^{\circ} S.$, and long. $95^{\circ} 20'$ and $106^{\circ} E.$, separated on the north-east from the Malay peninsula by the Strait of Malacca, having east the Java Sea, and the Strait of Sunda separating it from the island of Java, on other sides the Indian Ocean. Length northwest to southeast 1100 miles; breadth 60 to 240 miles. The area has been estimated at from 128,000 to 180,000 square miles; population 1,437,360, mostly Malays, but partly of the Papuan negro race, with Moors in the northwest, and Dutch and other foreigners. The eastern half of the island is mostly level or undulating, and along the coasts there are many sandy and marshy plains traversed by the Siak, Judrageri, Jambi, Palembang, and other rivers of large size, but which have been little explored by Europeans. Climate in the plains is less oppressive than might have been expected; at mid-day the thermometer usually ranges between 82° and 85° , sometimes rising to 88° ; but at sunrise not more than 70° Fahr. Dense fogs, thunder-storms, and water-spouts off the coast are frequent. Much of the island is occupied by dense forests. Products consist of rice, sago, millet, cocoa-nuts, betel, sugar-cane, an abundance of tropical fruits, turmeric, ginger, coffee, ratans, scented wood, teak and other timber, and the European colonists successfully cultivate the vine; but the principal articles of export are pepper to about three million pounds yearly, gold dust, copper ore, sulphur, camphor, in the north; nutmegs, cloves, and mace, in the Dutch territory of Bencoolen; and coral, benzoin, gutta percha, tin, in Palembang and Menankabow; many of which articles are brought by natives from the interior, and bartered at the ports for Indian and European manufactured goods. Iron, coal of an inferior quality, and naphtha, are among the mineral products. The inhabitants build their houses on posts, and adopt other usages of ultra-Gangetic nations; they manufacture gold and silver filagree work with great skill, also silk and cotton fabrics, earthen-ware, arms, and domestic goods generally; from Palembang, lacquered basins, cane boxes, and ratan mats of the best quality are exported to Singapore; and it is said that cannon were formerly cast at Acheen, in the northwest, which territory is, however, peopled by a race of Moorish descent. Imports, besides manufactured goods already mentioned, are opium and salt from India, coarse porcelain, iron wares, gold thread from China, striped cottons, spices, kris and other weapons from Java, Celebes, and other islands of the Archipelago. The island is divided among a number of native states, the chief being Acheen, Menankabow in the central mountain region, Batak, Siak, Jambi, Palembang, Lampong, along the east from north to south, mostly under the supremacy of the Dutch, who possess the settlements of Bencoolen and Padang, on the western coast.

Sumptuary Laws. Laws to restrain excess in dress, furniture, eating, etc. Those of Zaleucus ordained that no woman should go attended by more than one maid in the street, unless she were drunk; and that she should not wear gold or embroidered apparel, unless she designed to act unchastely, 450 B.C. —DROG. LAERT. This law checked luxury. The *Lex Orchia* among the Romans limited the guests at feasts, and the number and quality of the dishes at an entertainment; and it also enforced that during supper, which was the chief meal among the Romans, the doors of every house should be left open. The English sumptuary laws were chiefly in the reigns of Edward III. and Henry VIII. —See DRESS, LUXURY, etc.

Supercargo, a person employed to oversee the cargo or sale of the cargo. The duties of a supercargo are not specially regulated by law, but are dependent

upon special agreement between the owners of the cargo and himself. Generally the power of a supercargo does not extend beyond the cargo, the master alone being responsible, and has its limits in the arrival and departure from trading ports. However extended may be the authority conceded to a supercargo, such authority must be subordinate to the common interest of the vessel and cargo. When the powers of a supercargo extend to the navigation of a ship, they must be communicated through the captain, and have reference only to the destination of the ship, and not to the particular management of the ship. Even a supercargo, in cases of necessity, and acting with discretion, may bind the owners of a ship. —POTHIER, *Charte-Partie*; DODSON'S *Admiralty Rep.*, i. 278. See articles MASTER, INSURANCE, SHIPPING.

Superior, Lake, the largest sheet of fresh water on the face of the globe, and the most remarkable of the great American lakes, not only from its magnitude, but also from the picturesque scenery of its borders, and the interest and value attaching to its geological features. As a mining region it is one of the most important in this country, and is rich in veins of metallic copper and silver, as well as in the ores of those metals. At the present moment it may be regarded as the most valuable mining district in North America, with the exception only of the gold deposits of California.

This great lake is comprised between the 46th and 49th degrees of north latitude, and the 84th and 92d degrees of longitude, west of Greenwich. Its greatest length is 400 miles; its width in the middle is 160 miles, and its mean depth has been estimated at 900 feet. Its surface is about 600 feet above the level of the Atlantic Ocean, and its bottom is 300 feet below the level of the sea. The ancient French Jesuit fathers, who first explored and described this great lake, and published an account of it in Paris in 1636, describe the form of its shores as similar to that of a bended bow, the northern shore being the arc, and the southern the chord, while Keweenaw Point, projecting from the southern shore to the middle of the lake, is the arrow. This graphic description is illustrated by a map, prepared by them, which displays the geographical position of its shores with as much fidelity as most of the maps of our day, and proves that those early explorers were perfectly familiar with its shores. The coast of Lake Superior is formed of rocks of various kinds and of different geological groups. The whole coast of the lake is rock-bound; and in some places mountain masses of considerable elevation rear themselves from the immediate shore, while mural precipices and beetling crags oppose themselves to the surges of this mighty lake, and threaten the unfortunate mariner who may be caught in a storm upon a lee-shore with almost inevitable destruction. Small coves, or boat harbors, are abundantly afforded by the myriads of indentations upon the rocky coast; and there are a few good snug harbors for vessels of moderate capacity, such as steamboats, schooners, and the like.

The fisheries of Lake Superior are of great value to the people living upon the shores of the lake, and of some importance to the states bordering on the other and lower lakes, and the inland towns near their borders. To the poor Indian the bounties of the great lakes are of vital importance, for without the fish the native tribes would soon perish. Game has become exceedingly scarce in these thickly-wooded regions, only a few bears, rabbits, and porcupines, and some partridges, being found in the woods, and ducks in moderate numbers upon the waters. Agriculture has scarcely begun to tame the wilderness in the vicinity of the copper mines, and the only crops raised are potatoes and a few hardy northern esculents. Small cereal grains—such as oats, barley, and rye—will do well here as in Canada; and Indian corn of the northern varieties, in places not too much exposed to the

chill breezes of the lake, thrives and ripens. English grasses have not yet been cultivated, but they will undoubtedly thrive as well on the south shore of Lake Superior as in New Brunswick and Nova Scotia. The native grasses are abundant and good, but are limited to small natural prairies or to dried-up ponds. The forests are also filled with excellent timber for building purposes; and where the growth is of mixed trees, such as sugar-maple, yellow birch, and pines, the white and yellow pines are of large dimensions, and furnish good lumber.—See LAKES, *Commerce of*.

Sweden (*Sverige*), a country of northern Europe, forming the east and larger portion of the Scandinavian peninsula, and one of the kingdoms composing the monarchy of Sweden and Norway; situated between lat. 55° 20' and 69° 10' N., long. 11° 15' and 24° 10' E., bounded east by the Baltic, the Gulf of Bothnia and Russia, south by the Baltic, west by Norway, the Kattegat, and the Sound. Capital, Stockholm. The soil is not generally fertile, and the corn produced was formerly only about two-thirds of that required; but from the great improvements in agriculture introduced by the government within the present century, and the general introduction of the potato, the produce is now adequate to the consumption. Barley is cultivated as far north as lat. 69°, but the crops frequently fail. Rye, hemp, and potatoes are grown to lat. 66° N. Oats ripen to 63° 30'; wheat and hops cease to be cultivated with advantage beyond lat. 62° N. One-fourth of the surface is covered with forests, but the produce of timber is small; much is used for fuel, and made into charcoal for use in the mines. There are few woods to the north of lat. 64° N. The principal trees are the pine, fir, and birch. Fish are abundant on the coast, and in the lakes and rivers; the herring-fishery has greatly declined, but lobsters are exported, and salmon is caught in all the principal rivers. The mining districts of Sweden, mostly in the central provinces, extend over 16,000 square miles; the chief products are iron, which is distributed over nearly all the country, but the best is found in the län Upsala; the annual produce of all the mines is about 70,000 tons of bar iron. The richest copper mines are at Falun; the annual produce in all is about 1000 tons. Gold is not now sought for, and silver is procured only to a small extent. The other mineral products are cobalt, lime, coal of inferior quality, and porphyry. Manufactures are chiefly confined to articles of domestic use; the principal are woollens, sugar, tobacco, paper, linens, cotton (in small quantity); tanning is an important branch of industry. Ship-building is carried on to some extent in the ports of the Baltic. Distilling and brewing are extensively prosecuted. The internal commerce of Sweden is considerable, and Swedish vessels visit most of the Atlantic ports of America, and the Mediterranean. Government is a constitutional monarchy.—See NORWAY.

The Swedish monarchy, comprising Sweden and Norway, embraces an area of 292,104 square miles, and contains a population of 4,645,000 inhabitants, viz.:

Sweden.—Area, 170,096 square miles; population, 3,816,580
Norway.—" 122,008 " " " 1,328,470

Sweden and Norway have different constitutions, though they are governed by the same king. Their commercial regulations, their tariffs of duties, their laws and revenues, are all separate. Several treaties of peace, amity, and commerce have been negotiated between the United States and these countries; the latest, that of July 4th, 1827, being based upon the liberal principle of entire reciprocity, as well with Sweden and Norway as with the small but flourishing colony of St. Bartholomew, in the West Indies. The following abstract presents the principal stipulations respecting commerce and navigation:

The citizens and subjects of each of the two high contracting parties may, with perfect security for their persons, vessels, and cargoes, freely enter all the ports,

places, and rivers of the territories of the other, wherever foreign commerce is permitted. The vessels of both nations, including those of the island of St. Bartholomew, whether laden or in ballast, to be treated in the ports of each, on their entrance, during their stay, and at their departure, upon the same footing as national vessels coming from the same place, with respect to the duties of tonnage, light-houses, pilotage, and port charges, and all other perquisites, duties, and charges, of whatever kind, levied in the name or to the profit of the government, the local authorities, or any private establishment whatever. All merchandise of every description, no matter of what country it may be the produce or manufacture, that may be imported into either country in national vessels (or into Sweden or Norway in vessels of the island of St. Bartholomew), may in like manner, and without paying other or higher duties or charges, of whatever kind or denomination, be imported in the vessels of the other; full and perfect reciprocity and equality in this respect being established. Similar reciprocity and equality between the vessels of each of the high contracting parties, including those of the island of St. Bartholomew, in respect to exports from either country, is established. This equality with the national flag is applicable to the vessels of the United States proceeding, either laden or in ballast, to the colony of St. Bartholomew, in the West Indies, whether from ports of the kingdom of Sweden and Norway, or from any other place whatsoever, or proceeding from the said colony, either laden or in ballast, whether bound for Sweden or Norway, or any other place whatever. The coasting trade is reserved by each party to its own flag, respectively; the navigation from one port to another in the kingdom of Sweden and Norway, or between these two countries, being considered such coasting trade as respects Sweden. Duties on the navigation between their respective territories, including the island of St. Bartholomew, in the vessels of either, to be no higher or other than those imposed on every other nation; and no prohibitions, restrictions, or differential duties, of any kind or denomination whatsoever, to be established in respect of the products of the soil or industry of either country, including the island of St. Bartholomew, which shall not equally apply to articles of like nature, the growth of any other country. The privileges of transit, and all bounties and drawbacks which may be allowed within the territories of one of the high contracting parties upon the importation or exportation of any article whatever, shall likewise be allowed on the articles of like nature, the products of the soil or industry of the other contracting party, and on the importation or exportation made in its vessels.

The 11th and 12th articles exempt from import and navigation dues (pilotage, wharfage, and light-dues excepted) the vessels of either party arriving in the ports of the other, not wishing to unload any part of their cargoes, or perform any act of trade; and the privilege is mutually conceded to unload in the ports of either such portions only of their cargoes as the captain or owner may wish, and to depart with the remainder, without paying any duties, imposts, or charges whatsoever, except for that part which shall be landed, the proper entries having been made on the vessel's manifest. It is understood, however, that all duties, imposts, or charges whatsoever, which are or may become chargeable upon the vessels themselves, must be paid at the first port where they shall break bulk, or unload part of their cargoes; but that such duties, etc., shall not be paid twice in the ports of the same country which such vessels may afterward wish to enter, unless national vessels be, in such cases, subject to such ulterior duties.

Article 16 stipulates that on direct voyages between the two countries, respectively, a bill of health, granted at the port of departure by an officer having competent power to that effect, will exempt the vessel from any

other quarantine than such as may be necessary for the visit of the health officer of the port where such vessel shall have arrived. Other sanitary regulations are mutually stipulated between the high contracting parties, equally liberal and beneficial to commerce. The treaty of 1788, so far as its stipulations are not inconsistent with the present treaty, is revived; and the usual twelve months' notice, after the expiration of nine years from the exchange of ratifications, is provided for. A separate article reserves, on the part of Sweden, certain commercial privileges to Finland, applicable to the products of that duchy, and of Sweden and Norway, respectively.

The fisheries, the mines, and the forests of this kingdom were the early sources of Swedish commerce. Macgregor, in his *Tariff Regulations of Sweden*, cites from Puffendorf, one of the counselors of state to the King of Sweden, the following passage, written in 1680, relative to the productions of this kingdom: "Sweden produces more copper and iron than any other kingdom in the world, and the mines are fitted by nature for that purpose, being surrounded by woods and rivers. There is a silver mine in Westmanland. Finland brings forth pitch, and tar, and deal; and Wermanland [Carlstadt] good store of masts. The native commodities of Sweden are copper, iron, tar, pitch, masts, deals, boards, etc. In lieu of which, Sweden receives from abroad wine, brandy, salt, spices, cloth, silks, and woolen stuffs, fine linen, French manufactures of all sorts, furs, paper, and such like; all which, in some years, surpass in value the commodities exported hence. To recompense this, navigation and commerce has been encouraged of late years among the natives, and several sorts of manufactures are made, whereof those made of copper, iron, and brass would, questionless, turn to the best account, if those artists [blacksmiths and copper-smiths] were duly encouraged to settle in this kingdom."

The general character of the resources and foreign commerce of Sweden has undergone but little change since the foregoing was written. The extent and value have varied somewhat, but by no means in a ratio corresponding with the more enlightened and the more liberal commercial policy of the age. This is mainly owing to the restrictive tariff policy, which still obtains in Sweden, by which duties, equivalent in many cases to actual prohibition, are levied upon many articles of prime necessity, both for immediate consumption and manufacturing purposes.

The following table exhibits the general foreign trade of Sweden during the year 1854, compared with the general result for the preceding years designated:

NAVIGATION OF SWEDEN IN 1854.

Countries.	Arrived.		Cleared.	
	Vessels.	Tons.	Vessels.	Tons.
Norway	1,306	56,399	982	20,774
Finland	1,536	18,697	1,442	15,996
Russia	89	1,201	78	951
Prussia	397	17,167	386	10,470
Denmark	4,415	88,814	4,400	74,035
Mecklenburg	171	7,802	142	5,953
Lübeck	579	21,251	462	19,801
Hamburg	66	4,869	33	1,769
Bremen	34	2,173	22	989
Hanover & Oldenburg	6	279	5	131
Netherlands	81	6,935	144	7,290
Belgium	27	3,346	40	3,829
Great Brit. and Ireland	1,347	125,411	1,778	172,623
France	190	20,778	364	40,826
Spain	90	10,312	73	8,891
Portugal	179	17,569	82	7,256
Italy	33	3,565	16	2,438
Gibraltar	...	...	17	2,772
Austria	...	...	2	148
Algiers	...	...	25	3,776
United States	26	5,214	25	8,385
West Indies	10	1,256	...	...
Brazil	53	6,087	37	4,515
America generally	...	...	12	2,101
E. Indies and Australia	18	1,940	20	3,442
Cape of Good Hope	...	...	27	3,607
Total	10,648	418,555	10,574	422,168

COMMERCE OF SWEDEN IN 1854.

Rix Dollars Banco.

Countries.	Imports.		Exports.	
Norway	4,032,000	2,241,000		
Finland	1,453,000	276,000		
Russia	305,000	133,000		
Prussia	1,165,000	2,630,000		
Denmark	2,627,000	7,101,000		
Mecklenburg	82,000	448,000		
Lübeck	10,129,000	4,021,000		
Hamburg	1,777,000	406,000		
Bremen	421,000	321,000		
Hanover and Oldenburg	1,000	38,000		
Netherlands	626,000	1,381,000		
Belgium	181,000	339,000		
Great Britain and Ireland	9,264,000	23,063,000		
France	733,000	3,035,000		
Spain	504,000	1,081,000		
Portugal	461,000	1,309,000		
Italy	206,000	357,000		
Gibraltar	...	74,000		
Austria	...	253,000		
Algiers	...	362,000		
United States	3,250,000	2,173,000		
West Indies	601,000	...		
Brazil	6,071,000	626,000		
America generally	...	180,000		
East Indies and Australia	588,000	484,000		
Cape of Good Hope	...	315,000		
Total, 1854	52,437,000	52,810,000		
" 1847	28,040,000	30,920,000		
" 1846	20,600,000	24,880,000		
" 1840	18,308,000	20,437,000		
" 1830	11,150,000	18,337,000		
" 1821	11,143,000	12,161,000		

The preceding table exhibits the following results:

Increase in 1830 over 1821	1,183,000 rix dollars banco.
" 1840 over 1830	14,258,000 "
" 1846 over 1840	6,735,000 "
" 1847 over 1846	13,480,000 "
" 1854 over 1847	46,287,000 "

Notwithstanding the annual augmentation in the general foreign commerce of Sweden, which the above summary exhibits, the trade with the United States has been marked with but little variation.

The total trade with the United States in 1847, according to Swedish official authorities, amounted in value to 3,341,000 rix dollars banco, or 358,880 rix dollars banco less than 1840, while it exceeded that of 1845 by 779,000 rix dollars banco. In the trade between the United States and Sweden and Norway, there are but comparatively few American vessels employed. The following comparative statements will show the proportion between American and foreign (mostly Swedish and Norwegian) tonnage employed in this trade. A period of ten years, from 1845 to 1854, is selected, as affording a fair average: American tonnage employed in the direct trade between the United States and Sweden and Norway, from 1845 to 1854, 47,638 tons. Average annual tonnage, 4763·8 tons. Foreign (chiefly Swedish and Norwegian) tonnage employed in the trade between the United States and Sweden and Norway, during the above period, 232,089 tons. Average annual tonnage, 23,208·9 tons, or nearly 500 per cent. of foreign over American tonnage annually employed in the trade between the United States and Norway and Sweden. In 1847 the imports of Sweden amounted to nearly 11,160,000 dollars (United States currency). Of this sum Swedish and Norwegian vessels floated nearly nine million dollars, or four-fifths of the whole. The exports reached the sum of \$12,276,000, of which the Swedish flag covered over seven and a half millions, or about three-fifths of the whole.

The following are the principal colonial products entering into the imports during 1847, in kilograms of 2·20 lbs. each.

Sugar	8,085,000 kilograms
Coffee	8,085,000 "
Cotton	2,072,000 "
Tobacco	1,212,000 "
Dye-woods	500,000 "
Wines and spirits	2,150,000 litres

Of the exports, iron occupies the next rank to timber. The quantity exported in bars reached 82,212,000 kilograms, or about 185,000,000 lbs.

IRON (INCLUDING CAST AND OTHER STEEL) IMPORTED INTO THE UNITED STATES FROM SWEDEN AND NORWAY.

Years.	Cwt.	Values.
1845.....	272,496	\$626,166
1846.....	256,663	717,116
1847.....	288,464	609,729
1848.....	290,982	740,078
1849.....	295,359	729,206
1850.....	397,231	1,025,587
1851.....	409,003	942,961
1852.....	289,391	773,674
1853.....	181,049	445,808
1854.....	203,137	510,221
1855.....	296,500	844,233
1856.....	280,690	870,759
1857.....	233,434	741,446

The value of iron quite equals the entire value of imports into the United States from Sweden for each year during the period specified. The export of iron ore is prohibited. The annual average quantity produced the last five years is estimated at 300,000 tons. The quantity manufactured during the same period is stated to have been 140,000, and 100,000 tons of bar iron. The annual average of the latter exported was 80,000 tons. The average price of pig-iron in Sweden is 8 rix dollars banco the skeppund—7½ skeppunds to the ton, or \$24 the ton. The iron mines of Sweden belong to joint-stock companies principally. About two-fifths of the pig-iron is purchased and manufactured into bar-iron by iron-masters who own no mines; but the remaining three-fifths are manufactured by the companies that own the mines themselves. The production of pig-iron was formerly limited to a certain specified quantity, whether the capabilities of the mines and miners would admit of more or not. Under this unwise regulation of the government, which it is said was adopted to prevent the exhaustion of the fuel of the kingdom, the coal and forests, the annual production never exceeded 90,000 tons. These limitations have for some years been done away with; nor is there at present any limitation, beyond a matter of form, to the manufacture of bar-iron. The following statement, showing the exportation of iron from 1834 to 1849, is from Swedish official returns:

From 1834 to 1838, annual average	79,300 tons.
" 1839 to 1843 "	83,200 "
" 1844 to 1848 "	92,000 "
In 1849	88,500 "

The above exports were destined principally to the following countries, and in annual average quantities as follows:

Great Britain	33,000 tons.
United States	19,850 "
Denmark	8,150 "
France	5,200 "

Small quantities, in the shape of cannon, bombshells, etc., are sent to Norway, Holland, and Denmark. The number of blast furnaces in operation in 1850 was 220; of workmen employed in mining the ore, 5241; of mines, 586. The importation of cotton in 1851, according to Swedish official authorities, amounted to 7,989,428 lbs., against 1,832,431 lbs. in 1841, and 794,434 lbs. in 1831. In 1843 these authorities show an importation of 2,600,000 lbs., against 9,883,572 lbs. in 1853, which latter amount exceeded that of the importation of 1852 by 1,247,041 lbs., and that of 1850 by more than 5,200,000 lbs., being the largest of any preceding year. In 1848 the amount was 8,074,020 lbs. The value of cotton manufactures exported to Sweden in 1850 was \$46,000, against \$7500 only in 1851. It may be well now to inquire into the operation of the tariffs of the two countries respectively upon the leading staples of each, chiefly with a view to ascertain to what extent the importation of such products contributes to the respective customs revenue of each country. The character of the commercial legislation of the two nations, in its effects upon the importation of staple articles of prime necessity, from each into the other, will best show how far the reciprocity stipulated in the treaty of 1827 has been carried into practical operation. This inquiry may lead to useful and obvious sugges-

tions, especially if it results in demonstrating that a positive inequality exists in practice, under which one government derives fully one-fifth of its entire customs revenue annually from a cent-per-cent. duty on a leading staple of the other, without tendering any compensating equivalent for a tax so oppressive.

The importation of unmanufactured American tobacco into Sweden and Norway (including direct and indirect importations) amounted in 1851 to more than 6,500,000 lbs., which, under a duty equal to cent-per-cent. *ad valorem*, paid into the Swedish treasury about \$330,000, or one-fifth of the whole customs revenue of the kingdom—and this upon the single article of tobacco; while the entire exports of Sweden and Norway to the United States (amounting to \$967,237) paid into the Treasury of the United States, at 30 per cent., but a trifle more than \$290,000! In the mean time, nearly 40,000 tons of Swedish and Norwegian shipping were carrying profitable American freights on every sea, while but 4000 tons of United States shipping made single voyages direct to Sweden and Norway. Notwithstanding the most earnest and repeated remonstrances against these unequal restrictions, and this *one-sided* reciprocity, no amelioration has yet taken place in the tariff regulations of Sweden. It is true, some reductions have been admitted in the tariff of 1852 on certain articles which enter into American exports. The duties upon coffee, sugar, arrack, and undressed hides were severally reduced 3½, 25, 12½, and 8½ per cent., and upon rice in the husk, or paddy, 16-6 per cent. But these concessions were clogged to such an extent by the repeal of the 24th article of the tariff of 1849, that American commerce, so far from gaining any advantage by them, will be found, by the simple process of striking a balance between the results of the reductions and of the repeal, to be subjected to new and oppressive burdens. The 24th article, or the differential clause, appended to the tariff of 1849, reduced the duties upon certain merchandise imported and exported in Swedish or Norwegian vessels, as follows: Swedish vessels navigating to distant countries will continue to enjoy the advantage of the following reduction in duties of customs and convoy imposts, viz.: Of 15 per cent. on the produce and manufactures of countries situated on the continent of America north of the 25th degree of north latitude, or of any of the foreign colonies in the West Indies, if imported direct from thence in Swedish ships; and of the like reduction on Swedish produce and manufactures exported direct to foreign colonies in the West Indies.

Of 25 per cent. on Swedish produce and manufactures exported in Swedish ships direct to the island of St. Bartholomew, to places on the east coast of the continent of America south of the 25th degree of north latitude, or to the Cape of Good Hope; and the like reduction on the produce and manufactures of those countries imported direct into Sweden in Swedish vessels.

Of 3½ per cent. on Swedish produce and manufactures exported in Swedish ships direct to places on the other side of the Cape of Good Hope, as also to ports on the other side of Cape Horn; and on the produce and manufactures of those ports and places imported from thence direct in Swedish ships. Under the treaty, these privileges apply equally to American vessels.

The effect of the repeal of this article is, that every thing imported from America, except the articles above enumerated, has been chargeable since 1st of January, 1853—the day when the repeal took effect—with duties 15 per cent. higher than before that period. The repeal of this clause was granted as a concession, to silence the united and vigorous remonstrances of England and Holland against the operation of the Swedish tariff regulations. On the article of tobacco alone the commerce of the United States is burdened with additional duties amounting to \$85,000 per annum—enough to affect materially the sale of this American staple in the markets of that country; and a trifling reduction of

duty upon rice is the only acknowledgment which the government of Sweden has yet made of the injustice of these oppressive restrictions. The following table exhibits the working of the existing treaty between the United States and Sweden during the years 1845, 1846, 1847, 1848, and 1849, so far, at least, as it relates to the commerce between the two countries. It is translated and compiled from Swedish official publications:

IMPORT AND EXPORT TRADE OF SWEDEN WITH THE UNITED STATES DURING THE YEARS SPECIFIED.

Years.	Imports.		Exports.	
	By American Tonnage.	By Swedish Tonnage.	By American Tonnage.	By Swedish Tonnage.
1845	Per Cent. 26	51	Per Cent. 39	55
1846	16	56	14	67
1847	30	50	12	80
1848	26	51	16	50
1849	37	53	25	55

TOBACCO IMPORTED INTO SWEDEN, WITH THE PROPORTION FROM THE UNITED STATES.

Years.	Total Imports.		Direct from United States.	
	Leaf.	Stems.	Leaf.	Stems.
1845	2,436,000 Pounds.	1,536,000 Pounds.	1,691,000 Pounds.	1,156,000 Pounds.
1846	2,523,000	1,632,000	1,679,000	991,000
1847	1,924,000	911,000	1,555,000	540,000
1848	2,186,000	1,363,000	1,462,000	999,000
1849	2,358,000	1,405,000	1,440,000	1,259,000

The following statement shows the amount of American tonnage arrived at Swedish ports, and amount of Swedish tonnage arrived at United States ports direct from each country, or from foreign nations; also, amount of Swedish tonnage arrived at transatlantic ports from the United States, with full cargoes:

AMERICAN TONNAGE ARRIVED AT SWEDISH PORTS.

In 1845	5500 tons.
In 1846	1700 "
In 1847	1400 "
In 1848	4000 "
In 1849	3800 "

SWEDISH TONNAGE ARRIVED AT AMERICAN PORTS.

In 1845	17,000 tons.
In 1846	14,500 "
In 1847	21,000 "
In 1848	17,000 "
In 1849	17,000 "

SWEDISH TONNAGE ARRIVED AT EUROPEAN PORTS FROM THE UNITED STATES.

In 1845	60,000 tons.
In 1846	56,000 "
In 1847	60,000 "
In 1848	53,000 "
In 1849	64,000 "

According to the laws of Sweden, each triennial Diet proposes a new tariff, which is designed to remain in force three years; the king having, in the mean time, constitutional power to lower, but not to raise, any duties whatever, provided a certain sum be obtained from the customs. The tariff of 1852 continued in force until January 1, 1855. In the Diet of 1854 many important reductions were recommended by the committee on revenue, but they declined recommending any precise change on tobacco duties. They referred this subject to the king, to whom a recommendation was made to enter into negotiations with foreign governments, with a view to obtain reductions upon Swedish produce in exchange for lighter tobacco duties. These negotiations were understood to refer chiefly to iron duties in the United States. Among the reductions proposed by this committee are the following:

Indian corn to be reduced from 40 to 10 cents per barrel.
Cotton thread, from 20 to 13 cents per pound.
Wool, from 5 cents to 1½ cent per pound.
Dye-woods, from 1 per cent. ad valorem to free.
Rope, from 20 to 15 cents per 18½ lbs.
Salt, from 30 to 14 cents per barrel.
Copper, raw, from \$2 to 40 cents per 375 lbs.
Copper, refined, from \$3 to \$1 60 per 375 lbs.
Copper plates, from \$13 85 to \$2 70 per 875 lbs.
Steam-engines, from 20 and 10 per cent. to 5 per cent. ad valorem.
Tools and machinery, not specially enumerated, from 25 to 5 per cent. ad valorem.

The alterations recommended by this committee were generally adopted. After January 1, 1856, the articles prohibited by the tariff of 1855 are to be admitted at a duty equal, generally, to 25 per cent., except gunpowder, pig-iron, and certain kinds of brandy. Tobacco remains as under the tariff of 1852, and will doubtless be reserved as a basis for such negotiations as the Swedish government may have in contemplation relative to iron duties in the United States. The principal reductions, though not of great importance to American commerce with Sweden, apply to fire-arms, cheese, printed cotton, undyed cotton, yarn, codfish (dried and salted), logwood (made free), Indian corn (committee's recommendation adopted), salted meat, smoked or dried do., spermaceti candles (reduced 50 per cent.), rosin (do.), rice.

DESCRIPTION AND QUANTITIES OF CERTAIN MERCHANDISE IMPORTED INTO SWEDEN IN THE YEARS 1851 AND 1852.

Articles.	1851.	1852.
Sugar, loaf	pounds 54,509	821,393
" other kinds. "	24,700,329	25,045,752
Coffee	" 9,618,934	10,373,004
Cotton	" 7,989,428	8,636,531
Tobacco stems.	" 1,448,187	1,853,688
Wines and spirits. kanna	290,638	312,155

Besides the articles above specified, the returns for 1852 show an increase over 1851 in the following descriptions of merchandise, viz.:

Articles.	1851.	1852.
Cotton yarn	pounds 962,993	1,249,783
Hides	" 8,061,574	8,410,492
Linseed-oil	" 492,914	1,109,130
Coal	" 534,939	583,413
Cast steel	" 26,238	54,958
Sulphuric acid	" 189,225	196,834
Soap	" 140,408	182,250

The principal articles of which the importation in 1852 was less than that of 1851 were cocoa, fish (dried and smoked), salt, cheese, spirits of turpentine, tobacco (leaf and cut), fish-oil, wool, etc.

The exports of articles of domestic produce from the United States to Sweden and Norway for the year ending June 30, 1857, may be thus divided: Cotton, \$1,249,042; tobacco, \$84,871; other articles, 39,393—total, \$1,373,306.

The navigation returns for 1852 show a total of 7303 vessels entered, with an aggregate of 843,693 lasts. Of the total number of vessels, there were Swedish 4154, measuring an aggregate of 133,963 lasts; 1288 vessels, carrying in all 109,272 lasts, under the Norwegian flag; 550 vessels of 34,025 lasts, belonging to Finland; and 1311 vessels, measuring 66,433 lasts, under foreign flags.—*Com. Rel. U. S.*

Principal Ports.—Gottenburgö, or more properly Göthaborg, on the southwest coast of Sweden, bordering the Cattegat, near the mouth of the River Gotha, lat. 57° 42' 4" N., long. 11° 57' 45" E. Vessels do not come up close to the city, but lie in the river or harbor, at a short distance from the shore—goods being conveyed to and from them by lighters. The depth of water in the port is 17 feet, and there is no tide, bar, or shallow.

Stockholm, the capital of Sweden, situated at the junction of Lake Mælar with an inlet into the Baltic. The entrance to the harbor is intricate and dangerous, and should not be attempted without a pilot; but the harbor itself is capacious and excellent—the largest vessels lying in close to the quays.—*See STOCKHOLM.*

Bergen, the first commercial city of Norway, situated at the head of a deep bay, in lat. 60° 24' N., and long. 5° 20' E. The bay is inclosed on all sides by rugged rocks and islands; the water is deep, but the entrance to the town is difficult, and needs a pilot.

Manufactures.—The value of manufactures of all kinds at registered factories was: In 1839, \$5,439,123; in 1846, \$7,084,947; in 1848, \$8,368,348; in 1849, \$9,289,899; in 1850, \$9,891,072; in 1851, \$9,913,866, showing an increase since 1839 of \$4,474,743; since 1846, of \$2,828,919; and since 1849, of \$673,967.

COMMERCE OF THE UNITED STATES WITH SWEDEN AND NORWAY FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.		Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.		Foreign.	American.
Sept. 30, 1821.....	\$154,213	\$62,908	\$217,181	\$757,753	....	\$10,139	1,616	964	
1822.....	180,411	80,210	260,621	1,151,788	....	....	2,231	1,208	
1823.....	151,037	147,191	298,228	1,317,242	....	2,000	3,050	880	
1824.....	163,725	161,033	324,758	998,915	....	300	2,332	1,560	
1825.....	222,164	112,373	334,542	1,335,806	....	3,080	3,435	702	
1826.....	196,084	88,489	284,573	1,128,236	....	3,000	2,658	518	
1827.....	201,438	207,553	408,991	1,015,507	....	4,400	3,731	1,530	
1828.....	256,532	215,222	471,754	1,570,788	....	....	5,065	1,776	
1829.....	122,663	126,971	249,634	1,020,910	....	3,000	2,255	1,114	
1830.....	181,353	189,949	371,302	1,168,110	\$773	1,110	3,502	2,023	
Total...	\$1,759,620	\$1,991,904	\$3,751,584	\$11,467,145	\$773	\$27,029	30,375	12,275	
Sept. 30, 1831.....	\$190,511	\$96,519	\$287,030	\$901,512	....	....	3,232	472	
1832.....	214,043	152,365	366,413	1,007,394	....	....	1,868	3,078	
1833.....	244,587	70,262	314,849	1,168,647	....	....	1,806	2,898	
1834.....	277,237	128,562	405,799	1,079,327	....	....	1,437	3,486	
1835.....	416,073	100,160	516,233	1,285,178	....	....	1,520	2,703	
1836.....	528,983	89,553	618,541	1,243,193	....	....	1,926	2,807	
1837.....	211,700	208,704	420,404	1,399,001	....	....	1,331	4,084	
1838.....	210,745	66,686	277,431	854,771	....	\$5,027	1,412	1,639	
1839.....	337,000	20,502	357,502	1,553,684	....	....	707	2,608	
1840.....	455,092	115,134	570,226	1,217,913	....	....	1,118	5,936	
Total...	\$3,065,981	\$1,044,452	\$4,110,433	\$11,801,866	....	\$5,027	16,447	23,711	
Sept. 30, 1841.....	\$563,766	\$38,553	\$602,319	\$1,209,881	....	\$2,000	2,215	3,816	
1842.....	238,943	105,970	344,918	890,934	....	....	1,311	5,701	
9 mos., 1843.....	18,881	15,807	34,688	227,356	....	....	780	488	
June 30, 1844.....	217,870	12,231	230,101	421,834	....	....	....	4,620	
1845.....	250,567	22,761	273,328	627,938	....	....	349	6,248	
1846.....	302,792	39,545	342,337	724,865	....	....	693	7,765	
1847.....	301,847	28,340	330,187	613,698	....	....	....	6,263	
1848.....	625,972	32,844	658,816	750,817	....	....	2,138	10,545	
1849.....	725,281	38,506	763,787	731,846	....	....	1,531	14,718	
1850.....	668,590	61,610	730,200	1,032,117	....	....	644	9,822	
Total...	\$4,064,004	\$386,167	\$4,450,171	\$7,281,286	....	\$2,000	9,666	69,458	
June 30, 1851.....	\$760,800	\$21,566	\$782,366	\$967,237	....	....	1,545	9,068	
1852.....	732,346	25,322	757,668	775,448	....	....	3,640	6,547	
1853.....	833,533	18,735	852,268	447,332	....	....	3,217	6,153	
1854.....	1,085,602	39,324	1,124,926	515,178	....	....	4,731	4,896	
1855.....	949,017	28,793	977,810	848,000	....	....	4,691	4,850	
1856.....	1,371,645	47,718	1,419,363	871,245	....	....	9,461	8,560	
1857.....	1,373,306	27,120	1,400,426	744,812	....	....	3,432	5,592	

* Nine months to June 30, and the fiscal year from this time begins July 1.

The importation of raw cotton into Sweden in 1851 amounted to 7,989,428 lbs., being larger than the importation of the previous year by 3,338,588 lbs. It was, moreover, the largest quantity ever imported in a single year, except in 1848, when the amount was 8,074,020 lbs. In 1831 the amount imported was 794,434 lbs., and in 1841, 1,832,431 lbs. The amount of cotton twist produced in Sweden in 1851 was 6,005,081 lbs. (chiefly No. 26), and was valued at \$1,311,777. In 1850 the quantity was 5,734,332 lbs., and the value \$1,279,960. The amount of cotton cloth manufactured in 1851 was 1,730,000 English yards, and the number of people employed in registered cotton factories was over 3000. In 1850 the value of exported cotton manufactures was \$46,000. In 1851 it decreased to \$7500. In 1850, imported cotton cloth, 170,000 lbs.; imported cotton twist, 893,000 lbs.; total, 1,063,000 lbs. In 1851, imported cotton cloth, 195,500 lbs.; imported cotton twist, 1,068,000 lbs.; total, 1,263,500 lbs. Tobacco was imported in 1851 into Sweden to the amount of 4,141,599 lbs., of which only 42,642 lbs. were manufactured. Of the whole amount 2,567,982 lbs. came direct from the United States; the remainder chiefly from German ports. In 1850 the importation was 3,370,399 lbs.; 41,795 lbs. manufactured. At 79 tobacco manufactories in the kingdom there were employed, in 1851, 1277 workmen, and the sales were valued at \$647,120; consisting of 200,175 lbs. of cigars, 2,750,723 lbs. of snuff, and 1,632,555 lbs. of other prepared tobacco; in all 4,583,453 lbs. Tobacco, in small quantity, and of very bad quality, is grown in the neighborhood of Stockholm, but I believe in no other part of the kingdom. It should be remembered that the accompanying table and the foregoing notices of Swedish woven goods refer only to the registered factories, and do not exhibit half of the actual manufactures of the kingdom. None of the homespun cloths are included, for which, of every

description, the Swedish peasantry are remarkable, and of which, unfortunately, it is impossible to obtain exact accounts of the value or quantity. The province or county most distinguished for these productions is that of Elfsborg, of which Gottenburg is the market. The home-made manufactures of this province, over and above the amount consumed by its own inhabitants, were, in 1850 and 1851 (inclusive of stockings, quilts, and ribbons), as follows:

1850—Cotton stuffs.....	4,842,000	English yards.
“ Linen stuffs.....	275,200	“
“ Woolen stuffs.....	392,170	“
“ Cotton handkerchiefs... 1,448,928	pieces.	
1851—Cotton stuffs.....	4,752,600	English yards.
“ Linen stuffs.....	270,300	“
“ Woolen stuffs.....	340,161	“
“ Cotton handkerchiefs... 1,085,281	pieces.	

These quantities have slightly diminished of late years, and the registered factories are accordingly encouraged.

The homespun manufactures of Geseleborg which were sold in 1849 amounted to 1,423,333 yards; those of Westmoreland to 805,333 yards; and those of Holland to 162,700 yards.

The productions of other provinces are not given reliably; but enough is known to prove that the amount of such fabrics is considerably greater than that of the registered manufactures; and their productions, especially of linen cloth, surpass in durability, and rival in fineness, the best productions of the factories.

The value of manufactures of all kinds at registered factories was: In 1839, \$5,489,123; in 1846, \$7,084,947; in 1850, \$9,891,072; in 1853, \$10,151,724; in 1854, \$11,841,613; and in 1855, \$14,437,645. It will be seen, therefore, that the increase in ten years has been nearly \$7,000,000 (100 per cent.), and in twelve months \$2,500,000. The importation of raw cotton into Sweden in 1855 reached to 14,733,529 lbs.; in 1853 the

amount was 9,883,572 lbs.; in 1843, 2,600,000 lbs.; in 1851, 794,434 lbs.; showing an increase in twelve years of more than 12,000,000 lbs. The amount of cotton twist produced in 1855, chiefly of a quality under "No. 26," was 10,598,093 lbs., valued at \$2,168,625, exceeding the amount of the preceding year by 2,398,823 lbs. The amount of cotton cloth produced does not appear to have been ascertained, as the official report gives the amount indiscriminately with linen. Their joint value in 1855 was equivalent to \$652,489, nearly twice greater than in 1853. In 1845 their value was \$188,787. The importation of unmanufactured tobacco into Sweden in 1855 amounted to 4,532,616 lbs., being 573,626 lbs. more than in 1854. In 1853 the amount was 4,831,722 lbs. The importation of manufactured tobacco in 1855 was 55,205 lbs., somewhat more than 10,000 lbs. less than in 1853. Considerably more than half the tobacco consumed in Sweden is imported directly from the United States. The amount directly from the United States in 1853 was over 3,100,000 lbs. The accompanying table is necessarily confined to the returns of registered factories, and, unfortunately, exact accounts of homespun fabrics, for which this country is remarkable, can not be had. The province most distinguished for these productions is that of Elfsborg, adjoining the province of Gottenburg. In Elfsborg it appears that in 1855 the home-made goods, over and above the quantity consumed by its own inhabitants (about 250,000 souls), amounted to 9,047,506 English yards of cotton cloth, together with 1,568,556 cotton handkerchiefs. Also, linen fabrics, 259,329 English yards; woolen fabrics, 392,425 English yards; showing an increase in cotton weaving since 1853 of more than 3,300,000 English yards. In the province of Gefleborg there were woven by the peasants, in their homes, no less than 2,077,000 ells (or 1,384,666 English yards) of heavy linen. Other districts also are almost

equally distinguished for cotton and linen homespun fabrics of excellent quality.

REVIEW OF SWEDISH REGISTERED MANUFACTURES IN 1855, THEIR VALUES, NUMBER OF OPERATIVES, AND NUMBER OF ESTABLISHMENTS.

Species of Manufacture.	No. of Factories.	No. of Owners and Workmen.	Value of Manufactures in Swedish Rix Dollars.*
Cotton and linen, woven....	30	1,665	1,631,223
Cotton twist.....	16	3,097	5,421,562
Woolen cloth.....	106	6,684	6,375,832
Silk cloth.....	12	779	1,082,463
Ribbon and tape.....	11	101	47,540
Sail-cloth.....	7	1,176	377,741
Stockings.....	18	609	247,852
Calico printing.....	21	177	173,473
Sugar.....	17	907	7,369,340
Tobacco.....	90	1,839	2,484,291
Paper.....	90	1,350	1,198,947
Leather.....	550	1,579	2,114,061
Dye-houses.....	449	1,741	876,681
Glass.....	17	1,133	769,911
China.....	2	728	414,446
Earthen-ware.....	58	440	163,567
Oil.....	52	220	1,047,305
Porter.....	2	197	290,900
Wax candles.....	1	2	221
Stearin.....	3	58	178,500
Soap.....	9	31	214,417
Rope.....	22	195	212,461
Clocks.....	133	288	45,681
Playing cards.....	9	82	35,573
Wall paper.....	9	119	66,639
Colors and acids.....	16	56	144,892
Coaches.....	19	195	131,190
Lucifer matches.....	7	509	125,246
Engines.....	29	2,057	1,547,712
Various small manufactures	636	2,586	1,298,337
Total, 1855.....	2439	27,505	36,094,114

* Nearly equivalent to 40 cents American currency.

—U. S. Consular Returns, 1857. See articles COTTON, COTTON MANUFACTURES, IRON, STOCKHOLM, and NORWAY, for additional information on the trade and manufactures of Sweden.

COMMERCE OF THE UNITED STATES WITH THE SWEDISH WEST INDIES, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	\$507,077	\$53,149	\$560,226	\$611,116	....	\$292,738	20,774	583
1822.....	569,566	91,247	660,813	893,119	....	76,583	16,282	1880
1823.....	241,701	18,362	260,063	185,808	....	44,181	8,174	354
1824.....	204,983	39,687	244,670	102,835	....	22,520	8,203	340
1825.....	193,761	41,247	235,008	81,702	....	36,553	7,150	133
1826.....	120,673	23,284	143,957	163,946	....	40,429	4,437	....
1827.....	416,822	25,014	441,836	209,555	....	82,920	16,277	....
1828.....	611,584	25,616	635,200	375,395	....	109,656	26,553	635
1829.....	684,323	23,791	708,314	283,049	....	100,741	28,246	328
1830.....	552,700	57,727	590,427	230,530	....	167,574	19,460	584
Total.....	\$4,105,290	\$377,124	\$4,480,414	\$2,637,685	....	\$564,155	156,116	4742
Sept. 30, 1831.....	\$251,937	\$11,111	\$263,048	\$218,918	....	\$111,142	7,199	552
1832.....	141,249	7,478	148,727	58,410	....	22,215	4,651	644
1833.....	100,163	5,057	105,220	32,202	....	8,935	3,395	283
1834.....	81,040	7,902	88,942	47,214	\$2400	24,429	2,619	236
1835.....	72,714	13,641	86,355	31,330	....	22,013	2,539	217
1836.....	80,225	1,620	81,845	56,414	....	10,002	2,052	....
1837.....	84,114	3,005	87,119	68,977	....	27,207	2,628	84
1838.....	74,140	4,281	78,421	46,019	....	26,013	1,945	....
1839.....	103,282	4,130	107,412	12,453	....	3,960	2,184	139
1840.....	98,710	3,610	102,320	57,545	....	49,947	2,203	139
Total.....	\$1,087,674	\$61,335	\$1,149,409	\$624,487	\$2400	\$305,863	31,475	2204
Sept. 30, 1841.....	\$165,184	\$3,707	\$168,891	\$19,760	....	\$13,607	3,455	65
1842.....	129,727	3,320	133,047	23,242	....	19,475	2,603	726
9 mos., 1843.....	131,228	2,846	134,074	51,313	....	45,823	3,049	....
June 30, 1844.....	63,884	1,360	65,244	23,710	\$1000	22,399	1,478	141
1845.....	83,586	1,453	85,039	12,119	....	8,473	2,135	....
1846.....	138,121	3,448	141,569	5,285	1012	2,450	2,329	....
1847.....	110,062	3,659	113,721	....	....	....	1,607	....
1848.....	76,496	800	77,296	13,735	....	3,589	2,250	79
1849.....	95,128	737	95,865	15,932	....	9,918	2,684	547
1850.....	98,176	1,166	99,342	2,193	....	500	2,454	382
Total.....	\$995,392	\$21,996	\$1,017,388	\$107,403	\$5012	\$132,234	22,004	1770
June 30, 1851.....	\$61,157	\$745	\$61,902	\$20,001	....	\$19,587	1,319	....
1852.....	90,302	1,993	92,295	4,284	....	3,229	2,287	125
1853.....	31,024	1,191	32,215	6,876	....	4,539	1,136	....
1854.....	12,741	....	12,741	22,590	....	13,156	367	....
1855.....	68,356	391	69,247	32,229	....	16,816	1,365	146
1856.....	60,702	....	60,702	10,192	....	2,329	1,012	85
1857.....	76,405	3,523	79,933	12,082	\$2065	....	1,719	....

* Nine months to June 30, and the fiscal year from this time begins July 1.

Swedish West Indies.—The island of St. Bartholomew is the only possession of the Swedes in America. It belongs to the leeward group, and is situate centrally in lat. $17^{\circ} 50'$ N., and long. $62^{\circ} 52'$ W., distant 12 miles from St. Martin, and about 30 from St. Christopher. It is about 8 miles long, by from 2 to 3 miles wide, and contains an area of about 25 square miles. Capital, Gustavia. The island is of an irregular shape, and deeply indented by numerous small sandy bays, separated by bold and steep rocky acclivities of moderate height. In the interior it is hilly, but its loftiest elevations are less than 1000 feet. In most parts it is barren and sterile, but has numerous well-cultivated valleys. It produces all the staples of the West Indies—cotton, sugar, tobacco, indigo, etc., and also lignum vitæ and iron wood. Its only exports are cattle and some salt. Water is scarce, and the inhabitants depend for supply on the rains. The only harbor is La Carenage, a safe and commodious one, and much frequented. It is on the west side of the island. Close by is Gustavia, the principal town, a thriving place, having considerable commerce with the neighboring islands. The population is estimated at between 8000 and 9000, of which two-thirds are blacks. The slaves were emancipated on the 9th of October, 1847, and on this occasion the negroes tendered to the King of Sweden an address of thanks. St. Bartholomew was settled by the French in 1648, and was ceded to the Swedes in 1784, with whom it still remains.

Swedish vessels from the island of St. Bartholomew are placed on an equal footing with those of the United States by the treaty with Sweden and Norway of July 4, 1827.—See TREATIES, COMMERCIAL.

Switzerland (Ger. *Schweitz*; Fr. *La Suisse*; It. *La Svizzera*), a country of Central Europe, between lat. $45^{\circ} 50'$ and $47^{\circ} 50'$ N., and long. $5^{\circ} 55'$ and $10^{\circ} 30'$ E., having east the principality of Lichtenstein and the Tyrol, south Lombardy and Sardinia, west France, north and northeast Baden, Würtemberg, and Bavaria. Length 216 miles, breadth 75 to 140 miles. At an elevation of from 1000 to 1600 feet, the climate is pure and salubrious; but it is unhealthy in many of the deep and narrow valleys. Vegetation corresponds with the extremes of climate. In the Valais the fig and grape ripen at the foot of ice-clad mountains, while near their summits the rhododendron and the lichen grow at the limit of the snow line. The corn raised in Switzerland is not nearly sufficient for the supply of its population; the most productive cantons are those of the north and west. Here the vine ripens at an elevation of 1900, and in some places at 2100 feet above the sea. It is cultivated on the slopes of the Jura, and in the valleys of the Rhine, Rhone, Reuss, Limmat, and Thur. Buckwheat ripens at an elevation of 2200, and with a southern exposure at 3000 feet; barley, rye, potatoes, and pot herbs at 4000 feet. Flax and hemp are extensively grown; irrigation is judiciously managed; and, in general, agriculture is making considerable progress. The slopes of the Jura and of the Alps, and the high regions of the table-land, are covered with valuable timber trees—the oak, beech, larch, and birch. The pine grows to an elevation of 6700 feet, shrubs to 7400. The great wealth of Switzerland consists in its rich and excellent pastures, which in summer support vast numbers of cattle; the finest breeds are those of the Simmenthal, Gessenay, Gruyere, Zug, and Schwytz. The cultivation of the vine is an important branch of industry in the southwest cantons, and wine is exported. *Kirschwasser*, cider, and perry are made. Cheese is a valuable product; it is made chiefly in Gessenay, the Simmenthal, and the Emmenthal; that called Gruyere is much esteemed and extensively exported.

Switzerland has made rapid progress in manufacturing industry. The east and northeast cantons manufacture cotton goods, the chief seats of which are Appenzell and St. Gall. Silks are woven in Zurich and Basle, and linens at Bern. Neuchâtel has superior

printing establishments. Watches, jewelry, and musical boxes are the principal manufactures of the west cantons; here 230,000 watches are made every year. The number of individuals employed in the different branches of industry in 1846 were: Silks, 40,000; cottons, 90,000; watches and jewelry, 30,000; woollens, paper, leather, iron wares, etc., 40,000; in all, 200,000.

Switzerland contains a population of 2,390,116, and embraces an area of 15,261 square miles. Politically it is divided into twenty-two cantons, as follows:

Cantons.	Square Miles	Population
Appenzel	153	54,809
Aargau	593	190,720
Basle	185	73,385
Bern	2,567	457,921
Freyburg	565	99,805
St. Gall	749	160,598
Glarus	250	29,197
Genova	91	63,032
Grisons	2,975	89,340
Lucerne	558	132,730
Neuchâtel	231	70,679
Schaffhausen	116	35,273
Schwytz	331	44,150
Soleure	225	60,613
Ticino	1,037	117,397
Thurgau	270	83,619
Unterwalden	263	25,135
Uri	422	14,500
Valais	1,665	61,527
Vaud	1,185	199,453
Zug	85	17,456
Zurich	687	250,134
Total	15,261	2,390,116

A more moderate tariff than that now levied in Switzerland upon our principal staples could not be desired. For instance,

Grain of every kind pays a duty of only 3 cents per 110½ lbs.	
Rice, 3 cents	“
Salted provisions, 65 cents	“
Lard, 65 cents	“
Dried vegetables, 3 cents	“
Whale oil, 6 cents	“
Whalebone, 65 cents	“
Tobacco, 65 cents	“
Wool, raw or combed, 6 cents	“
Pot and pearl ashes, 6 cents	“
Rosin, 6 cents	“
Tallow, 6 cents	“

The commercial relations between the United States and Switzerland are regulated by treaty, exchanged November 8th, and proclaimed November 9th, 1855. Article 1 places citizens of either country residing in the other upon a footing of equality with native citizens, subject to the constitutional and legal provisions, as well federal as state and cantonal, of the contracting parties. Article 7 provides for the appointment and powers of consuls and vice-consuls in the large cities and important commercial places, in the countries of the contracting parties respectively. Article 8 provides that in all that relates to the importation, exportation, and transit of their respective products, the United States of America and the Swiss confederation shall treat each other reciprocally as the most favored nation: thus, neither of the contracting parties shall impose any higher or other duties upon the importation, exportation, or transit of the natural or industrial products of the other than are or shall be payable upon the like articles, being the produce of any other country, not embraced within its present limits. Article 10 provides that neither of the contracting parties shall grant any favor in commerce to any nation, union of nations, state, or society which shall not immediately be enjoyed by the other party. Article 11 provides that each country shall be at liberty to determine the manner of establishing the origin of its own products destined to enter the country of the other, should differential duties be established by either on the products of any nation. Article 12 provides that the territories and ports of each country shall be open to the admission of articles from the other; such articles, when imported into the United States under the national flag, or under that of one of the nations most favored by

them, shall pay the same duties as the merchandise of such nation; under any other flag it shall be treated as the merchandise of the country to which the vessel belongs. Th remaining articles relate to the extradition of criminals.

By a provision of the Swiss constitution of 1848, raw materials required for manufactures, as well as for the necessities of life, are to be admitted at the lowest possible rate of duty, while the highest import tax they can bear is to be levied upon articles of luxury. In all the other governments of Europe, if we except the Hanse Towns, tobacco is considered as an article of luxury; and it might be added, in behalf of France and England, as an article of convenience, also, for raising revenue. In these countries it is, consequently, subjected—in the former to the arbitrary exactions of the *regie*,* and in the latter to such duties as are almost equivalent to a prohibition. In Switzerland, however, whatever may be the light in which they view tobacco, whether as an article of luxury or of necessity, it is treated as an article of *trade*, and admitted at a rate of duty less for 110½ lbs. than Great Britain charges on the single pound. The effect of this liberal treatment of one of our leading staples is seen in the disproportional quantities, relatively to population, which are sent to these different countries. For example: France, with a population of 36,000,000, received an annual average of 15,000,000 lbs. of American tobacco during a period of three years (1851, 1852, and 1853), which gives about one-third of a pound to each person. Great Britain, with a population of 27,000,000, received an annual average, the same period, of 25,000,000 lbs., or nearly one pound per head; while Switzerland, with a population of 2,400,000, received more than 7,000,000 lbs., or some three pounds for each person.

The manufactures of Switzerland are the chief basis of its trade with foreign countries. As early as the 14th century Zurich became the great emporium and market for Italian products and industry; and Schwytz and Unterwalden, which, with Zurich, constituted the three original cantons, were at that period famed for their ingenious and industrious habits. The principal seats of Swiss manufactures at the present day are:

The canton of Neuchâtel for printed cottons, lace, jewelry, clocks, watches, and various minor articles. Wine and cheese are also produced in this canton. Geneva for watches,† clocks, jewelry, musical boxes, enameled articles, philosophical instruments, tools, cutlery, fire-arms, etc. Zurich, Aargau, and Thurgau chiefly for cotton and silk manufactures, woolen goods, straw plating, linens, and various minor articles. St. Gall and part of Appenzel for linens, muslins, cambrics, embroidery, tambouring, etc. Basle chiefly for silk ribbons, having upward of 4000 looms employed in their manufacture. The raw materials for these manufactures are greatly enhanced in price by the expense of carriage (*transit*); and bread, flour, and other articles of food cost higher than in most other countries of Europe. The restrictions on transit through France and other adjacent countries are a heavy drawback upon the industry of Switzerland; but the proverbial frugality of the people, and the low price of labor, together with the admitted superiority of most of their manufactures over those of England and France, enable them to compete successfully with those countries in foreign markets.

The commerce of all nations enjoys equal privileges in Switzerland, but the federal council is empowered to adopt immediate measures in case the commerce of Switzerland is subjected to any extraordinary restrictions in other countries; notifying, however, such measures to the next succeeding federal assembly. Consumption duties are levied in eighteen cantons; but

as they apply to only two articles—namely, wines and alcoholic liquors, neither of which the United States exports to that country—it is deemed needless to specify them. The suppression of these duties, however, affecting as they do one of the staples of France, might be compensated by a melioration in the laws applicable to the transite of Swiss manufactures across the territories of France—a result which would prove highly advantageous to the commercial relations between the United States and Switzerland.

The whole foreign commerce of Switzerland during the year 1840 amounted to about 460,000,000 francs, or \$85,000,000. Several causes have combined to develop and promote the industrial and commercial prosperity of Switzerland. In a mountainous country, covered with snow during six or eight months in the year, the inhabitants have recourse to in-door labor as a matter of necessity. Besides, their position in the centre of Europe, surrounded on all sides by manufacturing communities, stimulates their emulation, encouraged as it is by the facilities which the adjacent markets afford for the supply of raw materials. The people, at once agriculturists and artisans, and naturally industrious, find ample scope for constant and profitable employment in these two occupations, and are thus enabled to live on moderate wages. These causes have contributed to the most remarkable development of industrial pursuits, especially in the northern and western cantons. Without dwelling upon minute details in regard to the different branches of manufactures into which this mechanical industry has entered, the extraordinary success of cotton manufactures in Switzerland will be briefly considered, as necessarily bearing upon the consumption of one of the leading staples of the United States. There is, moreover, no branch of industry which more forcibly illustrates the energy and mechanical genius of the Swiss than their cotton manufactures. In 1830 the republic had in operation 400,000 spindles; in 1840, 750,000; and in 1850, 950,000; the number having more than doubled in twenty years. The cotton-spinning factories in the year last named were 200, estimated to produce annually from 18,000,000 to 20,000,000 lbs. of yarn. This progress in cotton manufactures is the more surprising, because of the heavy expense with which the raw material is burdened by transit tolls before it can reach the territory of Switzerland. The quantity passed in transit from Havre for Switzerland in 1833 and 1834 was nearly 6,000,000 lbs.; in 1843 it reached nearly 17,000,000 lbs., and constituted four-fifths of all consumed during that year in Switzerland. The entire receipt of cotton that year is put down at 22,000,000 lbs.

The following table exhibits the total quantity of raw cotton which passed through Havre in transit for Switzerland during a period embracing thirteen years:

Years.	Kilograms.	Years.	Kilograms.
1833.....	2,033,000	1840.....	4,912,000
1834.....	4,296,000	1841.....	7,367,000
1835.....	4,362,000	1842.....	9,836,000
1836.....	6,496,000	1843.....	7,622,000
1837.....	5,493,000	1844.....	7,440,000
1838.....	7,120,000	1845.....	9,431,000
1839.....	4,475,000		

In 1851 the importation of cotton into Switzerland amounted to 27,035,725 lbs., of which 13,729,320 lbs. were from the United States. According to the *Tableau Général* of France for the years designated, Switzerland received cotton in pounds as follows, in 1851, 1852, and 1853:

	1851.	1852.	1853.
Through France	15,816,761	15,815,473	14,978,257
Of which from the United States.....	15,812,161	15,765,556	14,879,331
From other places.....	4,590	4,917	98,926

A severe restriction on the importation of cotton, and also of tobacco, to Switzerland, as well as on the reception by the United States of Swiss wares and manufactures in return, is, as already mentioned, the

* For an explanation of this term, see *Digest of France*, p. 123.

† It is estimated that from Geneva alone 240,000 watches are annually shipped, *via* Havre, to the United States.

noxious and expensive transitage, especially through France. The oppression of this burden may be inferred from the fact that the annual average aggregate value of merchandise on which transit tolls are paid, proceeding from Switzerland, was in 1853 nearly \$30,000,000; and the value of that proceeding to that republic more than half as much.

Switzerland sent in transitu to France, cotton tissues to the value of nearly \$3,000,000 in 1852, and to the value of nearly \$4,000,000 in 1853. By the French tariff such fabrics are excluded from France for consumption. Since 1845, Switzerland, it is stated officially, has quite superseded, in the markets of Germany and Austria, the yarns of Great Britain.

The following statement shows the quantities of cotton received by Switzerland from the United States, and of cotton stuffs sent to the United States from Switzerland, made up from Swiss official sources:

COTTON FROM THE UNITED STATES TO SWITZERLAND.			
1850.....	15,942,740 lbs.	1852.....	19,065,200 lbs.
1851.....	13,720,320 "	1853.....	18,441,830 "
COTTON STUFFS FROM SWITZERLAND TO THE UNITED STATES.			
1850.....	3,326,300 lbs.	1852.....	4,077,920 lbs.
1851.....	3,509,660 "	1853.....	5,265,160 "

In 1855 Switzerland returned to the United States, in exchange for raw cotton, the same article manufactured, to the value of \$212,700.

In this branch of industry Switzerland is said to compete successfully with France. Her chintzes, and also her embroidered mousselines, are superior to those of Alsace; and if the French markets are closed against their admission under the operation of restrictive tariffs, they find an ample outlet in the Levant, or across the Austrian territory by the Danube. They also find markets in North and South America, the Barbary States, the East and West Indies, in the fairs and markets of Central Germany, as well as in the entrepôts of the Hanse Towns. The manufacture of tobacco in Switzerland is stated to employ 4000 persons, and to produce about 9,000,000 pounds, valued at \$1,116,000. There is imported of the article annually into Switzerland, and produced in the country, as follows:

Imported.....	7,031,502 lbs.—Value.....	\$436,728
Produced.....	800,000 ".....	24,626
Total.....	7,831,502 ".....	\$461,354*

Of this there is consumed in Switzerland 6,740,502 lbs., of the value of \$558,000; leaving for exportation 1,091,000 lbs.; and if to the value which this latter amount represents to the manufacturer be added wages of hands and other expenses of manufacturing, it is estimated that the raw tobacco costs the Swiss manufacturer about six cents per pound, while he expects to realize from the sale of the manufactured article about 7½ cents per pound.

TOBACCO IMPORTED INTO SWITZERLAND DURING A SERIES OF YEARS.

1847.....	lbs.	2,696,712
1848.....	"	3,370,894
1849.....	"	5,428,159
1851.....	"	7,284,967
1852.....	"	7,166,912

As American products generally reach Switzerland *via* Havre, the following table is subjoined, exhibiting the transit trade between France and Switzerland during a period of eight years, ending with 1853:

Years.	From Switzerland.	To Switzerland.
1846.....	\$13,764,000	\$10,416,000
1847.....	14,880,000	9,300,000
1848.....	16,182,000	9,114,000
1849.....	18,600,000	10,602,000
1850.....	18,414,000	8,928,000
1851.....	18,225,000	8,928,000
1852.....	18,738,000	11,346,000
1853.....	26,598,000	10,788,000

It may be inferred from the above statement that the chief obstacle to trade between the United States

* The figures indicate the relative qualities of imported and domestic tobacco. Thus—Imported, 64 cents per pound; domestic, 3 cents per pound.

and Switzerland is found in the restrictions of transitage, especially over the territories of France. If Swiss manufacturers could have their goods destined for the United States finally examined and sealed (*plombé*) at the first French frontier custom-house, then to pass on to their final destination under the protection of that seal, unopened, and consequently exempt from the re-examination and repacking which they undergo at each post, it is believed that the trade with the United States would all pass through Havre, instead of seeking, as is the case at present, the more circuitous and expensive routes *via* Liverpool and other ports. Such a change in the French transit regulations would result, also, in an annual augmentation in the general exchanges between the United States and Switzerland. Commercial returns from Switzerland are necessarily imperfect, owing to the difficulty in procuring requisite statistics from the various ports through which Swiss merchandise reaches the United States. The exports which passed through the consular district of Basle during the last six months of 1854 for the United States, amounted to \$728,689 35. The total value of merchandise that passed through the consulate at Zurich for the United States was:

In 1853.....	\$3,800,628
In 1854.....	4,496,072

The following statement shows the values of the goods, wares, and merchandise sent from Switzerland to the United States, covered by invoices authenticated at the consulate of Basle, for the six months ending July 1st, 1855:

Silk goods.....	\$386,856 09
Watches and jewelry.....	89,067 00
Cotton.....	24,273 17
Straw.....	11,706 17
Medicines.....	3,606 20
Cheese and spirits.....	3,161 26
Silk and woolen.....	12,361 95
Paper-hangings.....	2,980 56
Leather.....	238 25
Mathematical instruments.....	353 67
Cloth.....	634 50
Machinery.....	81 40
Wooden ware.....	25 06
Cutlery.....	81 43
Total.....	\$537,614 53

The following table exhibits the value of imports, the produce and manufacture of Switzerland, into the United States, during the years ending June, 1853, and 1855; to which is added a statement showing the ports from which said imports were cleared, with the amounts for each, made up from United States official authorities:

VALUE OF PRINCIPAL IMPORTS, THE PRODUCE AND MANUFACTURE OF SWITZERLAND, INCLUDED IN THE IMPORTATIONS FROM THE HANSE TOWNS, HOLLAND, BELGIUM, FRANCE, AND ENGLAND, DURING THE YEARS ENDING JUNE 30, 1853, AND JUNE 30, 1855.

Description of Merchandise.	Values.	Values.
	1853.	1855.
Manufactures of wool.....	\$285,932	\$61,536
" cotton.....	823,632	212,700
" silk, etc.....	3,801,836	4,840,534
" flax, flannels, etc.....	3,352	—
" iron and steel.....	19,002	28,426
" brass.....	326	1,060
" gold and silver.....	16,449	14,510
" glass.....	157	—
" paper, etc.....	72	1,354
" wood.....	2,704	1,300
Watches.....	1,035,714	2,573,416
Watch crystals.....	3,161	23,790
Wearing apparel.....	5,344	5,940
Books, printed and other.....	1,352	173
Buttons.....	445	—
Cheese.....	3,225	5,702
Clocks.....	842	408
Drugs and medicines.....	91	1,000
Hats and bonnets of straw, etc.....	851,049	140,568
Mathematical instruments.....	1,324	984
Musical boxes.....	3,016	7,732
Optical instruments.....	214	—
Cordials.....	1,085	—
Argol.....	—	5,857
Total value of imports.....	\$5,532,984	\$7,778,132

SUMMARY STATEMENT EXHIBITING THE VALUES OF THE PRINCIPAL IMPORTS, THE PRODUCE AND MANUFACTURES OF SWITZERLAND, DURING THE YEARS ENDING JUNE 30, 1853, AND JUNE 30, 1855, THE DETAILS OF WHICH APPEAR IN THE PRECEDING STATEMENT, WITH THE PORTS WHENCE CLEARED.

Via the Ports of	1853.	1855.
Hamburg	\$881	\$8,159
Bremen	798,342	689,168
Holland	995	9,542
Belgium	10,015	
France	2,637,377	3,791,004
England	2,150,324	3,405,266
Total	\$5,592,984	\$7,778,132

Imports from the United States into Switzerland are made, for the most part, through the customs frontiers of Bern, Soleure, Basle, and Aargau, bordering on France and the southern part of Germany. Swiss statistics, especially such as relate to commerce, are so far behind those of other European governments, owing mainly to the geographical position of Switzerland, that an approximation only to fixed facts is attempted in the following tables, designed to illustrate the preceding summary of the trade between the two countries.

COMMERCE OF THE UNITED STATES WITH SWITZERLAND, EMBRACING THE AMOUNTS OF THE PRINCIPAL IMPORTS AND EXPORTS.

IMPORTATIONS INTO SWITZERLAND FROM THE UNITED STATES.

Denomination of Merchandise.	1851.	1852.	1853.
	Centners.*	Centners.	Centners.
Cotton	124,512-4	173,320	167,553
Dye-stuffs, wood, berries, roots, and herbs.	24,393-2	14,464	16,294
Grains and vegetables	442,543-9	725,355	576,108
Fish-oil	3,060-4	3,090-6	8,140
Flour	141,530-3	172,393	107,023
Furs	127-1	197	58-9
Hops	564-8	648	613
Lard and tallow	3,958-1	4,553	2,341
Potash	1,227-6	791	995
Tobacco leaf	46,215-6	49,964	51,467
Manufactured cigars	3,405-8	3,698-8	4,802
Tar, rosin, and pitch	1,401-2	899	897
Turpentine and oil	2,921	2,246	2,152

EXPORTATIONS FROM SWITZERLAND TO THE UNITED STATES.

Denomination of Merchandise.	1851.	1852.	1853.
	Centners.	Centners.	Centners.
Cotton stuffs	31,806	37,072	47,865
Cheese	31,854	36,396	37,866
Silk stuffs	20,767	20,074	28,287
Straw twistings	2,737	5,080	4,465
Watches, including music-boxes.	551-6	342	467
Wooden manufactures	1,359-5	1,942	1,652

The trade between the United States and Switzerland is gradually on the increase. American flour, which, prior to 1847, never reached that country, is in common use now, and if reduction can be obtained on the expense of transportation through France, or on the Rhine, it may in time become as much in use as that obtained from the Baltic. During the year 1853 the following amounts of Swiss manufactured articles were exported to the United States, the papers of which passed through this consulate, nine-tenths of which were manufactured alone in the Canton of Zurich, which contains a population of but 250,000:

Silk goods, amounting to	19,312,050 francs.
Cottons (mostly from Canton St. Gall)	703,812 "
Straw goods	72,989 "
Catholic books, from Convent Einsiedel	18,965 "
Cheese	8,845 "
Calf-skins, etc.	16,779 "

Making a grand total of

—Com. Rel. U. S.

Swords were originally formed of iron taken from a mountain by the Chinese, 1879 B.C.—*Univ. Hist.* The sword was one of the earliest implements of war. The Roman swords were from twenty to thirty inches long. The broadsword and cimeter are of modern adoption. The sword of state was carried at an English king's coronation by a king of Scotland, 1194. Damascus steel swords are highly prized, and next the sword of Ferrara steel. The Scotch Highlanders were accustomed to procure the latter from the celebrated

* The Swiss centner is equivalent to 110½ lbs.

artificer named Andrea di Ferrara, and used to call them their *Andrea Ferraras*. The broadsword was forbidden to be worn in Edinburgh in 1724.—*HAYDN.*

Sydney, the capital of New South Wales, and of the British settlements in New Holland, or Australia, on a cove on the south side of Port Jackson, about seven miles from its mouth, lat. 38° 55' S., long. 150° 10' E. Population in 1846, 38,358, and now (1853) estimated at above 50,000. Owing to a want of attention at first, the streets of Sydney were laid out, and the houses built, according to the views of individuals, without any fixed or regular plan. But latterly this defect has been to a considerable degree remedied in the old streets; and the new ones are systematically laid out. The town covers a great extent of land, almost every house having a considerable piece of ground attached to it. Schools for the instruction of poor children have been established, and there are, besides two establishments dignified with the pompous title of colleges, numerous seminaries, some of them said to be very well conducted, for the education of the middle and upper classes. There are several newspapers and other periodical publications.

Sydney is admirably adapted for the capital of a great trading colony. Port Jackson is one of the finest natural basins in the world. It stretches about fifteen miles into the country, and has numerous creeks and bays; the anchorage is every where excellent, and ships are protected from every wind. The entrance to this fine bay is between two gigantic cliffs, not quite two miles apart. On the most southerly, in lat. 33° 51' 30" S., long. 151° 16' 30" E., a light-house has been erected, the lantern of which is elevated 67 feet above the ground, and about 345 feet above the sea. It is navigable for ships of any burden to the distance of fifteen miles from its entrance, or seven miles above Sydney, up what is called the Paramatta River. Ships come close up to the wharves and stores of the town, their cargoes being hoisted from the ship's hold into the warehouses. Sydney is consequently the emporium of all the settlements in this part of Australia, and has a very extensive trade. Down to the discovery of the gold fields in 1851, wool was by far the most important product raised in the colony. The increase of cattle and sheep, but especially the latter, in Australia has in truth been altogether extraordinary. Previously to the arrival of the English settlers in New South Wales in 1788, neither horse nor cow, sheep nor hog, had ever set foot on the continent. The stock they brought with them was limited in the extreme, consisting only of 7 horses, 7 head of cattle, 29 sheep, 19 goats, and 74 pigs. And from this late and scanty stock, assisted by a few subsequent importations, have been derived all the vast numbers of sheep and other useful animals now to be found in the Australian continent. For a while the rate of increase was comparatively slow. But from 1810 down to 1851, when the revolution occasioned by the gold discovery affected every branch of industry, the multiplication of sheep and other stock, especially the former, has been rapid beyond all precedent. This is shown by the following account of the sheep's wool annually imported from Australia into the United Kingdom since 1840:

Years.	Pounds.	Years.	Pounds.
1840	9,721,423	1847	26,086,815
1841	12,399,090	1848	30,034,567
1842	12,950,671	1849	35,774,671
1843	17,433,780	1850	39,018,221
1844	17,589,712	1851	41,810,187
1845	24,150,687	1852	43,197,301
1846	21,865,270		

Down to 1851 the colony of New South Wales comprised the extensive province of Port Phillip, now Victoria. But the latter was then separated from the former, and formed into an independent state, with a governor and Legislature of its own.—*See MELBOURNE.*

At the close of December, 1851, the colony of New South Wales (exclusive of Victoria) had a population

of 197,168. It had also, at the same time, 152,057 acres under crop, 116,397 horses, 1,375,257 head of cattle, and 7,896,895 sheep. During the same year the value of the imports (mostly from England) amounted to £1,563,931, and that of the exports to £1,796,912. The latter comprised, among others, the following items, viz.:

Wool.....	15,268,493 lbs.	Value, £828,302
Gold bullion.....	144,120 oz. 17 dwt.	468,336
Tallow.....	84,464 cwt.	114,163
Hides.....	.....	86,625
Whale oil...	601½ tons.	25,377

with neat cattle, flour and bread, bones, soap, cedar, and other woods, etc.

Harbor Dues, etc.—The colonial Legislature has also, by an act passed in 1852, suppressed all charges on shipping for harbor dues, light-house dues, fees on entering and clearing, water police dues, etc. Sydney is therefore really a free port. See articles AUSTRALIA, MELBOURNE, and NEW SOUTH WALES.

Money, Weights, and Measures.—Accounts are kept in sterling money; but Spanish dollars are most abundant. They pass current at 5s. each. The weights and measures are the same as those of England.

Syria, the ancient Syros, one of the islands of the Greek Archipelago, whose salubrity and fertility have been celebrated by Homer (POPE's *Odyssey*, book xv. v. 438, etc.), in the group called the Northern Cyclades, fifteen miles west from the greater Delos, its port, on the east side of the island, being in lat. 37° 26' 30'' N., long. 24° 57' E. It is from nine to ten miles in length, by about five in breadth. Though rugged, it is carefully cultivated, and produces garden stuffs, wine, olives, figs, cotton, etc., with a little barley. The population in 1830 was set down by Mr. Urquhart at 4500; but we have been assured that it is at present (1853) little, if at all, short of 27,000.

It is indebted for this extraordinary increase of population to the convenience and excellence of its port and its central situation, which have made it a considerable commercial entrepôt. Though small, its harbor is accessible to line-of-battle ships. The holding ground is good, and it has in its centre about ten fathoms water. Merchantmen of from 400 to 500 tons burden moor within about 100 yards of the wharves. Winds from the southeast round to east-northeast throw in a heavy swell; but the port is well protected from winds from all other points. A light-house, with a revolving light, has been erected on Gaidoro Island, about 1½ mile southeast from the port. Most part of the trade that formerly centred at Scio is now carried on here; and the island has not only received numerous immigrants from Scio, but also from many other parts of Greece. Great Britain and most European powers have consuls in Syria; and it is also the principal seat of the Protestant missionaries to the Levant. The town is on the north side of the harbor. The oldest portion occupies the summit of a conical-shaped hill, probably the site of the acropolis of the ancient city. —See *TOURNEFORT, Voyage du Levant*. But the new streets and houses, of which there are many, come down to the water's edge. It has an appearance of great bustle and animation. Its copious spring of pure fresh water has been eulogized by Clarke (*Travels*). In 1848 no fewer than 468 vessels were registered at Syria, being a greater amount of shipping than belonged to any Greek port.

Syria (with Palestine), a large division of Asiatic Turkey, mostly between lat. 31° and 37° N., and

long. 34° 30' and 40° E.; bounded north by the Amanian Mountains, east by the Euphrates and the Arabian desert, south by Arabia Petrea, and west by the Mediterranean Sea. Estimated area, 50,000 square miles. Population about 1,865,000, mostly Mohammedans, but comprising about 345,000 Greek Christians, 260,000 Maronites and Roman Catholics, 175,000 Jews, 48,000 Druses, and 17,000 Metualis and Yezidis. The west, or coast portion, is mountainous; the east chiefly an elevated plain. After the Dead Sea, the principal lakes are those of Tiberias, or Genesareth, and Hulaah, in the valley of the Jordan; some smaller ones exist near Damascus and Antioch. The surface being very uneven, the climate and products vary greatly within short distances. Along the coasts the heat is great, and the orange, banana, and date flourish, while the summits of the mountains are seen covered with snow. In the north, and on the elevated plain east of the mountains, the climate is colder, but at Aleppo frosts are seldom severe, and snow rarely lies on the ground for more than a day at a time. The corn is nearly ripe early in May; and from June to September summer heats prevail, unbroken by any rain, though tempered in the west by sea-breezes. It is stated that the country is capable of producing sufficient to maintain ten times its present population; yet such is the rude method of agriculture, the depressed condition and insecurity of the rural population, and the uncertainty of taxation and government regulations, that in bad years corn must frequently be imported from Egypt and elsewhere. Wheat, barley, maize, millet, lentils, and sesamum, are raised in the plains, principally in the Haouran, which has always been considered the granary of Syria. Cotton and the mulberry flourish on the coast, and silk is produced on the slopes of Lebanon. The cotton annually raised in the south is estimated to amount in value to £350,000; and about 1700 cantars of silks, 10,700 cantars of tobacco, from 8000 to 10,000 cantars of gall-nuts, and 300 cantars of madder roots are annually produced. Other chief products are sheeps' wool, olive-oil, sugar, indigo, scammony, and other gums, safflower, dates, timber, hides, and skins. Sheep and other live-stock form, as in antiquity, a chief part of the wealth of the inhabitants; and, all merchandise being conveyed on the backs of animals, it is estimated that the transit trade employs 80,000 beasts, and about 30,000 drivers. About 3500 okes of sponge fished on the coast are sent to the ports of the Mediterranean annually; other fisheries are comparatively unimportant, as is mining industry. Damascus has about 4000 looms engaged in the manufacture of silks, and the same manufacture is carried on to a considerable extent in Aleppo. Cotton, and some woollen fabrics, shawls, gold and silver thread stuffs, are also woven there and elsewhere, and the total produce of the looms of Aleppo is estimated at £250,000 in annual value. Glass, earthen-ware, leather, and soap, are made in the above and other towns; and in Palestine great numbers of religious ornaments are manufactured for sale. Commerce is greatly impeded by the want of roads, those that exist being mere mule or camel tracks; also by the deficiency of good harbors. But as Syria is on the high route from Bagdad, Mosul, and Erzeroum, to Mecca, caravans annually traverse it, bringing galls, indigo, Mocha coffee, skins, Cashmere shawls, and other Indian manufactures, also the products of Asia Minor, Mesopotamia, and Persia, which are exchanged here for European manufactures and cochineal.

T.

Tacamahac, a resin obtained from the *Fagara octandra*; and likewise, it is supposed, from the *Populus balsamifera*. It comes in large oblong masses wrapped in flag leaves. It is of a light brown color, very brittle, and easily melted when heated. When pure, it has an aromatic smell, between that of lavender and musk, and dissolves completely in alcohol, water having no action upon it.—THOMSON'S *Chemistry*.

Tack, a rope used to confine the foremost lower corners of the courses and stay-sails in a fixed position when the wind crosses the ship's course obliquely. The same name is also given to the rope employed to pull out the lower corner of a studding-sail or driver to the extremity of its boom. The mainsail and foresail of a ship are furnished with a tack on each side, which is formed of a thick rope tapering to the end, and having a knot wrought upon the largest end, by which it is firmly retained in the clew of the sail. By this means one tack is always fastened to windward, at the same time that the sheet extends the sail to the leeward.

To **tack**, to change the course from one board to another, or turn the ship about from the starboard to the larboard tack in a contrary wind. Thus, a ship being close-hauled on the larboard tack, and turning her prow suddenly to windward, receives the impression of the wind on her head sails, by which she falls off upon the line of the starboard tack. Tacking is also used in a more enlarged sense, to employ that maneuver in navigation by which a ship makes an oblique progression windward in a zigzag direction. This, however, is more usually called *beating* or *turning to windward*.

Tackle, a machine formed by the communication of a rope with an assemblage of blocks, and known in mechanics by the name of *pulley*. Tackles are used in a ship to raise, remove, or to secure weighty bodies, to support the masts, or to extend the sails and rigging. They are movable as communicating with a runner, or fixed as being hooked in an immovable situation; and they are more or less complicated in proportion to the effect which they are intended to produce. The application of the tackle to mechanical purposes is called *hoisting* or *bowsing*. Ground tackle implies the anchors, cables, etc.

Taffarel, the uppermost part of a ship's stern, being a curved piece of wood, and usually ornamented with some device in sculpture.

Taffeta, one of the earliest species of silken manufacture, more prized formerly than now, woven very smooth and glossy. It was worn by queens, and was first made in England by John Tyce, of Shoreditch, London, 41 Elizabeth, 1598.—STORR'S *Chron.* Taffeta has been superseded by numerous descriptions of manufacture more esteemed by the female world.—HAYDN.

Taganrog, a city of European Russia, on the north coast of the Sea of Azof, near the mouth of the River Don, lat. 47° 12' 48" N., long. 38° 39' E. Population, 18,000. It has a naval hospital, a lazaretto, etc.; and there are annual fairs in May, August, and November. Taganrog is a place of considerable commercial importance. It was intended by its illustrious founder, Peter the Great, to replace Azof, the ancient emporium of the Don, the port of which had become all but inaccessible; and its whole consequence is derived from this circumstance, or from its being the entrepôt of the commerce of the countries traversed by that great river. The largest portion by far of the trade is carried on with Constantinople, Smyrna, and other Turkish ports, but a good deal is also carried on with the Italian and other foreign ports; and there is an extensive coasting trade with Odessa and other Russian ports. In 1852 the exports to foreign countries comprised, among other articles, 1,102,047 chet-

werts wheat, 112,510 poods tallow, 175,836 poods wool, 26,194 poods caviare, 346,380 chetwerts linseed, etc. Seeing that Taganrog was built to obviate the difficulties that had to be encountered by vessels entering the Don, through the shallowness of the water, it might have been supposed that care would be taken to place it in a position in which it should be, in as far as possible, free from this defect. This important consideration seems, however, to have been to a great degree overlooked. The Gulf of the Don is seldom navigable by vessels drawing more than from ten to eleven feet water, and even these can not approach within less than about 700 yards of the town. They are principally loaded by carts, drawn each by a single horse, the expenses being so very considerable that it costs from 120 to 150 copecks to ship a chetwert of wheat. Without, however, altering the position of the town, these defects might be obviated with but little difficulty, by constructing a wooden pier by which vessels in the roads might be sheltered, and from which they might be laden.

It is impossible to form a correct estimate of the future magnitude of the trade of the Sea of Azof. No doubt, however, it is very great, being the natural seat of the commerce of some of the most extensive and fertile countries of Eastern Europe.

Were the navigation of the Don improved, and facilities given to foreigners entering the sea, the exports might be largely increased, even with recent prices, which have been nearly the same as those of Odessa. The harvests in the south of Russia fluctuate very greatly. The imports into the Sea of Azof are but inconsiderable, principally consisting of Greek wines, oils, dry salteries, and such like articles.

Talc, a species of fossil nearly allied to mica. It is soft, smooth, greasy to the feel, and may be split into fine plates or leaves, which are flexible, but not elastic. It has a greenish, whitish, or silver-like lustre. The leaves are transparent, and are used in many parts of India and China, as they were used in ancient Rome (PLINY, *Hist. Nat.*, lib. xxvi.), in windows instead of glass. In Bengal a seer of talc costs about two rupees, and will sometimes yield a dozen panes 12 inches by 9, or 10 by 10, according to the form of the mass, transparent enough to allow ordinary subjects to be seen at twenty or thirty yards' distance. It should be chosen of a beautiful pearl color; but it has, in general, either a yellowish or faint blue tinge. Its pure translucent flakes are frequently used by the Indians for ornamenting the bawbles employed in their ceremonies. Talc is employed in the composition of *rouge végétal*. The Romans prepared with it a beautiful blue, by combining it with the coloring fluid of particular kinds of testaceous animals. The talc brought from the Tyrolese mountains is called in commerce Venetian talc. Several varieties are found in India and Ceylon.—THOMSON'S *Chemistry*; REES' *Cyclopædia*; MILBURN'S *Oriental Commerce*; ANSLIE'S *Mat. Indica*.

Talent signifies both a weight and a coin very common among the ancients, but very different among different nations. The common Attic talent of weight contains 60 Attic minæ, or 6000 Attic drachmæ; and weighed, according to Dr. Arbuthnot, 59 lbs. 11 oz. 17½ grs. English Troy weight. There was another Attic talent, by some said to consist of 80, by others of 100 minæ. The Egyptian talent was 80 minæ; the Antiochian also 80; the Ptolemaic of Cleopatra 80½ that of Alexandria, 96; and the insular talent, 120. In the valuation of money, the Grecian talent, according to Dr. Arbuthnot, was equal to 60 minæ; or, reckoning the mina at £3 4s. 7d., equal to £193 15s. The Syrian talent, in this valuation, consisted of 15 Attic minæ, the Ptolemaic of 20, the Antiochian of 60, the

Eubæan of 60, the Babylonian of 70, the greater Attic of 80, the Tyrian of 80, the Egeian of 100, the Rhodian of 100, and the Egyptian of 80 minæ. There is another talent much more ancient, which Dr. Arbuthnot calls the *Homeric talent* of gold, which seems to have weighed six Attic drachms, or three Dorics, a Doric weighing very little more than a guinea. According to this talent some reckon the treasure of King David, particularly that mentioned 1 Chron. xx. 14, which, according to the common reckoning, would amount in gold talents to the value of £547,500,000, and the silver to above £342,000. As David reigned in Judea after the siege of Troy, it is not improbable but Homer and he might use the same numeral talent of gold. Among the Romans there were two kinds of talents, the *little* and the *great* talent. The little was the common talent; and whenever they say simply *talentum*, they are to be understood of this. The little talent was 60 minæ or Roman pounds, the mina or pound being estimated at 100 drachms or denarii. It was also estimated at twenty-four great sesterces, which amounted to £60. The great talent exceeded the less by one-third part. Budæus computes that the little talent of silver was worth £75 sterling, and the greater £99 6s. 8d. sterling. The greater of gold was worth £1125 sterling.

Talent, as a species of money among the Hebrews, was sometimes used for a gold coin, the same with the shekel of gold, called also *stater*, and weighing only four drachms. The Hebrews reckoned by these talents, as we do by pounds, etc. Thus a million of gold, or a million of talents of gold, among them was a million of shekels, or nummi; the nummus of gold being the same weight with the shekel; viz., 4 drachms. But the Hebrew talent weight of silver, which they called *cicar*, was equivalent to that of 3000 shekels, or 119 lbs. 10 oz. 1 dwt. 10½ grs. English Troy weight, according to Arbuthnot's computation.—E. B. See COINS.

Tallow (Fr. *Suif*; Ger. *Talg*; It. *Sevo*, *Sego*; Russ. *Salo*, *toplenoe*; Sp. *Sebo*), animal fat melted and separated from the fibrous matter mixed with it. Its quality depends partly on the animal from which it has been prepared, but more, perhaps, on the care taken in its purification. It is firm, brittle, and has a peculiar heavy odor. When pure, it is white, tasteless, and nearly insipid; but the tallow of commerce has usually a yellowish tinge, and is divided, according to the degree of its purity and consistence, into candle and soap tallow. Tallow is an article of great importance. It is manufactured into candles and soap, and is extensively used in the dressing of leather, and in various processes of the arts. The exports of tallow from Russia amount, at an average, to about 3,810,000 poods, or 137,160,000 lbs. a year.—TEGOBORSKI, *Forces Productives de la Russie*, i. 233. Of this immense supply, the export of the largest portion is to England; the remainder being exported to Prussia, France, the Hanse Towns, Turkey, etc.

We borrow from the work of Mr. Borrisow, on the commerce of Petersburg, the following details with respect to the tallow trade of that city: Tallow is divided into different sorts; namely, white and yellow *candle tallow*, and common and Siberian *soap tallow*; although it is allowed that the same sort often differs in quality. Tallow is brought to Petersburg from the interior; and the best soap tallow from Siberia, by various rivers, to the Lake Ladoga, and thence by the canal of Schlussemburg to the Neva. Yellow candle tallow, when good, should be clean, dry, hard when broken, and of a fine yellow color throughout. The white candle tallow, when good, is white, brittle, hard, dry, and clean. The best white tallow is brought from Woronesch. As for soap tallow, the more greasy and yellow it is, the better the quality. That from Siberia is the purest, and commonly fetches a higher price than the other sorts. The exports of tallow

from Petersburg in 1852 amounted to 2,062,101 poods. Formerly the oil and tallow warehouses were the same, and this occasioned great difficulties in shipping, because all vessels or lighters taking in tallow or oil were obliged to haul down to the *ambare*, and wait in rotation for their cargoes. The consequence was, that, when much business was doing, a vessel was often detained for several weeks at the *ambare* before she could get her cargo on board. Now the tallow and oil warehouses are separated, and every article has its own place. When a shipment of tallow is made, the agent is furnished by the selector (*bracker*) with a sample from each cask. Captains, in order to obtain more freight, usually load some casks of tallow upon deck; but it is more for the interest of the owner to avoid this, if possible, because the tallow loses, through the heat of the sun, considerably, both in weight and quality. One hundred and twenty poods of tallow, gross weight, make a Petersburg last, and 63 poods a ton. The value of the tallow exported from Russia is said by M. Tegoborski to amount, at an average, to about 3,871,000 roubles, or about \$15,500,000.

EXPORTS OF DOMESTIC TALLOW FROM THE UNITED STATES
DURING THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Pounds.	Value.
Danish West Indies.....	8,750	\$1,068
Hamburg.....	26,537	3,320
Dutch West Indies.....	436	55
Dutch Guiana.....	14,706	1,724
England.....	1,773,452	208,946
Malta.....	2,750	356
Canada.....	1,455,563	149,382
Other British North Am. Possessions.....	592,110	60,373
British West Indies.....	2,679	332
British Honduras.....	2,700	270
British Guiana.....	4,571	624
France on the Atlantic.....	40,000	4,844
French North American Possessions.....	3,163	382
Cuba.....	885,316	105,366
Porto Rico.....	8,858	1,070
Azores.....	1,100	120
Hayti.....	4,566	604
Mexico.....	12,132	1,305
New Granada.....	14,833	1,736
Venezuela.....	267,987	31,481
Chili.....	576,561	60,006
Total.....	5,698,315	\$632,256

IMPORTS OF TALLOW INTO THE UNITED STATES FOR THE
YEAR ENDING JUNE 30, 1857.

Whence imported.	Pounds.	Value.
England.....	21,710	\$1,721
British West Indies.....	7,760	427
British Possessions in Africa.....	541	69
British East Indies.....	32,420	2,601
Mexico.....	974	99
Buenos Ayres, or Argentine Republic.....	16,238	1,108
Sandwich Islands.....	86,965	6,542
Total.....	166,548	\$12,507

Tally Trade, the name given to a system of dealing carried on in London and other large towns, by which shop-keepers furnish certain articles on credit to their customers, the latter agreeing to pay the stipulated price by certain weekly or monthly installments. In London there are about sixty or seventy tally-shops of note, and from 500 to 600 on a smaller scale. They are also spread over the country to a considerable extent, particularly in the manufacturing districts. The customers of the tally-shops are mostly women, consisting principally of the wives of laborers, mechanics, porters, etc., servant girls, and females of loose character. Few only of the more respectable classes have been infatuated enough to resort to them.

Tamarinds (Ger. *Tamarinden*; Fr. *Tamarins*; It. and Sp. *Tamarindo*; Arab. *Umblic*; Hind. *Tintiri*), the fruit of the *Tamarindus Indica*, a tree which grows in the East and West Indies, in Arabia, and Egypt. In the West Indies the pods or fruit, being gathered when ripe, and freed from the shelly fragments, are placed in layers in a cask, and boiling sirup poured over them, till the cask be filled; the sirup pervades every part quite down to the bottom; and when cool, the cask is headed for sale. The East India tamarinds are darker

colored and drier, and are said to be preserved without sugar. When good, tamarinds are free from any degree of mustiness; the seeds are hard, flat, and clean; the strings tough and entire; and a clean knife thrust into them does not receive any coating of copper. They should be preserved in closely-covered jars.—THOMSON'S *Dispensatory*. The tamarind-tree was very early introduced into England, where it sometimes is known to flower; from which circumstance it may be inferred that it would prosper in favorable localities in some of our Southern States, and probably mature its fruit. There is, perhaps, only one species of this genus; but the West Indian tamarind, believed to be only a variety, differs much from the East Indian, in the form of its fruit and the number of its seeds.

Tampico, or Santa Ana de Tamaulipas, a sea-port town of the Mexican confederation, department, and 215 miles north-northwest from Vera Cruz, on the south shore of the Lake of Tampico. Population, 7000. It is regularly laid out on a slope, and has some good dwellings in the old Spanish style, with military and naval hospitals, some public monuments, and well-supplied markets. It is better drained and less unhealthy than formerly. Principal exports are specie, hides, tallow, bones, and jerked beef.

IMPORTS INTO TAMPICO FROM THE UNITED STATES, WITH THE ESTIMATED DUTIES.

Year.	Amount of Cargoes.	Import Duties.
1851.....	\$273,704	\$205,273
1852.....	196,936	147,702
1853.....	843,564	632,673

The exports hence to the United States during the year 1837 amounted to \$1,283,157, whereas the returns of the year 1855 only amount to the sum of \$208,571. In 1834 the total amount of specie from this port was, by official returns, \$9,165,178, of which over \$2,000,000 went to the United States, the balance to Europe. A serious drawback to the commercial intercourse between this port and the United States is the want of direct steam conveyances. The geographical position of Tampico has many advantages over any other port in the republic, in consequence of its proximity to San Luis Potosi, where goods can be sent at 50 per cent. less in the charges of freight than from Vera Cruz, and San Luis being the key to all the principal places in the sections of the country whose commerce is supplied with foreign goods, and the spot where the goods meet from the states of Durango, Jalisco, Guanajuato, and Zacatecas, these being the principal mining states in the republic. There were twelve arrivals and departures of English packets, bringing to Tampico 3431 quicksilver flasks, and taking thence cargoes of an aggregate value of \$3,459,061; which, added to the aggregate value of other outward cargoes, makes a total of \$3,994,772.

RETURNS OF AMERICAN AND FOREIGN TRADE AT THE PORT OF TAMPICO DURING THE YEAR ENDING DECEMBER 31, 1854.

Nations.	Tons.	Value of Imports.	Tons.	Value of Exports.
American vessels...	2,775	\$200,309	3091	\$208,471
Mexican ".....	2764	216,700	2650	61,890
Spanish ".....	285	66,100	285	26,450
French ".....	2100	530,382	2216	.....
English ".....	895	493,140	895	238,000
Danish ".....	280	111,885	280	900
Total.....	9219	\$1,618,026	9407	\$535,711

Tanning. The process of tanning leather with the bark of trees was early practiced by various nations. The use of tan was introduced into these countries from Holland by William III., for raising orange-trees. It was discontinued until about 1719, when ananas were first brought into England. Since then tan has been in general use in gardening. Great improvements were made in tanning in 1795, *et seq.*

Tapestry, an art of weaving borrowed from the Saracens; and hence its original workers in France were called Sarazinois. The invention of tapestry hangings belongs (the date is not mentioned) to the Netherlands.—GUICCIARDINI. Manufactured in France

under Henry IV., by artists invited from Flanders, 1606. The art was brought into England by William Sheldon, and the first manufactory of it was established at Mortlake by Sir Francis Crane, 17 James I., 1619.—SALMON. Under Louis XIV. the art of tapestry was much improved in France.—See GOBELIN TAPESTRY. Very early instances of making tapestry are mentioned by the ancient poets, and also in Scripture; so that the Saracen manufacture is a revival of the art. For the tapestry wrought by Matilda of England, see BAYEAUX, *Tapestry*, p. 74.

Tapioca, a species of starch or white coarse powder derived from the roots of the bitter cassava (*Jatropha manihot*), an American plant raised all over South America, but principally in Brazil, where it is called *mandioc* or *manioc*. The roots of the plant, being peeled, are subjected to pressure in a kind of bag made of rushes; the juice which is forced out by this process being a deadly poison, and employed as such by the Indians to poison their arrows. But the residuum, or farinaceous matter remaining after the expulsion of the juice, is perfectly wholesome, and makes excellent bread. Tapioca, as stated above, is prepared from this residuum; and being nutritious and easy of digestion, is extensively used in the making of puddings. When dressed, it is not easily distinguished from sago.

Tar (*Fr. Goudron*; *Ger. Theer*; *It. Catrame*; *Pol. Smola gesta*; *Russ. Degot, Smolashitkaja*; *Swed. Tjara*), a thick, black, unctuous substance, chiefly obtained from the pine and other turpentine trees, by burning them in a close, smothering heat.

EXPORTS OF TAR FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Barrels.	Value.
Swedish West Indies.....	2	\$4
Danish West Indies.....	370	832
Hamburg.....	800	1,773
Bremen.....	198	228
Holland.....	7,082	8,213
Dutch West Indies.....	85	210
Dutch Guiana.....	370	827
Dutch East Indies.....	723	1,612
England.....	27,253	69,498
Scotland.....	12,742	26,680
Gibraltar.....	270	661
Malta.....	430	247
Canada.....	2,471	9,470
Other British North Am. Possessions	6,243	13,553
British West Indies.....	2,857	5,350
British Honduras.....	210	606
British Guiana.....	1,478	3,153
British Possessions in Africa.....	305	1,087
British Australia.....	550	1,907
British East Indies.....	8,388	17,929
France on the Atlantic.....	3,722	5,933
France on the Mediterranean.....	1,929	2,350
French North American Possessions	169	402
French West Indies.....	598	1,289
French Guiana.....	442	817
Spain on the Mediterranean.....	1,096	2,766
Canary Islands.....	60	132
Philippine Islands.....	659	1,949
Cuba.....	3,215	7,511
Porto Rico.....	476	1,114
Portugal.....	285	646
Madeira.....	50	120
Cape de Verd Islands.....	75	166
Azores.....	290	588
Two Sicilies.....	815	1,062
Turkey in Europe.....	150	300
Turkey in Asia.....	400	825
Ports in Africa.....	1,373	3,011
Hayti.....	277	573
San Domingo.....	230	460
Mexico.....	962	2,676
Central Republic.....	59	131
New Granada.....	1,224	3,570
Venezuela.....	777	1,573
Brazil.....	1,380	2,754
Uruguay, or Cisplatine Republic...	250	506
Argentine Republic.....	575	1,399
Chili.....	472	1,218
Peru.....	350	777
Ecuador.....	250	549
Sandwich Islands.....	339	1,109
Other islands in the Pacific.....	26	108
China.....	350	1,166
Whale-fisheries.....	19	76
Total, year 1856-7.....	46,731	\$208,610

Tar is an article of great commercial importance. The process followed in making it has been described as follows by Dr. Clarke: "The situation most favorable to the process is in a forest near to a marsh or bog; because the roots of the fir, from which tar is principally extracted, are always most productive in such places. A conical cavity is then made in the ground (generally in the side of a bank or sloping hill), and the roots of the fir, together with logs and billets of the same, being neatly trussed in a stack of the same conical shape, are let into this cavity. The whole is then covered with turf, to prevent the volatile parts from being dissipated, which by means of a heavy wooden mallet, and a wooden stamper, worked separately by two men, is beaten down and rendered as firm as possible above the wood. The stack of billets is then kindled, and a slow combustion of the fir takes place, without flame, as in making charcoal. During this combustion the tar exudes; and a cast-iron pan being at the bottom of the funnel, with a spout which projects through the side of the bank, barrels are placed beneath this spout to collect the fluid as it comes away. As fast as the barrels are filled they are bunged and ready for immediate exportation. From this description it will be evident that the mode of obtaining tar is by a kind of distillation *per descensum*; the turpentine, melted by fire, mixing with the sap and juices of the fir, while the wood itself, becoming charred, is converted into charcoal."

Tare, an abatement or deduction made from the weight of a parcel of goods, on account of the weight of the chest, cask, bag, etc., in which they are contained. Tare is distinguished into *real tare*, *customary tare*, and *average tare*. The first is the actual weight of the package; the second its supposed weight according to the practice among merchants; and the third is the medium tare, deduced from weighing a few packages, and taking it as the standard for the whole. In some commercial cities tares are generally fixed by custom. The prevailing practice, as to all goods that can be unpacked without injury, both at the custom-house and among merchants, is to ascertain the real tare. Sometimes, however, the buyer and seller make a particular agreement about it.

Tare, Vetch, or Fitch, a plant (*Vicia sativa*, Linn.) that is cultivated principally for its stem and leaves, which are used in the feeding of sheep, horses, and cattle; but partly, also, for its seed. Horses thrive better upon tares than upon clover and rye grass; and cows that are fed upon them give most milk. The seed is principally used in the feeding of pigeons and other poultry.

Tariff, or Tarif. First, a list of certain goods, merchandise, etc.; then a list of duties on imports or exports of such articles. This word, like many others used in commerce, is derived from the Italian, in which it is *tariffa*; this again, like numerous other expressions relating to commerce and navigation, comes from the East. In Persian it is *tarif*; in Arabian the verb *arf* signifies to know, which in the second form becomes *tarif*, signifying to make known. The substantive derived from the verb therefore signifies notification. The principles of a tariff depend upon the commercial policy of the state by which it is framed; and the details are constantly fluctuating with the change of interests, and with the wants of the government or community, or in pursuance of commercial treaties with other nations. The British tariff underwent seven important changes between the years 1772 and 1842; viz., in 1787, in 1809, in 1819, in 1825, in 1833, and in 1842. Finally, on 26th June, 1846, the royal assent was given to Sir Robert Peel's noted tariff—a measure which canceled the duties on several hundred articles, and pressed upon the country the adoption of free trade.

The able report of L. D. Campbell, of the House of Representatives, 1856, to the Committee of Ways and Means, is a just and comprehensive exposition of the

protective (not prohibitive) system; and as such, and as being the report upon which our present tariff was mainly constructed, we need not apologize for giving extended extracts. The moderately protective tariff is essential in the early commercial and manufacturing stages of a country. And the fact that free trade may at some future time be advantageous to us does not prove its present necessity. It will be seen that, though generally assenting to the asserted fact that the purpose of revenue alone can justify the imposition of duties, yet the proofs and statistics given prove too much, and prove to the unprejudiced reader that duties are not alone necessary for revenue, but may be necessary for protection.

Principle and Policy of the Proposition.—The propriety of the proposed reduction of the tariff of duties upon imports is made by the President's annual message to rest, first, upon the principle that "the purposes of revenue alone can justify their imposition;" and, second, upon the policy of "reducing the tariff of duties upon imports, as the means of reducing the revenue to the amount annually needed for the prudent and economical administration of public affairs."

The recommendation of the message, thus analyzed, affords a principle which the President contents himself with saying "is so generally conceded, that, in readjusting the impost tables and schedules, which unquestionably require essential modifications, a departure from the principles of the present tariff is not anticipated," and a policy which he does not in any manner undertake to verify or illustrate. It stands in the message as a position assumed without proof, or as too plain to require demonstration.

Revenue limited by Expenditures.—Your committee perceive only one sense in which the President's doctrine concerning the purpose for which import duties may be imposed can be regarded as generally conceded. Imposts employed as a measure of taxation must be conformed to the requirements of the public revenue, or they miss the controlling object of their imposition.

Taxes of every kind must be levied at once up to the necessities, and within the limits of government expenses; in other words, the gross amount of revenue must be regulated by the demand of the government for its current expenses; and, where foreign imports are selected by the policy of the nation to bear the chief burden of its support, the tax imposed must be determined in amount by the requirements of the national treasury.

Thus far it is conceded that the purpose of revenue alone can justify their imposition; and thus far the doctrine of the message is in accordance with the sentiments of the American people. But tariffs have other legitimate purposes, and are capable of other and important uses, while kept in strict conformity to the requirements of the national treasury.

Impost Systems of all Nations protective of their productive Industry.—*Our own Policy persistently governed by this Intention.*—The protection of the national industry, by means of duties laid upon foreign imports, is one of the purposes which characterize the impost systems of all the governments of the earth, whose rank entitles them to consideration as authorities with us. This policy, since its adoption by the first-class nations, has undergone changes corresponding to changes of condition, both in Europe and America, but the principle has never been abandoned. The Continent of Europe holds it as firmly as ever, and Great Britain, by working it to its utmost capacity of beneficial service, has thoroughly justified the theory. Her experience is its most perfect demonstration. In the United States the doctrine has its disciples and supporters as numerous and influential as principles, rightly understood, ever secured among an intelligent and patriotic people. In the forty years of controversy to which it has been subjected in this country, the opposing theory has never obtained a victory or a concession which can

in any way entitle its advocates to claim possession of the field. Fifteen general acts of legislation have made as many changes in the details of our tariff laws, but none of them has yielded the principle of protection, direct or indirect, to our national industry.

Duties less than protective, Fluctuations of the Revenue, and Vicissitudes in the Business of the Country.—The compromise of 1833, of all the general acts of Congress imposing duties upon imports, alone seems to yield prospectively to the doctrine of a tariff for revenue without effectual incidental protection. It is the only instance of a horizontal rate of duties carried below the point of adequate encouragement of our home industry. But even under this act, the level 20 per cent. which its provisions contemplated was not to take effect until after the 30th of June, 1842. Till that date the successive reductions of all excess in the rates over 20 per cent. continued to wear the discriminating features of the protective tariff, which it modified, although the rates ran below the point of protection; and its large free list decidedly expressed the same intention. Nine years' experience of the operation of this act abundantly manifested its unfitness for any of the purposes which a policy of imposts should answer. The revenue derived from it declined in four years from twenty-nine millions to eleven; rose again in two years to twenty-three; sunk the next year to thirteen and a half; and stood three years afterward at eighteen millions. The vicissitudes in the business of the country, and the disasters which its monetary interests encountered in this period, are well remembered. They are indicated sufficiently by the following facts. The price of flour in 1837 was \$10 25 per barrel; in 1842 it had fallen to \$6. In 1836 twenty-five millions of dollars' worth of public lands were sold; in 1842 less than two millions of dollars' worth. In 1836 cotton was at 16·8 cents per lb., in 1842 at 8·1 cents per lb. The export had in six years risen one hundred and sixty millions of pounds, and the total value had fallen twenty-three millions of dollars.

The tariff of 1842 was a convulsive reaction of the national sentiment, awakened by the sufferings of the people under the operation of the system of the Compromise Act.

The general bankruptcy of the people which had resulted was reflected by a corresponding bankruptcy of the national treasury. In 1836 a surplus fund of twenty-eight millions had been disposed of by order-

ing that amount to be deposited with the States; but sixteen months afterward the fourth installment of that deposit was arrested by the necessities of the treasury; and in six years from the date of the act required to relieve the plethora, it was fifty-four millions in debt!

The single instance of a tariff that looked to revenue only, and had the opportunity to practically demonstrate its working qualities, thus proved itself to be the only one ever put upon its trial wholly incapable of answering that special intention, and at the same time had proved more mischievous to every other object which the system of import duties affects, than any other that has ever been attempted.

Established Principles of our Revenue System.—Your committee, feeling well satisfied that the policy of the nation in respect to all the points involved in legislation upon the subject of import duties is sufficiently manifest, think it well to state its principal doctrines for the service which such a statement will render to the purposes and objects of this report:

I. The revenue of the government is to be raised from the sales of public lands, duties upon imports, and from miscellaneous sources, without resorting to internal taxation, direct or indirect.

II. The revenue to be derived from import duties, amounting in the average, since the foundation of the government, to six-sevenths of the resources relied upon, shall be levied under direction of the following principles: 1st. No more money shall be collected than is necessary for the wants of the government, economically administered. 2d. The duties shall be imposed so as to operate as equally as possible throughout the Union, discriminating neither for nor against any class, or section, or interest.

III. Conforming to the objects and limitations of these rules, certain kinds of imports shall be subject to varied rates of duty, and certain others shall be exempt from duty, in such manner as shall best foster and promote home production and the general welfare of the nation; taking care to distribute the protection so afforded over every interest of the people as equally as possible.

Revenue accruing under High and Low Tariffs, respectively, in the last thirty-two Years.—Let us see how either of these points, thus necessary to the validity of the calculation, is sustained or contradicted by the history of our foreign commerce in the last thirty-two years:

Years.	Millions of Dollars.	Sales of Land in Thousands of Dollars.	Average Sales per Annum.	Millions of Dollars Customs.	Average.	Millions of Dollars difference.	
1824.....	53½	984½	\$2,086,000	17½	21½	Inc. 2½	Tariff of 1824, from June 30, 1824.
1825.....	66½	1,216		20		Inc. 8½	
1826.....	57½	1,39½		23½		Inc. 8½	
1827.....	55	1,495½		19½		Dec. 8½	
1828.....	67	1,018½		23½		Inc. 8½	
1829.....	54½	1,517		22½	24½	Dec. 4½	Tariff of 1828, from Sept. 1, 1828.
1830.....	49½	2,329½		22		Dec. 4½	
1831.....	82½	3,210½		24		Inc. 2	
1832.....	75½	2,028½		28½		Inc. 4	
1833.....	83½	3,967½		29		Inc. 4	
1834.....	87	4,557½	7,401,000	16½	Dec. 13	Tariff of 1832, from March 1, 1833. After Dec. 31, 1833, one-tenth excess over 20 per cent. deducted.
1835.....	122	14,757½		19½		Inc. 8½	
1836.....	158½	24,877		23½		Inc. 4½	
1837.....	113½	6,776		11		Dec. 12½	
1838.....	86½	3,082		16	Inc. 5	One-tenth more after Dec. 31, 1837.
1839.....	145½	7,076½		23		Inc. 7	
1840.....	86½	3,292		18½		Dec. 9	
1841.....	114½	1,865½		14½		Inc. 1	
1842.....	88	1,835½		18		Inc. 3½	Half of residue after Dec. 31, 1841. Remaining half after June 30, 1842.
Equal to 1843.....	77	1,197	2,007,000	16	24	Dec. 2	
1843-44.....	96½	2,060		26		Inc. 10	
1844-45.....	105½	2,077		27½		Inc. 1½	Tariff of 1842, after Aug. 30, 1842.
1845-46.....	110	2,694½		26½		Dec. 1	
1846-47.....	116½	2,498½		23½		Dec. 2½	
1847-48.....	140½	3,323½	2,505,000	31½	28	Inc. 8	Tariff of 1846, after Dec. 1, 1846.
1848-49.....	132½	1,859		28½		Dec. 8½	
1849-50.....	164	1,860		39½		Inc. 11½	
1850-51.....	200½	2,352		40	45½	Inc. 9½	
1851-52.....	195	2,048		47½		Dec. 12	
1852-53.....	251	1,667	7,212,000	59		Inc. 11½	Inc. 5
1853-54.....	276	8,471		64		Inc. 5	
1854-55.....	231½	11,497		63		Dec. 11	

Productiveness of the higher and lower Tariffs of thirty-five Years. Steadiness of the former: Unsteadiness of the latter.—The income from customs, under the same tariff, rose from thirteen millions in 1821, to seventeen and a half millions in 1822. Under the tariff of 1824, from 1825 to 1828, it rose from twenty to twenty-three and a quarter millions; under that of 1828, from 1829 to 1832, it rose gradually from twenty-two and a half to twenty-eight and a half millions. Under the Compromise Act of 1833, which reduced the duties under the act of 1832, by biennially deducting one-tenth of the excess over 20 per cent., from and after the 31st of December, 1833, until the 31st of December, 1841, when one half of the remaining excess was struck off, and on the 30th of June, 1842, the other half thereof, the revenue from the customs rose in the first three years of its operation from sixteen to twenty-three and a half millions; in the next year, 1837, sunk to eleven millions—falling twelve and a half millions in one year—and rose again in 1839 to twenty-three millions, another difference of twelve millions in two years. In 1840 it ran down nine and a half millions, and in two years more rose four and a half millions.

The first year of the operation of the tariff of 1842, the customs amounted to no more than sixteen millions; the three following years it stood very steadily at twenty-six, twenty-seven and a half, and twenty-six and a half millions, respectively. In the years 1846–47, during seven months of which the present tariff was in operation, the customs fell two and a half millions; in the following year of famine in Europe they rose eight millions; in the year 1848–49 they declined three and a half millions, and in the succeeding year increased eleven and a quarter millions. In the year 1850–51 they rose again nine and a half millions above the preceding year; in 1851–52 they declined one and three-quarter millions; in 1852–53 they rose eleven and three-quarter millions; in 1853–54 they again increased five millions; and in 1854–55 fell eleven millions.

Fluctuations of the Customs, and Tendency to Excess under the same low-duty Tariff.—In this summary it will be perceived that within the last nine years the revenue from customs has five times varied from the amounts yielded in the years immediately preceding these several changes, from eight to eleven millions of dollars. During these nine years the present tariff was in operation, and an unvarying rate of duties was charged upon the imports. Its changes of productiveness to the revenue have been changes of increase, indeed, but not in any balancing proportion to the naturally increasing expenditure of a growing population; for we find by statement No. 23, of the Secretary's report, that the consumption of foreign imports, *per capita*, rose in the first four years of the period from \$6 60 to \$10; and the surplus in the treasury after all ordinary expenditures, and the payment of over forty millions of the public debt besides, is conclusive of this point.

Your committee have not in these statements considered the causes of the great disparity of the revenues yielded to the treasury by the different rates of duty levied upon foreign imports. They have been looking simply to the question how far, and to what effect, impost percentages of themselves affect the revenue. For the proposition presented for their consideration by the President and Secretary embraces no more, either of facts or principles, than the naked assumption that the reduction of the percentage of itself must work a reduction of the revenue.

"Low Duties yield the larger Revenue." *The Doctrine and Experience of the Past.*—That this doctrine is not in accordance with the facts of a large and varied experience, covering and embracing every variety of conditions which can affect the question, is abundantly manifested by the statistics presented. Indeed the directly opposite doctrine has been held by the advo-

cates of low duties in all controversies which the matter has hitherto undergone. In 1845, pending the discussion which substituted the present reduced tariff for the higher one of 1842, it was argued by the Secretary of the Treasury, in his report of that year, that the larger revenue is produced by the lower rates of duty. He says, "The revenue from *ad valorem* duties last year exceeded that realized from specific duties, although the average of the *ad valorem* duties was only 23·57 per cent., and the average of the specific duties 41·30, presenting another strong proof that lower duties increase the revenue." And again, he says, "While it is impossible to adopt any horizontal scale of duties, or even any arbitrary maximum, experience proves that, as a general rule, 20 per cent. *ad valorem* will yield the largest revenue."

This principle, which is a sound one, does not apply to either of the extremes of impost rates, for the one may be carried up to the point which is prohibitory, or near to it, and the other down to that which would be as nearly nugatory, and so both extremes may be made to operate alike upon the treasury; but it is true within a comparatively moderate range of difference—that is, within any such difference of percentage as any advocate of reduction would now undertake to recommend.

The facts which our financial history offers in support of this doctrine are, in general, as conclusive as these following, which your committee select from a multitude for its proof.

Under the tariff of 1842 the average duties upon protected articles was something above 40 per cent.; the average monthly receipts from customs under that act amounted to \$1,991,267. Under the tariff of 1846, with its average duties below 30 per cent., the monthly receipts during the first two years of its operation reached the sum of \$2,575,207.

Mr. Walker, in his report, December 11, 1848, page 8, says: "As the high duties under the act of 1842 were rapidly substituting the domestic articles, and excluding the foreign rival, the revenue must have declined. From this disastrous condition we have been saved by the tariff of 1846, yielding from reduced taxes an average excess, thus far, of more than seven millions of dollars over the average receipts from the tariff of 1842."

Twice under the operation of the Compromise Act, once after the second deduction was made upon the rates of the act of 1832, and once after the third deduction, the revenue from customs rose to the annual average of the high tariff of 1828. And in the year 1842, when its lowest rates were nearly touched, and the level 20 per cent. was nearly its maximum, the customs stood higher than in five of the previous years of its operation, and above the average of the eight preceding years.

The average annual amount of the customs yielded by the tariff of 1824 was twenty-one and a half millions; of the tariff of 1828, was twenty-four and a fourth millions. In a period of twenty-two years, rising five millions, or 23 per cent. The average of the first four years of the tariff of 1846 was thirty-three and a fourth millions—25 per cent. in four years; the average of its second four years was fifty-four and three-fourths millions; rising in eight years twenty-seven and a half millions per annum, or 133 per cent.

The average annual consumption of foreign imports *per capita* under the tariff of 1824 amounted to \$5 26; under the tariff of 1828, \$5 21; under that of 1842, to \$5 20; while under the lower tariff of 1846, during the four years of its operation previous to the influx of the California gold, the consumption rose to \$6 50 *per capita* of the population, and under the very low average duties of the whole period of the compromise the consumption stood at \$7 28.

These facts show how much more productive of revenue the lower tariffs rates are than those which,

though considered higher, are yet far short of prohibiting importation, or seriously interfering with the prosperity of the carrying trade.

Causes of larger Revenue from lower Duties.—As a means of lessening the revenue derived from customs, or of lessening its proportion to the public expenditure, it is thus made apparent, by the facts of a conclusive experience, that a mere reduction of the rates of duty can not be relied upon; but, on the contrary, that the policy has always the directly opposite effect, and this for many obvious reasons.

A reduction of duties induces increased importations of foreign commodities, disturbing our money market by diminishing the available capital, and enhancing its rate of interest to our own manufacturers. The importer obtains command of the market, and to the extent to which the home competition is crippled in the production of such articles, it opens a vacancy to be supplied by importation, and adds just so much more to the customs as such supply from abroad will yield; and, therefore, so long as the country has the means of purchasing such increased quantity of foreign goods, so replacing the home product, the revenues will continue to augment, instead of diminishing, under the lower rates.

Again, an increased demand for our breadstuffs and provisions in Europe, occasioned by failure of crops there, will have the effect, under a low tariff, of inducing large importations, and, consequently, a large enhancement of the customs. In the famine year of 1847 the customs rose eight millions above the receipts of the year immediately preceding; and every deficiency of crops abroad, to the extent to which it occurs, must have a proportionate effect in the same direction.

Again, a large increase in our agricultural and manufacturing products, by affording a surplus for exportation at any price which will pay transportation, will have a similar effect.

Again, foreign wars, by increasing the demand upon us for provisions, induces a corresponding increase of our importations, and a corresponding augmentation of the revenues resulting from it.

Again, abundant products of the precious metals, by affording the means of large purchases, operate in the same way.

And again, the system of railroad and other enterprises now in active operation in this country, which demand large capital on long credits, bring loans in immense amounts, in the shape of dutiable merchandise, to swell the customs.

All the causes above mentioned, except diminished rates of duty, and great failure of crops abroad, have been in operation upon the customs since the fiscal year 1849-'50, and we have their combined effect in raising the revenue derived from this source from less than forty to over sixty-four millions of dollars per annum in the space of four years.

In the last year they fell off eleven millions, owing to the absence of some of the causes which we have noticed, but their product still stood at thirteen millions above that of the year 1849-'50, and nearly six millions above that of 1851-'52.

Alternations of Excess and Deficiency in the Revenue under Duties lower than protective.—From these facts, and the laws of national finance which they illustrate, it is obvious that the ratio of percentage imposed upon imports, acting within a moderate range of differences, is the least influential, and the most likely to deceive expectation, of all the causes which usually affect the revenues arising from them. But low duties not only disappoint the intention for which they are recommended, in the manner and for the reasons given, but, by their own inherent vices, they are not only liable, but certain, in despite of all modifying influences, ordinary and extraordinary, to work mischievously in the opposite direction—in spasmodic alternations from excess to deficiency.

The first reduction of the duties of the act of 1832, provided for by the compromise of 1833, took effect on the 1st January, 1834. At the end of that year the public debt was paid off, and there was a balance in the treasury of a little less than nine millions of dollars. In 1835 the revenue from customs and the sale of public lands rose thirteen millions and a half above the receipts from the same sources in the preceding year; and in the year 1836 they rose fourteen and a half millions more; so that at the end of the year 1836 there was a balance in the treasury of forty-six and a half millions. To dispose of this enormous surplus of public moneys, the act of 23d June, 1836, was passed, directing the deposit of twenty-eight millions with the States. But such tendency to excess in the system of national finances, like the febrile paroxysms of the human constitution, speedily passes into the stage of exhaustion. In 1837 the revenue from public lands and customs fell to eighteen millions, from forty-eight millions the year before; and on the 12th October of that year, the issue of ten millions of treasury notes was authorized to supply its deficiency for the services of the government. In 1839 the revenues rose to thirty millions—twelve millions in two years; and in two years more sunk to fifteen and three-fourth millions—another fall of nearly 100 per cent. in two years.

Thus, in the first three years of the Compromise Act we have the whole difference between twenty-one and forty-eight millions of revenue per annum resulting to the treasury, and in the next five years the still greater difference of a decline from forty-eight to fifteen and three-quarter millions. Under the operation of the second reduction, while the duties remained the same, the customs fell off from twenty-three and a half to eleven millions; and under the operation of the third reduction, they rose again to twenty-three millions—fluctuations in the revenue which baffled all calculation and destroyed all reliance.

Steadiness of the Revenue, and Adjustment to Expenditure, under protective Tariffs.—Under the tariff of 1824 the revenue varied no more than from twenty-two to twenty-five millions in four years; and under that of 1828 from twenty-five to thirty-two millions by regular increase in four years. Under that of 1842 the customs rose from the depressed point of eighteen to the steady and adequate one of twenty-seven and a half millions in four years, and the receipts from the public lands raised only from one and a third millions to two millions.

The public expenditures during the three periods of these comparatively high tariffs were very regularly covered by the national income—the first yielding five millions, the second four millions, and the last thirteen millions, or from one to three millions per annum more than the current ordinary expenses of their respective periods of operation; amounting annually to no more than such balance in the treasury as it is prudent to hold for its incidental uses.

Plethora of the Treasury under the Compromise Act, and under the Tariff of 1846.—Under the low tariff of 1833 we have first an enormous surplus in the treasury, then a large deficiency and debt. Under that of 1846 we have arrived at such a surplus of public moneys as again calls for relief; we have a balance in the treasury now of nineteen millions, and we are threatened with its augmentation to the amount of thirty millions in a year to come.

It is not intended by this contrast of the steadiness of the revenue under the highest tariffs and their happier adaptation to the wants of the treasury, against the unsteadiness of the income and its maladjustment to expenditure under the lower tariffs, to espouse the rates of duty of the particular systems cited of the one class, or to condemn the systems of the other by so sweeping a generalization; but they are arrayed here now simply to exhibit their respective workings, as

the facts and figures of their history present them to us, and that they may serve as data for the inquiry before us.

Your committee are as well aware, and feel as forcibly as any objector can, that where a number of causes are in existence, and co-operating in the result, especially when several of them are inter-dependent, and some of them independent of the others, the difficulty of determining their respective agencies is great in proportion to the complexity and diversity of the forces at work; but such difficulty, in a matter of the vast importance of that under investigation, only increases the necessity for endeavoring a solution.

The fluctuations of the national revenue during the operation of the low tariffs, and its steadiness under the higher ones, occurring in a constant connection in the last thirty-five years of our financial experience, seem to admit of a clear and instructive explanation.

The following propositions, which embrace the facts involved correctly and sufficiently to cover all the operative causes, immediate and collateral, very fully satisfy the inquiry.

A tariff of duties ranging generally below the point of adequate protection to our home production, induces large importations by the effect of diminished prices, to the extent to which the purchaser's means are relatively increased, and to the further extent of supplying the vacancy occasioned by withdrawing from the market the amount of commodities of home production which are so excluded.

Effect of low Tariffs upon the Income from the public Lands.—In 1834, the first year of the reduction under the Compromise Act, the imports for consumption rose three and a half millions, and the revenue fell off twelve millions.

In the year 1835 the imports rose again thirty-five millions, and the revenue from them was less by ten millions than in the year 1833; but nearly fifteen millions of dollars flowed into the treasury that year from the sales of the public lands, bringing the total revenue up to the total of 1833, and more than a million above it.

In the following year, 1836, the imports for consumption took another rise of thirty-seven millions; the customs reached within five and a half millions of the highest point they had ever attained under the preceding tariffs. The public lands rose to the enormous amount of twenty-five millions; and the total revenue of the year stood at seventeen millions above that of 1833—the highest mark of the high tariff years.

Under the lowest of our Tariffs the greatest Excess and the greatest Deficiency of Revenue both reached.—For nine years before 1834, the public lands had never in any one year yielded quite four millions, and the average was two, or nineteen millions in nine years; but in three years, 1834, '35, and '36, their product to the treasury was over forty-four millions. The customs for these three years, under the compromise, had fallen off from the sum of eighty-one and a half millions afforded by the three previous years of the higher tariff, to fifty-nine millions—a reduction of twenty-two and a half millions; but the revenue of the treasury, by the addition of thirty-six millions from the public lands, above their average previous yield, amounted to fourteen millions more for these three years of the compromise than for the three preceding years; and the proceeds from the sales of lands continued for three years longer to yield ten millions more than their product under any higher tariff which we had before or since. At the close of the year 1839 these movements had exhausted themselves. The customs for the three following years ran down to forty-six millions, twenty-eight millions below the ordinary expenditures of the period; the lands fell to two millions per annum, and the principal of the public debt contracted in the five preceding years stood at ten millions.

The operation of a tariff of duties below the point of

protection, with the long run of nine years for its developments, is here fully presented. All the causes which could affect the results had room and time for their natural action, and their combined results are openly exhibited.

Its first effect was to nearly double our foreign importations in three years. This had the effect, by reduction of prices and glut of the market, of crushing the rival manufacturing industry at home; mills and work-shops were crippled and closed; the capital and labor driven from them sought employment in agriculture; the sales of public lands amounted to more than seven-fold the average quantity of any other period of ten years before or ten years afterward; and the term wound up with a general bankruptcy of the national treasury, and of the people, bringing with it a complete political revolution, and compelling a total change in the financial policy of the government.

The fluctuations of revenue under it are strikingly marked by the facts that the income from all sources never afterward rose to within eight millions of that of 1836, until the year 1850-'51, and had not fallen so low as in the year 1841 since the year 1821; it, in fact, touched a point below the receipts into the treasury of the year 1808. Its fluctuations in a period of five years touched both extremes of the revenue of the nation, running through thirty-four years of change; that is, the revenue had not been so low for twenty-five years before the year 1841, nor so high for fourteen years after 1836.

Greatest Fluctuation in Prices under the lowest Tariffs.—The business of the country felt these vicissitudes in our foreign commerce, and answered to them like their echo. Within a period of six years, while this tariff was developing its extremes of change, from 1836 to 1842, the highest and lowest prices of eighteen years were touched. Cotton, flour, provisions, tobacco, commodities of all kinds, labor and real estate, went up in price almost in the exact ratio that importations increased—that is, to nearly double the amount of 1833, in 1836; and in 1842, the imports falling to one half in amount, so the property, labor, and products of the country stood at half the market value of six years before. Not an interest of the country on which its national or individual welfare depended, but had in that brief period undergone convulsions unparalleled since similar causes had resulted in the great business catastrophe of 1820-'21.

Such is the history of the policy which abandoned the revenues of the government, and the industrial interests of the country, to the operation of causes not within its control.

Undue Expansion of Bank Circulation inseparable from excessive Imports of foreign Merchandise.—It has been customary with the advocates of low tariff duties to charge the inflation of prices, the rage of speculation, and the resulting revulsions in the business prosperity of the country, to excessive issues of bank paper.

The fact that such overissues always concur with inordinate rise of prices is remarkable indeed, and offers a plausible explanation of the mischief; but the other fact, of the invariable concurrence of greatly enhanced prices and excessive bank issues with the reign of low tariffs, connect these phenomena in our financial history in a category of relations which very clearly shows that they are in their nature inseparable. If this be so, the government, which has the direct control of one of these agencies in the mischief, has an indirect but absolute control over the others, and should exert it.

Fixed Ratio of Bank Issues to foreign Imports.—In 1830 the bank circulation was estimated by Mr. Gallatin at sixty-one millions; in April, 1834, the Secretary of the Treasury, Mr. Taney, estimated the circulation at eighty millions. In the four years, 1830, 1831, 1832, and 1833, which immediately preceded the first reduction under the Compromise Act, the imports con-

sumed amounted to two hundred and ninety-one millions. At the end of the next five years, 1837, the bank circulation had swollen to one hundred and forty-nine millions, and the imports for consumption for 1834, 1835, 1836, and 1837, to four hundred and eighty-one millions. Thus the increase of the imports amounted to 75 per cent. for the period of four years, and the increase of the bank circulation to 80 per cent.; and if we add the increased purchase of public lands of the latter term over the former, we have the proportion of the circulation to the expansion of business speculations induced by the reduced tariff very exactly balanced.

In May, 1837, the banks, with one consent all over the Union, suspended specie payments, and did not permanently or effectually resume till the spring of 1842; then their circulation had fallen to eighty-three millions; nor did it rise higher than eighty-nine millions again during the operation of the tariff of 1842.

Since the year 1846, the increase and decrease of bank circulation hold so exact a ratio to the several instances and rates of increase and diminution of imports for consumption for each year of the whole period, as involves a direct and unquestionable connection between them.

The tabular statement appended to this report exhibits the constancy of this connection for every single year of our financial history since 1833, and for periods of years before and since, in a ratio so nearly mathematical that there seems no doubt of the law which rules the subject, as there is none of the facts which serve to demonstrate it.

It will be seen, by reference to the tabular statements of this report, how little power other causes, which were undoubtedly active in modifying the results, had to disturb the working of that one which is here assumed to be the principal. The expansions and contractions of bank credits and issues are certainly influenced by many other causes, but the fact that they have occurred during the last forty years, year by year, in an invariable relation to the fluctuations in the amount of our foreign imports, goes far to establish the idea that the variations in our imports rule the fluctuations in our paper currency; and this law is, moreover, so energetic that it even overrules the effects naturally expected from the large supply of gold furnished to the currency from the California mines. For it is as true as it is surprising that since 1850, as before, every year of increased import has been marked by an equivalent increase of bank circulation, and every year of diminished imports has been marked by a diminished bank circulation, corresponding in amount as nearly as it is possible to conceive a primary and ruling cause can operate while minor and subordinate ones are also in play.

Low Tariffs responsible for excessive Bank Issues.—That low tariff duties are responsible for the excess of foreign importation—that these augmented imports induce excessive bank issues, and excessive bank issues swell prices inordinately, in the series of dependency which is here alleged—is rendered unquestionable, by the fact that these expansions of imports, paper circulation, and prices, never have occurred when our tariffs were high enough to foster, but always when they were so low as to discourage, home production, and to substitute the foreign commodities for domestic products in our market.

Summary of the Reasons which forbid the Abandonment of protective Duties.—Your committee derive from this investigation of the effects of our varied tariff systems upon the revenue the following conclusions:

1. The immediate effect of duties below the rates which protect our own industry from the rivalry of foreign commodities of the same kind, is a proportionate enhancement of such imports, and a corresponding increase of the revenue from customs, which either approach, equal, or exceed the revenue from customs of

the higher tariffs; but in all instances is certain to disappoint any expectation of a reduction of the customs in proportion to the abatement of the rates.

2. The increase of imports consequent upon a reduction of duties below the point of adequate protection drives manufacturing capital and labor into agriculture and trade, and by this means vastly increases the revenues from the sale of the public lands and from foreign commerce, and thus makes up all deficiency in the customs, and greatly overpasses it, and so tends to a plethora in the treasury, instead of limiting its income and restraining its overflow.

3. The indirect effects of the same policy is to exhaust the sources of national and individual prosperity, and by its reaction to bankrupt the treasury and prostrate the enterprise of the country, leaving debt, public and private, to punish the extravagance which it induced and indulged.

Your committee, therefore, for reasons cogent as these, and many others which depend upon these, but are irrelevant to this issue of mere national finance, would earnestly discourage any measure which, either in principle or in details, aims at relieving the treasury of its present and prospective surplus by a reduction of the present rates of impost duties below the point which any branch of our home industry requires for its security and prosperity. To guard against any possible misconception, it must be observed that by the frequent allusions of this report to excessive importations of foreign goods, and the influences drawn from such excess of importation, the apparent "balance of trade" against the United States, which the statements of the Treasury Department exhibit for any single year, or for any series or groups of years, is not taken, or intended to any effect or purpose for which the difference in official value between our imports and exports has been used by either party to the controversy.

The total value or valuation of our imports, as given by the department statements, from the beginning of the government to the 30th June, 1855, amounts to 6983 millions of dollars; the exports for the same period of domestic and foreign merchandise and specie, to 6170 millions—a difference of 813 millions.

No conclusions whatever are drawn, either as to effect or amount of effect, from the data which our international account current thus offers, or seems to offer. The discussion which this point would awaken has been avoided as wholly unnecessary to the argument of this report, and possibly inconclusive and uncertain for any purpose. But although the enormous apparent balance against us in the account of our foreign trade be not reliable for the actual difference in our exchanges with the rest of the world, as it probably is not, yet the amount of the national, State, municipal, railroad, bank, and other corporation stocks and bonds held by foreigners, should be received as a subsisting balance of debt, resulting from a past balance of trade, which it must represent.

Effects of the present Tariff upon Wool-growers, Manufacturers, and upon the Revenue.—The tariff of 1846 unhappily raised the duty on all imported wools to 30 per cent., while it reduced the duty on imported flannels and blankets to 25 and 20 per cent., and on the coarser woolen fabrics to 25 per cent.

Now these low-priced manufactures of wool being the chief in quantity and value of which we were then capable, the business was prostrated by the premium which that act in effect offered to the foreign manufacturer; and the nominal protection of the wool-grower resulted in the ruin of his business, as in that of the cloth-maker. The home market was destroyed for the farmer; in the foreign he could not compete, and the flocks were sent to the slaughter, because the woolen factories had been sold at auction or converted to other services. The effects of this policy on the treasury are seen in the fact that twenty-two millions of the

surplus in the treasury, accumulated in the years 1853, 1854, and 1855, have come from customs upon woollens. In 1844 woollens yielded \$3,313,495 to the customs, cottons \$4,850,731; in 1855 woollens yielded \$6,088,157, cottons but \$3,823,294.

The cotton manufacture was protected; the woollen was abandoned; and while all the interests dependent upon it have been sacrificed, the revenue has been inflated at least four millions per annum during the last four years beyond what it would have received if the policy of the government had been as friendly to it as it has been to the cotton manufacturer; a striking illustration of the law that the certain method of limiting the amount of taxes is by limiting the amount of imports, by duties adequate to guarding the home-made commodity against extinguishment by the foreign.

Exemption of the coarser and finer Wools from Duty.—Your committee, looking straight at the question of the revenue, therefore, recommend you to exempt all wools of those qualities not generally grown in this country, costing less than fifteen and more than fifty cents per pound at the port of entry in the United States, from duty, retaining the existing tariff rate upon the intermediate qualities, and at the same time to raise the duties upon all woollen manufactures to the point of adequate protection.

The recommendation to fix the duty upon all such wools as our farmers now produce, or can easily produce, at 30 per cent., and to raise the duties upon all woollen fabrics into whose manufacture such wool enters, is made for the purpose of opening a market at home for the raw material which it can not find abroad, and diminishing the customs flowing into the treasury from woollen imports to the extent which such enhanced domestic production will replace them.

Magnitude of the Woollen Interest.—Special consideration to this interest is here given because of its magnitude, which may be estimated by the fact that, both in value of the imports and the amount of duty yielded to the treasury, woollen manufactures have been equal to those of iron, greater than cottons, and next in importance to silks, during the last ten years of our financial history.

The Secretary of the Treasury, noticing the great progress made in the manufacture and production of iron since the year 1840, states the fact that the American production in the year 1850 was \$60,485,655, and the foreign import of the same year only \$16,333,145, and says: "The conclusion is inevitable, that the production and manufacture of iron in the United States within a very short period of years will exclude the foreign production and manufacture." Of cotton he says: "That already the American manufacture is in possession of the home market as to all coarser fabrics, and beginning successfully the manufacture of the finer fabrics."

These are the good parts of a policy of protection so moderate that without the help of a number of independent causes, co-operating with the imposed duties, even these branches of the iron and cotton manufacture, to which the Secretary's report justly applies, would not have been sustained in the past, or given such flattering promises for the future. The protection extended to them, and which now appears in their prosperity, covers a period of not more than fourteen years, and has been efficiently operative for only about half of that time; yet, with all favoring influences concurring, under a stable policy, the enterprise and skill of our manufacturers may in time achieve a victory over the competition of cheaper and more abundant capital and labor abroad.

Depression of the Woollen Interest.—But our woollens have languished to the verge of extinction, while these two branches, of not more than equal importance, have so far prospered. In 1846 we imported for consumption \$10,000,000 of woollens and \$13,000,000 of cottons. In 1855 we imported for consumption \$22,000,000 of wool-

ens and only \$15,500,000 of cottons, and exported of domestic cottons nearly \$6,000,000; in the one case more than doubling our dependence upon foreign production, and in the other reducing it, in effect, 27 per ct.

Now we are just as capable of growing wool and manufacturing it as we are of the corresponding cotton production and manufacture. The territory of the United States, adapted to wool-growing, is as large and as favorable as all Europe possesses and devotes to the purpose; and if those qualities of the article which we do not or can not profitably cultivate were exempted from duty, and so afforded equally cheap to our own as to the foreign manufacturer; there is no natural cause in existence to prevent the immediate establishment of woollen factories sufficient to open a remunerating market for our farmers to an almost unlimited extent. There are portions of the United States in which the finest and best wool of the world has already been grown; and it is possible that this might in time be brought up to supply our entire demand for such first quality of staple; but it is certain that all the qualities between the finest and the coarsest could be supplied quite up to the demand of the market within five years from the establishment of an encouraging policy; and Congress is imperatively called upon now to decide whether so vast an interest as this shall be sustained or destroyed.

Protection to the Wool-grower and Manufacturer, or Destruction to one of the three greatest Branches of American Industry.—As the question now stands, moreover, let it not be overlooked that, if the manufacture shall be relieved of all weight which the duties upon all qualities of wool impose on it, by placing them in the free list, the wool-growing interests of the country may be seriously injured. If the manufacture is protected, as it must be by a duty of 30 per cent., the agriculturists will be taxed that much upon all the woollens they must use, while their own interests in the production of the fabrics are destroyed; and if woollens shall not be thus protected, then manufacturer and farmer are both overwhelmed, and the country is deprived of all share in one of the three greatest branches of human industry.

The consumption of woollens is at least equal in value to that of cottons in the United States, and to surrender their production and manufacture to destruction is so unwise that it is not to be supposed possible to an intelligent people. Let a home market for all the wool that can be profitably produced in this country be created by a change in the present tariff which will exempt the coarsest and finest qualities from duty, raise the duties on flannels, blankets, and those fabrics which require the middling qualities of wool which the United States can supply abundantly, and farmer and manufacturer will be restored to that prosperity of which they have been deprived, and the revenues will be reduced by the diminution of imports effected by the home supply, and all the objects of a just and wise legislation will be equally met.

Reduction of the Revenue by Protection of the Woollen Manufactures.—The customs have risen on woollens in eleven years from \$3,313,495 to \$6,088,157, while those on cottons have fallen from \$4,850,731 to \$3,823,294. Here we have a ratio of reduction in the revenue, from this source, which under parallel circumstances would, by its direct operation, reduce the annual surplus of the treasury at least four millions.

Add this probable reduction to the Secretary's estimate of the diminution promised by his proposed free list, and about nine millions of diminution in the annual revenue are fairly provided for—five millions immediately, and four millions just as soon as factories can be built, or those which have been converted from woollen to other manufactures can be restored; and sheep, which by natural increase more than double their number every year, can be reared to supply the demand.

Silks, Revenue from them.—Another and more immediately effective reduction of the revenues may be made by revising the tariff upon silks, so as to reduce the rates upon all qualities and kinds which do not compete with any established production of the article at home.

The imports have risen in value since 1847 from less than twelve to over twenty-four millions, and the customs from \$2,833,850 to \$6,129,583. In these nine years the total amount of duties received into the treasury from manufactures of silk is \$51,893,871; while the total revenue from iron, manufactures of iron, and iron and steel, amount to only \$50,186,942.

Luxuries, and the Rule for taxing them.—Silk manufactures stand highest in productiveness to the treasury of all articles enumerated in the tariff schedules. They owe this rank as sources of revenue, it seems to your committee, mainly to the misapplication of a general rule which has governed tariff legislation during those periods of financial necessity when import duties were resorted to to supply the treasury's deficiencies, and were felt to be a necessary increase of the burdens of taxation for revenue purposes. This rule holds, with some justice, that the wealthy shall contribute more liberally to the national wants than can be fairly demanded of the comparatively poor. Hence the maxim that luxuries should bear the highest revenue duties.

When this rule has the effect of lessening the burden of taxation upon the poor, it ought to have its operation; but when in altered circumstances, both of the national finances and the general condition of the people, it only operates to bar the people of moderate independence from the enjoyment of such luxuries without affording them a corresponding and compensating relief from taxation; it takes the character of ministering to the privileges of the rich, and preventing the otherwise possible enjoyment of luxuries by the whole people.

Luxury is a relative term, and must change its meaning or its application with all changes of condition in its subjects. Before the year 1832 tea and coffee were treated as luxuries by the previous tariffs, although they were more than sufficiently productive of revenue for all the wants of the government. By the act of that year they were put into the free list, probably because they did not enter into competition with any home production of a similar character and use, and possibly for the additional and equally good reason that a republican Legislature ought, by every legitimate use of the powers intrusted to it, aim at leveling up the comforts and enjoyments of the people of every condition to the better and higher that can by any means be brought within the reach of their industry and aspirations.

The imports of silk manufactures are greatly larger in value every year than those of wool; their consumption by the people of the United States must, therefore, be not only very large but very general, and whatever can be done to bring them more easily within the means of the whole community, which at the same time shall help to relieve the excess of annual revenue and damage no industrial interest of the nation, ought to be done.

For the like reasons, tropical fruits, spices, and other commodities not produced in the United States, or not embraced by, or adapted to, the industrial enterprise of our people, should be put under the same rule. With a sufficiency of revenue accruing to the treasury from other sources, the principle of free trade in all such commodities should have its utmost application in practice.

Reduction of Customs by enlarging the free List, encouraging Woollens and modifying Duties upon Silks, sufficient to relieve the Excess of Revenue.—In a judicious modification of the duties upon silks and other luxuries, your committee see a promised reduction of

the revenue, based upon the statistical data before us, which, taken in connection with the measures already indicated, comes very well up to the amount of diminution demanded by the present and prospective exigencies of the treasury.

Calculations of revenue to be yielded by percentages, when the principal is of unsettled amount, and liable to be disturbed, not only by various other causes, but by the changes in the rate of duties adopted upon those calculations, are of course uncertain; but where there is nothing else to guide than estimates so based, they must be taken, and a future experience be left to settle their results into certainties. We can be safely confident that the measures which conform to the principles and laws of the subject will work in the direction intended, and this is sufficient assurance of correctness to warrant the trial. In this confidence, corroborated as it is by the teachings of the past, your committee submit these suggested changes of the present tariff for adoption.

Our System of Finance unsound and mischievous.—The management of the national revenue so as to adjust it fairly to the national expenditure, keeping the policy well within the constitutional powers of the government, and conforming it at the same time to the movements and interests of our national industry in all its vast varieties and values, is a problem which has not yet been satisfactorily solved in the practice of the government. Deficiencies and excesses have alternated in the treasury so rapidly and so largely in our past experience, that Congress is at length fairly driven from the ground of temporary experiments, and compelled to search for the principles that naturally rule the subject.

The Policy of Industrial Independence.—If the experience of mistakes teaches any thing clearly and reliably, our tariff histories are full of evidence that our home affairs can not be safely left to foreign influences, and that the accidents which lie in wait for them are not to be prevented by abandoning all legislative care of them. A nation must govern itself, or its neighbors will; and that for their own purposes and profit. If the United States were exclusively a manufacturing, or as exclusively an agricultural people, absolute free trade would be their policy, and custom-houses an absurdity.

The most extensive trade which they could attain to with foreign nations would then be their highest interest, and direct taxation for the support of the government the soundest system of national finance.

But our manufactures have now quite reached to the value of our agricultural products. Fifteen hundred millions of dollars per annum is the value of each of these two great classes of productive labor, according to the estimate of the most reliable authority; and it is neither in the character nor destiny of this great people to endure a perpetual dependence upon foreign nations for the products of skilled industry which they need for every-day consumption. British legislation aimed at restraining us, while we were her colonies, to the production of raw material from her market. If our own system were permitted to drift to the same result, we should, by our own act, voluntarily restore her empire over us in the only particular that is, or ever was, a substantial object of her ambition, and our Revolution would be a failure in every thing but the boast of political independence.

The despotism of wealth fears no rebellions; predestinated poverty has no independence to assert. Its spirit and its necessities are passive submission. The rights and liberties of a nation are declared in its political constitution, but their substance is in the industrial independence of the people. True freedom is found only in the command that men have over the resistance of the forces of nature to their dominion; and a people which achieves the control of their own conditions are never the slaves of any other power.

Dependence upon a foreign people for a market, either for agricultural or mechanical products, is industrial vassalage.

England has made herself the work-shop of the world by a viciously exaggerated system of manufacturing; and she depends day by day upon the world's unnatural submission to her system for her prosperity.

Turkey abandoned the guardianship of her prosperity to foreign dominion, and has sunk from the rank of a first-rate power in the earth to the very verge of national ruin. Her internal trade is wholly in the hands of foreign hucksters, as her national integrity is under the guardianship of foreign sovereigns. A people impoverished by a system of the lowest and least remunerative industry, and degraded in character and spirit by its necessary ignorance and feebleness, is inevitably at the mercy of its superiors in these respects.

The American people, of the same lineage, equal skill and enterprise, superior inventive genius, and holding a better territory by all the difference of its extent and variety of climate, soil, and commercial relations, as compared with Western Europe, can not possibly be held to inferior and subordinate industrial avocations.

The necessary command of our welfare, the current disposition of our own affairs, imperatively demand that we shall guard ourselves against all injurious foreign agencies and influences, by a settled system of self-defense.

Home and foreign Market for Provisions and Breadstuffs.—The home market for all our products now is at twenty-seven hundred and fifty millions to two hundred and fifty millions; but the corresponding two hundred and fifty millions of imports, for which we exchange our surplus, has the power to disturb and distract our currency, domestic exchanges, and domestic industry, to an extent which puts the treasury of the nation and the prosperity of the people at the mercy of every fluctuation in the market of London. We must conquer our independence of the money power of Europe, and we must control our national finances into conformity with our own necessities. This, it is obvious, can be done only by bracing the home market against all disturbing agencies.

The mischievous error of preferring a foreign to the home market for breadstuffs and provisions, and seducing the agriculturist into the policy of favoring it, is clearly exposed and convincingly proved by the following statement:

The population of Great Britain and Ireland in 1855	27,000,000
American breadstuffs and provisions shipped to the United Kingdom in 1855	\$15,392,342
Consumption per capita	57 cents.
Workmen employed in making the iron imported from Great Britain in 1855	60,518
Representing in families of five persons each	302,590
Three hundred and two thousand five hundred and ninety persons, at fifty-seven cents each, worth of provisions and breadstuffs	\$172,476
Three hundred and two thousand five hundred and ninety Americans would consume of our provisions and breadstuffs fifty dollars each	15,123,500

or within a trifle of the whole amount taken from us by the 27,000,000 of British people for that year.

To bring the iron imported in 1855 to the United States the equivalent of 70 American and 18 foreign vessels were entirely supported, counting the cargoes both ways. The tonnage of American vessels average 931 tons each, and they carry crews of 24½ men each, or in all, Americans, 1563; 18 foreign vessels, of 733½ tons each, and crews of 21½ men each, equal to 390 men. Each vessel is estimated to make three trips in the year, carrying six cargoes. The vessels represent a capital equal to \$50 per ton.

American capital employed in carrying this iron is 65,170 tons, at \$50	\$3,258,500
British capital in 13,208 tons of shipping, at \$50	660,150
Total capital in the shipping	\$3,918,650

SUMMARY OF EMPLOYMENT.

	Men.	Persons supported.
Englishmen in manufacturing	60,518	302,590
Englishmen in shipping	390	1,950
Americans in shipping	1,563	7,815
Total	62,671	312,255

SUMMARY OF CAPITAL.

British in production of iron	\$75,000,000
British in shipping	660,150
	75,660,150
Americans in shipping	3,258,500
Total capital supported	\$78,918,650

SUMMARY OF BREADSTUFFS AND PROVISIONS.

Consumed by the British people in making iron, 302,530, at 57 cents	\$172,476
In shipping, 1,950, at \$5	9,750
	304,549
By Americans in shipping, 7315 men, at \$50	360,750
Total	\$472,976

Had the iron been made in the United States, 302,590 persons would have consumed, at \$50 each, \$15,129,500.

The result is, that we supported in the importation of foreign iron, in the year 1855—

Foreign capital	\$75,660,150
Foreign people, 304,540	
American capital	3,258,500
American people, 7315	
We gained a market for breadstuffs and provisions of	4,722,976
And we lost a market for breadstuffs and provisions of	15,123,500
Loss to American farming interest, a market for	\$14,656,676

The facts and figures of every other kind of imported commodities which a home production would exclude are data for a similar calculation of loss to the agricultural interest of this country.

International Exchanges.—The surplus provisions and breadstuffs which we might produce, after an evenly balanced and independent system of manufacturing should be established, would be the legitimate subject for foreign commerce, contributing to our necessary exchanges with other nations, and thus to the general welfare; but shipped at such a loss in amount and value, as they must be while they are injudiciously denied a home consumption, the undue amount of their export measures our distance from a healthy system, and from the wealth, prosperity, and independence which a true policy would secure to us.

Agricultural home Market against the foreign.—It is only the least profitable of the farmer's crops which will bear distant voyages in search of a market, and all excess which his exports find or make abroad falls back in diminished prices upon the hundred-fold stock which he sells at home, sometimes scarcely repairing by the whole net value of the exports the diminution of price which they reactively inflict upon the domestic market. For his green crops, fruits, and garden stuffs, his poultry, veal, mutton, and dairy products, he must have a market at home, or he must abandon their culture for sale. His land may be made to yield him thirty or forty dollars per acre in transportable grain, less the cost of cultivation, or he may make its product marketable abroad and worth about as much by feeding it to stock; but he can neither diversify his crops, nor maintain the fertility of his land against such a system of exhaustion; and, above all, he will not be able to make it yield three times the value of such crops in those vegetables which, with a well-sustained home market, is easily effected. The difference between the market value and the profit of a farm in the Far West, and one of an equal quantity of land adjacent to a large city, illustrates the difference between a market at hand for all possible agricultural products, and a foreign one with an ocean intervening.

The farmer's wool crop has been amply protected for nine or ten years, so far as a high tariff duty upon imported wool could do, or promise to do it; but his home market has been destroyed by a countervailing

legislation leveled against the manufacturer. The opportunity of a foreign market could not tempt, as it would not reward, him for his industry in that direction. If the agriculturists of this country but considered the subject, they would discover that the market opened to them abroad for the produce of their fields is no better than for their wool.

In the year 1855 the total exports of breadstuffs and provisions from the United States fell short of thirty-nine millions of dollars. What is this to the crop of the year, worth fifteen hundred millions, that the American farmer should sacrifice the custom of a neighboring blacksmith, shoemaker, or weaver to secure it? In amount it is but the fortieth part of his crop, and one family next door to him would consume it more profitably for him, and with greater certainty of demand. Prices may be high or low under the influence of accidental causes, but the laws of nature and the principles of trade are a safe directory in any combination of circumstances; their bearing upon national policy is absolute and unvarying, and they must be obeyed or they will be avenged.

Harmony of all Industrial Interests, and Adjustment of the best economical Policy to the Necessity of the national Treasury.—That a harmony of interests naturally and necessarily exists among all the departments of national industry is a fundamental principle in political, as it is in social and religious science. It is one of those first principles which stand incontrovertible as the data of all reasoning upon the policy of human societies. So far as this inquiry has proceeded, the truth of this principle is clearly supported; and it can not be doubted that the other branches of productive and commercial business, not specially considered, must fall within the rule with an equally happy accordance. If an integral, self-sustaining, well-balanced relation holds between the manufacturing and agricultural welfare of the nation, and if the policy which is best for them is also well adjusted to the requirements of our system of national finance, the true interests of the planter, the navigator, and the merchant can not possibly be at war with them.

Cotton and Commerce.—It would exceed the limits as well as the proper province of this report, to endeavor a formal demonstration of its doctrine as it applies to cotton and commerce, and it must, therefore, be forborne; but some general considerations, which may be suggested in its support, will serve to show "the equal operation of the policy throughout the Union, discriminating neither for nor against any class, section, or interest," conformably with that maxim of our legislative system which has the dictates of justice and the spirit of the federal constitution for its authorities.

Export of Gold; Effects upon the Planting Interest.—In the first place, the system which looks to the industrial independence of the country would necessarily have the effect of retaining the gold exported to foreign countries for the purchase of all those commodities which we might advantageously manufacture for ourselves. The two hundred millions which we have sent abroad within the last six years is an excessive export, by the amount to which it has diminished the necessary home supply, and raised the rate of interest to its present inordinate height. Scarcity of capital and extravagant rates of loans leave no interest of the country uninjured, except that of the wealthy moneyholder.

At the place to which money flows it is most abundant and cheapest. The rates in London do not average more than half those that are constantly paid in our Atlantic cities, and often stand at one-third, or even lower.

Capital at 10 per cent. interest, exposed to the competition of capital at 5, has a fearful odds to contend with; but it is abundance against scarcity which is even more disastrous than the difference of rates. A

prosperous business man may endure heavy interest, but a small capital must encounter the fluctuations of the market without relief, and is swamped in a storm which the heavier craft will ride out under bare poles. From the revulsions which our monetary affairs periodically suffer from this cause, no department of production or trade escapes, and the planters are usually the earliest and severest sufferers. They are most shaken by depression of prices, and by bankruptcy of their customers, from the fact that their industry is less varied, and the commodities which they require for constant consumption are less within their reach, when business is embarrassed. They must bring them from abroad, where credit and confidence are not so easily commanded as at home.

Fixed capital commands credit within the country, but mortgages are not negotiable securities at a distance.

Limit to Exportation of the precious Metals.—The drain of the precious metals, unduly induced by the import of articles which ought to be made at home, is an evil of such magnitude, that if there were not another among the incidents of excessive importation, it would of itself deserve the utmost exertion of legislative power to correct it. It is utterly from the purposes of a sound policy to speak of gold as a product of the country, and a commodity of trade, like iron or cotton, while its export is carried to the extent of crippling business, disturbing the currency, and enormously enhancing the rate of interest. However produced or derived, it is money to the extent required for the health of the circulation and the prosperity of business, and any policy which runs the supply below the demand is suicidal.

Cotton and Iron Manufactures in the South.—In the next place, the older planting States are not only capable of the labor of converting their raw material, both cotton and iron, into at least the coarser fabrics which are conveniently and profitably marketable, but they are now under the compulsion of necessity to so far diversify their industry, and so to divert some portion of their labor from the one business which they have been so long helping to depress, and to derive from this change the better remuneration which the work of conversion affords above that of production.

Georgia, Virginia, and North Carolina made the experiment of applying a portion of their cheaper labor to the coarser cotton fabrics, with a success which promised fairly to give them the home-market in a few years for such articles; but New England was compelled to dispute this ground with them by the failure of the tariff of 1846, to give the more advanced manufacturers of the North the opportunity of making the finer fabrics in the then existing condition of the enterprise, and the South for the time was thrown back upon her staples and a foreign market for her dependence.

Protective Policy no longer a Party or sectional Question.—But the spirit of progress, and the change of conditions which nine years have brought with them, have wrought their necessary changes in the movements of the whole country, and given us the happy promise of a better union in interests and policy than we have known in the past.

The time and the occasion for harmonizing measures are now upon us, and the fond faith which we hold in the future destiny of the Union warrants the confidence that this great people will show both the wisdom and virtue of a genuine patriotism in the settlement of all their differences.

A common Prosperity corrective of social Strifes.—Every section of the Union should be the best judge of its own policy; at all events, it will determine it for itself; but it is a happy circumstance for the United States that, in the things which work their way determinately into the destiny of the nation, there exists so little contrariety of opinion, and so much less difference

of drift, that there is nothing substantial required to be sacrificed by any part of the country for the good of the whole, and very little even in speculative opinion to be compromised to effect an agreement.

The people may be agitated and divided upon constitutional, moral, and religious questions, and their discussion and settlement will have proportionate effect upon the general harmony, but the measures which carry with them a general prosperity will hereafter, as heretofore, bear them through every strife, and secure the general welfare.

The prosperity of navigation, foreign, coastwise, and internal, are necessarily so directly dependent upon the productiveness and wealth of the agricultural and manufacturing business of the nation, that the simplest definition of its functions contains the proof of our proposition. It is the common carrier of all exchanges. Its business is proportioned to, as it is dependent upon, production, and must grow with all growth, and decline with all diminution of the products demanding its agency.

Relations of the Trader and the Laborer, and the Compensations of a general Progress for all Changes.—A sound political policy looks to a constant diminution of the proportionate number of intermediates between the producer and consumer.

All the modern improvements in the methods and instruments of commerce tend to the accomplishment of this great aim. Time, distance, and cost of transportation are in rapid progress of abridgment, and middlemen are, in corresponding ratio, eliminated by the process. Yet all these movements toward a better and directer relation between men whose reciprocating industries require improved conditions of intercourse is found to work as well for all the dependent as for the principal functionaries in the world's commerce. Steam has been largely substituted for human and brute power on the great thoroughfares of trade and travel, but horses have increased in number and value in direct proportion to the growth of the agency which threatened to deteriorate them. Wages and demand for human labor have, in like manner, risen under the auspices of the machinery that now does so much of the work which formerly belonged to them. All the natural labor in the nation bears but a small proportion to the artificial, which has so largely replaced it in production and transportation; yet that natural labor was never so fully employed nor so well rewarded as now; and the same law holds for every business function of society, and every species of employment which has any legitimate place or use in human life.

STATEMENT SHOWING THE CHANGES THAT HAVE TAKEN PLACE IN OUR TARIFF POLICY SINCE THE FORMATION OF THE CONSTITUTION, viz.:

Date.	Character of Change.
1789... July 4,	First Tariff adopted.
1790... August 10,	General change.
1791... March 3,	General "
1792... May 2,	General "
1794... June 5,	Special "
" " 7,	General "
1795... January 29,	General "
1797... March 3,	General "
" " July 8,	Special "
1800... May 13,	Special "
1804... March 26, 27,	Special "
1812... July 1,	Special "
1813... July 29,	Special "
1816... February 5,	Special " April 29, General.
1818... April 20,	Special "
1819... March 3,	Special "
1824... May 22,	General "
1828... May 19,	General " May 24, Special.
1830... May 20,	Special " May 29, Special.
1832... July 13,	Special " July 14, General.
1833... March 2,	Special " March 2, Comp'se.
1841... September 11,	General "
1842... August 30,	General "
1846... July 30,	General "
1848... March 29,	Special "
" " August 12,	Special "
1849... January 20,	Special "
1857... March 3,	General "

Year 1824.—The tariff change of this year created considerable discussion and feeling. The duties collected that year were \$17,878,000, with a population of 12,000,000, or \$1 50 to each individual.

1828.—The general change this year was accompanied by a light increase of duties; viz., \$22,681,000.

1832.—Another general change took place, followed by a rapid increase of duties after 1834, viz.:

Years.	Duties.
1833.....	\$29,032,000
1834.....	16,214,000
1835.....	19,391,000
1836.....	23,409,000

\$1 10 per head.

\$1 60 per head.

The collapse of 1837 led to a reaction, and the duties diminished for 1837-'38, showing as follows:

Years.	Duties.	Years.	Duties.
1837.....	\$11,169,000	1840.....	\$13,499,000
1838.....	16,153,000	1841.....	14,487,000
1839.....	23,187,000	1842.....	18,187,000
Population, 1840.....			17,063,000

Since the latter date the duties have increased from \$1 per head to about \$2 50 per head, viz.:

Years.	Duties.	Years.	Duties.
1846-'47.....	\$23,747,500	1851-'52.....	\$47,339,000
1847-'48.....	31,757,000	1852-'53.....	58,931,000
1848-'49.....	28,348,000	1853-'54.....	64,224,000
1849-'50.....	39,668,000	1854-'55.....	83,025,000
1850-'51.....	49,017,000	1855-'56.....	64,022,000

Since the year 1789, the aggregate revenue from all sources has been \$1,886,740,084, viz.:

From customs.....	\$1,327,151,592
From public lands.....	164,063,855
From miscellaneous.....	395,519,636
Total returns.....	\$1,886,740,084
Total disbursements.....	1,887,721,045

for a period of sixty-eight years; viz., from March 4, 1789, to June 30, 1856.

By the Constitution of the United States it is provided that "no State shall, without the consent of Congress, lay any impost or duties on imports or exports, except what may be absolutely necessary for executing its inspection laws; and all such laws shall be subject to the revision and control of Congress."

The following statement has been furnished showing the changes from one rate of duty to another, as made by the tariff act of the year 1857, when applied to the importations of the year ending 30th June, 1856:

Value.	Rate, Act of 1843.	Rate, Act of 1857.
\$4,552 from 40 per cent. to 15 per cent.		
25,232 " 30 " to 15 "		
277,810 " 40 " to 8 "		
321,859 " 30 " to 8 "		
12,652 " 25 " to 8 "		
440,028 " 20 " to 8 "		
697,929 " 15 " to 8 "		
158,276 " 25 " to 4 "		
2,205,860 " 20 " to 4 "		
179,170 " 15 " to 4 "		
8,335,313 " 10 " to 4 "		
1,665,980 " 30 " Free.		
70,146 " 25 " "		
153,729 " 20 " "		
1,546,715 " 15 " "		
190,778 " 10 " "		
6,522,471 " 5 " "		

The loss of revenue by additions to the free list

In.....	\$1,145,615 90
Loss of revenue by transfers to Schedule I, or 4 per cent.....	775,535 67
Loss of revenue by transfers to Schedule G, or 8 per cent.....	263,247 41
Loss of revenue by transfers to Schedule E, or 15 per cent.....	4,922 80

Subjoined is a statement exhibiting the revenue which the importations into the United States, in the year ending 30th June, 1856, would produce under the tariff act of 1857:*

* This includes an approximation to all the changes made by the new tariff, except bleached, printed, painted, and dyed manufactures of cotton, and of delaines transferred from schedule D to C (or 15 to 24 per cent.), and of jappanned leather or skins, transferred from Schedule E to D (or 20 to 19). These changes, raising from a lower to a higher schedule, would increase the aggregate above given equal to the difference made by the transfer, and in proportion to the amount of such importations, which are not returned in such a manner as to be separated from other similar goods.

Schedule.	Value of Imports.	Rate of Duty.	Amount of Duties.
A.....	\$4,001,575	30 per cent.	\$1,200,472 50
B.....	8,662,188	30 "	2,598,656 40
C.....	94,159,241	24 "	22,598,211 76
D.....	71,074,265	19 "	13,504,110 35
E.....	35,288,897	15 "	5,293,334 55
F.....	5,892,347	12 "	707,081 24
G.....	6,160,422	8 "	492,833 76
H.....	3,553,050	4 "	142,122 00
Total..	\$248,791,993		\$47,336,830 50

British Tariff.—The following are some of the most important regulations of the British tariff:

Overpayments of duty made in error may be returned, if claimed within six years after date.

In case of dispute as to the proper rate of duty, the importer to deposit the amount of duty demanded, and such deposit shall be deemed the proper duty payable, unless an action be brought or commenced within three months. In the event of such action being determined against the revenue, full indemnity to be made to the importer.

The Board of Customs may remit or mitigate penalties incurred through inadvertence, or non-compliance with existing regulations.

The duties on the following goods must be paid on the first importation, and such goods shall not be warehoused for home consumption or exportation: viz., corn, grain, meal, and flour, and wood goods from British possessions.

Diamonds, bullion, lobsters, and fresh fish of British taking, may be landed without report or entry; no other goods can be unshipped or landed, except with the authority of an officer of the customs.

Where *ad valorem* goods shall have been detained as undervalued, the officers shall give a written notice of such detention to the person entering the same, and of the value thereof as estimated by them. If such goods be retained for the use of the crown, the value entered with an addition of 5 per cent., and the duties already paid on such entry, to be paid to the owner.

Goods not entered, or landed within fourteen days after the arrival of the ship, may be conveyed to the queen's warehouse; and if the duties and charges due upon such goods be not paid within three months, they may be sold, and the overplus, if any, paid to the proprietor.

Bonded goods to be cleared within five years, unless the proprietor desire to re-warehouse them, in which case they shall be examined, and the duties due upon any deficiency ascertained and paid.

If such goods be not cleared or re-warehoused within the said period, they shall be sold to defray duties and charges.

No person shall export bonded goods in any ship of less burden than fifty tons, except to the islands of Guernsey and Jersey, by regular traders not being of less than forty tons burden.

No drawback shall be allowed on goods of less value than the drawback claimed, and all such goods so entered shall be forfeited, and the person who caused them to be entered shall forfeit the sum of £200.

No tobacco, cigars, or snuff shall be imported into the Channel Islands in ships of less than 120 tons burden, nor unless in hogsheads or chests, each containing not less than two hundred pounds' weight of such tobacco or snuff, nor unless in packages each containing not less than one hundred pounds' weight of such cigars, tobacco, or snuff, not being in any manner separated or divided within such package.

The island of Malta and its dependencies shall be deemed to be in Europe.

Any person making a false declaration in any document relating to the customs, or answering untruly authorized questions put to him by the officers of customs, liable to a penalty of £100.

In case it shall appear that British vessels are subject in any foreign country to restrictions as to the voyages in which they may be engaged, or the articles

imported or exported, it shall be lawful for her majesty to impose similar restrictions upon the ships of such foreign country.

No foreign goods upon which a higher duty is payable on their importation into Great Britain than on their importation into the Isle of Man, shall, after they have been delivered out of charge of the customs in the said isle, be shipped into Great Britain.

Comparative Tariffs.—The following comparative statement exhibits the gross amount of duties received upon the principal articles of foreign and colonial merchandise in Great Britain and France, respectively, during the year 1856, to which we have annexed a column showing the gross amount of duties received by the United States upon similar articles during the same year:

Articles.	Great Britain.	France.	United States.
Cocoa	\$78,890	\$540,520	\$11,807
Coffee	2,933,820	4,616,620	11,872
Wheat	1,027,005	397,680	509
Oats	289,205	4,010	108
Rye	7,005	965	....
Barley	183,060	3,770	318
Indian corn	447,060	18,660	....
Opium	10,605	2,235	97,169
Rice	159,910	40,720	....
Cassia lignea	2,875	4,520	07,880
Cinnamon	1,885	1,765	6,343
Cloves	8,945	12,690	21,221
Mace	6,830	270	9,563
Nutmegs	53,275	3,570	130,453
Pepper	494,445	210,405	95,520
Pimento	5,015	9,175	140,908
Rum	6,945,035	69,990	283,494
Sugar	26,918,385	12,071,960	6,720,106
Tallow	342,285	99,315	7,392
Tea	27,631,205	51,840	7,864
Watches	77,110	70,220	380,075

The following comparative statement exhibits the amount of duties paid on the articles specified, in France and the United States, respectively, in the year 1856, all of said articles being admitted free of duty in Great Britain:

Articles.	France.	United States.
Brimstone	\$43,005	\$24,525
Cotton, raw	3,870,115	Free.
Cochineal	46,885	24,905
Indigo	124,175	106,374
Flax	245,315	19,869
Guano	140,210	Free.
Hemp	24,665	503,568
Hides	26,585	404,164
Mahogany	113,210	88,049
Iron in bars	125,135	1,605,835
Steel, unwrought	235,695	422,747
Lead	295,680	505,603
Spelter	7,245	26,351
Tin	9,930	728,661
Oil, whale	5,805	1,594
Oil, palm	41,575	41,631
Olive-oil	429,490	141,149
Beef, salted	8,230	124
Pork, salted	6,985	....
Quicksilver	375	725
Silk, raw	20,165	151,160
Tar	9,680	....
Wool	1,636,730	499,519

The total amount of customs duty in France in 1856 was \$35,330,405, on a total value of \$397,955,235, or 8·87 per cent. on the whole amount; the total amount in Great Britain was \$131,034,220; and the total amount in the United States was \$64,022,863. If to the \$35,330,405, the amount of customs paid into the French treasury in 1856, we add \$36,416,640, chiefly realized from the tobacco monopoly, but made up in part also of the export duty on wines, we have \$71,747,045, or amount of customs duties received by the three countries in 1856, as per existing tariffs:

Great Britain	\$121,034,220
France (including revenues from tobacco and wines)	71,747,045
United States	64,022,863

The following table exhibits the comparative tariffs of the United States, Great Britain, France, Spain, Holland, Belgium, and Brazil, in regard to the principal articles exported from the United States.

COMPARATIVE STATEMENT EXHIBITING THE IMPORT DUTY LEVIED IN GREAT BRITAIN, FRANCE, AND HOLLAND ON GOODS, WARES, AND MERCHANDISE, OF THE GROWTH, PRODUCE, AND MANUFACTURE OF THE UNITED STATES; ALSO THE DUTY ON LIKE GOODS, WARES, AND MERCHANDISE IMPORTED INTO THE UNITED STATES.

Articles.	United States. Duty, ad valorem.	Great Britain.		France.		Holland.	
		Quantity and Duty.		Quantity and Duty.		Quantity and Duty.	
				In French Vessels.	In for'n Vessels.		
Oil, spermaceti.....	15 cts.	Free.		Cwt. \$1 96	\$2 15	Free.	
" whale and fish.....	15	"		" 3 91	5 48	"	
Fish, dried and smoked	15	"		" 3 91	4 81	"	
Lumber and boards.....	15	Ton. \$3 42	324 feet.	19	19	Cubic ell.	\$0 20
Manufactures of wood.....	24	10 per ct. ad val.	15 per ct. ad val.	15 p. c. ad val.	8 per ct. ad val.	8 per ct. ad val.	
Tar and pitch.....	15	Free.		Cwt. 29	34	Free.	
Skins and furs.....	15	"		100 pieces. 19 c. to 46	19c. to 48	1 per ct. ad val.	
Beef.....	15	"		Cwt. 1 75	1 94	220 lbs.	2 42
Tallow.....	8	Cwt. 36	" 1 40	" 1 75	" 1 75	"	20
Hides.....	4	Free.		" 24 c. to 98	48½ c. to 1 46	½ per ct. ad val.	
Leather.....	15	"		" 24 c. to 98	48½ c. to 1 46	½ per ct. ad val.	
Butter.....	15	Cwt. 1 21	" 20	" 32	" 32	220 lbs.	1 21
Cheese.....	24	" 61	" 5 c. to 1 46	" 5 c. to 1 61	" 5 c. to 1 61	"	2 02
Pork and Bacon.....	15	Free.		" 3 23	3 55	"	40 c. to 50
Lard.....	15	"	" 1 46	" 1 75	" 1 75	"	20
Wool.....	24	"	20 per ct. ad val.	20 p. c. ad val.	20 p. c. ad val.	Free.	
" less than 20 c. p. lb.	Free.	"	30 per ct. ad val.	30 p. c. ad val.	30 p. c. ad val.	220 lbs.	2 02
Wheat.....	15	Bushel. 2				Ton.	1 61
Indian corn and meal.....	15	" 2				"	1 21
Rye, oats, and small grain.....	15	" 2				"	1 21
Ship bread.....	15	Cwt. 9				220 lbs.	1 82
Potatoes.....	24	Free.		Cwt. 5	5	3 bushels.	2
Apples.....	8	Bushel. 6		" 5 c. to 59	66½ c. to 89	3 per ct. ad val.	
Rice.....	15	Cwt. 9	" 93 c. to 2 93	" 93 c. to 2 93	\$2 44½ to 3 42½	220 lbs.	8 c. to 12
Cotton.....	Free.	Free.		Prohibited.	Prohibited.	Free.	
" manufactures.....	10 and 24	"		Prohibited.	Prohibited.	4 per ct. ad val.	
Tobacco.....	24	Pound. 73		"	"	220 lbs.	25 c. to 4 54
" manufactured.....	30	" 2 18		"	"	"	\$4 84 to 16 13
Hemp-seed.....	8	Free.		Cwt. 15 c. to 64	53½ c. to 79	Ton.	40½
Hemp, manufactured.....	15	"	" \$2 93 to 240 34	" \$2 93 to 240 34	" \$2 93 to 240 34	1 to 6 per ct. ad val.	
Sugar, brown.....	24	Cwt. 2 30		"	"	220 lbs.	8
" refined.....	24	" 3 03		Prohibited.	Prohibited.	"	14 52
Spirits.....	30	Gallon. 3 63	22 gallons.	83 32	38 30	Free.	
Molasses.....	24	Cwt. 9		"	"	220 lbs.	1 21
Beer, ale, etc.....	24	Barrel. 4 84		Cwt. 5	5	22 2-9 gallons.	1 01
Linseed oil.....	15	Free.		" 2 44½	2 93	"	2 02
Spirits of turpentine.....	15	"	" 2 44½	" 2 44½	2 68	1 per ct. ad val.	
Hats of fur and silk.....	15	"	" 2 44½	" 2 44½	2 68	6 per ct. ad val.	
Gunpowder.....	15	Each. 24		Each (felt). 29	29	220 lbs.	\$4 84 to 16 13
Books and shoes.....	15	Doz. \$1 13 to 3 39		Prohibited.	Prohibited.	6 per ct. ad val.	
Cables and cordage.....	19	Free.		10 per ct. ad val.	10 p. c. ad val.	6 per ct. ad val.	
Salt.....	15	"		Cwt. 5	10 c. to 27	220 lbs.	6 45
Lead.....	15	"	" 2 35	" 2 53½	" 43	Free.	
Iron, pig.....	24	"	" 39	" 43	"	"	
" bar.....	24	"	" 98 c. to 1 37	"	"	"	
" nails and castings.....	24	Cwt. 61		Prohibited.	Prohibited.	220 lbs.	80
" other manufact.....	24	" 61 c. to 3 63		Cwt. \$1 96 to 24 25	\$2 15½ to 25 51	1 and 2 per ct. ad val.	
Copper and brass.....	Free.	Free.		" 1 c. to 4 89	29 c. to 5 38	220 lbs.	8
" "manuf.....	24	Cwt. 2 42	" \$4 89 to 92 92	" \$5 38 to 94 62	" 5 c. to 21 81	40 c. to 1 61	
Drugs and medicines.....	15	Free.	" 5 c. to 20 54	" 5 c. to 21 81	"	1 per ct. ad val.	
Wearing apparel.....	24	10 per ct. ad val.	Same as raw material.	Ditto.	Ditto.	6 per ct. ad val.	
Books.....	8	Cwt. 7 26	" 98 c. to 9 75	" \$1 08 to 10 52	" \$8 46 to 31 06	220 lbs.	4 03
Paper, all kinds.....	15 and 24	Found. 5 c. to 6	" \$7 83 to 23 34	" \$8 46 to 31 06	" \$8 46 to 31 06	3 to 5 per ct. ad val.	
Jewelry.....	24	10 per ct. ad val.	3½ oz. 4½ c. to 1 92	" 4½ c. to 2 11	" \$1 08 to 12 64	6 per ct. ad val.	
Glass, fancy.....	24 and 30	Cwt. 2 42	" 98 c. to 12 64	" \$1 08 to 12 64	" \$1 08 to 12 64	6 per ct. ad val.	
" other kinds.....	15 and 24	Free.	" 50½	" 65	"	100 pieces.	1 40
Bullion.....	Free.	"	" 10	" 11	"	Free.	
Coal.....	24	"	" 3 c. to 5	" 1 c. to 10	"	1 per ct. ad val.	
Ice.....	Free.	"	Free.	Free.	Free.	6 per ct. ad val.	
India rubber manufact.....	24	Pound. 5	Cwt. 1 96	" 2 15½	"	1 per ct. ad val.	
Unenumerated.....	15	Manufactured.				"	
"		10 per ct. ad val.				"	
"		Raw. Free.				"	

From an examination of the comparative duties on different articles, we find that the tariff of Great Britain more nearly approaches free trade than any other. The United States and Holland follow next in order, and Spain and Brazil are the nearest the other extreme—making, in fact, protection almost prohibition. There is a great want of uniformity in the tariff charges generally, with the exception of those of the United States. In the tariffs of Spain and Brazil the duties seem to be levied arbitrarily in regard to home production, etc., and the tariff considered only in reference to the maximum duty under which the separate articles will be imported, and the total possible maximum revenue.

In the articles of every-day consumption, such as flour, provisions, etc., the tariff of Spain shows almost a prohibition, while articles of luxury are admitted on low duties.

The commerce of the United States with these countries in 1857 was in proportion to the total commerce of the country, as follows:

Year ending June 30, 1857.	Exports from United States.	Imports into United States.	Total.
Great Britain.....	\$185,845,784	\$131,003,193	\$316,848,977
France.....	38,238,987	47,792,827	86,031,814
Spain.....	10,708,007	2,723,016	13,426,118
Holland.....	4,107,877	2,469,762	6,577,639
Belgium.....	5,644,326	5,060,311	10,704,637
Brazil.....	5,545,207	21,400,733	27,005,940
Other countries.....	112,875,404	150,380,239	263,255,703
Total.....	\$362,960,682	\$360,390,141	\$723,350,823

From this table it appears that the six countries of which we have given a tariff summary had the following proportion of the commerce of this country for the fiscal year 1857:

In the exports from United States.....	69 per cent.
In the imports into.....	53 "
In the total commerce of.....	64 "

If we had included the colonies of the above countries, which have the same tariff regulations as their mother countries the percentage would have been materially increased.

COMPARATIVE STATEMENT EXHIBITING THE IMPORT DUTY LEVIED IN SPAIN, BELGIUM, AND BRAZIL ON GOODS, WARES, AND MERCHANDISE, OF THE GROWTH, PRODUCE, AND MANUFACTURE OF THE UNITED STATES; ALSO THE DUTY ON LIKE GOODS, WARES, AND MERCHANDISE IMPORTED INTO THE UNITED STATES.

Articles.	United States. Duty, ad valorem.	Spain.		Belgium.		Brazil.	
		Quantity and Duty		Quantity and Duty.		Quantity and Duty.	
		In Spanish Vessels.	In for'n Vessels.	Quantity and Duty.		Quantity and Duty.	
Oil, spermaceet	15 cts.	25 lbs. \$0 58½	\$0 77½	22 gallons. \$3 07	3 pints. \$0 33		
" whale and fish	15	26½	34	" 2 68	" 19		
Fish, dried and smoked	15	Free.	Free.	220 lbs. 1 22½	25 per ct. ad val.	6 53	
Lumber and boards	15	Each. 1½	2	20 per ct. ad val.	9000 sq. in.	6 53	
Manufactures of wood	24	15 per ct. ad val.	18 p. c. ad val.	2 per ct. ad val.	40 per ct. ad val.	3 27	
Tar and pitch	15	100 lbs. 12½	17	1 per ct. ad val.	25 per ct. ad val.	82	
Skins and furs	15	Dozen. 4 1-5 c. to 9 62	4 c. to 11 56	6 per ct. ad val.	32 lbs. \$1 17 to 1 63	8	
Beef	15	5 lbs. 31½	38½	" 9½ c. to 67½	" 1-5 c. to 19	8 c to 4	
Tallow	8	100 lbs. 38½	51	" 1-5 c. to 19	" 1-5 c. to 19	13	
Hides	4	8½ c. to 1 80	\$1 14 to 2 78	" 1-5 c. to 19	" 1-5 c. to 19	13	
Leather	15	8½ c. to 1 80	\$1 14 to 2 78	" 1-5 c. to 19	" 1-5 c. to 19	6	
Butter	15	Pound. 8½	10½	" 1-5 c. to 19	" 1-5 c. to 19	1 63	
Cheese	24	25 lbs. 1 07	1 28	" 1-5 c. to 19	" 1-5 c. to 19	30 per ct. ad val.	
Pork and bacon	15	Pound. 4½	5½	" 1-5 c. to 19	" 1-5 c. to 19	30 per ct. ad val.	
Lard	15	25 lbs. 1 00	1 20½	" 1-5 c. to 19	" 1-5 c. to 19	99	
Wool	24	100 lbs. 6 40	8 57	" 1-5 c. to 19	" 1-5 c. to 19	20 to 30 per ct. ad val.	
" less than 20 c. p. lb.	Free.	4 79	5 75	" 1-5 c. to 19	" 1-5 c. to 19		
Wheat	15	Prohibited.	Prohibited.	" 1-5 c. to 19	" 1-5 c. to 19		
Indian corn and meal	15	"	"	" 1-5 c. to 19	" 1-5 c. to 19		
Rye, oats, and small grain	15	25 lbs. 9½ c. to 1 18½	14 c. to 1 56½	" 1-5 c. to 19	" 1-5 c. to 19		
Ship bread	15	Prohibited.	Prohibited.	" 1-5 c. to 19	" 1-5 c. to 19		
Potatoes	24	25 lbs. 1½	2	2½ bushels. 80	30 per ct. ad val.	33 c. to 99	
Apples	8	" 8	9½	22 gallons. 30	30 per ct. ad val.	44	
Rice	15	100 lbs. 1 70½	2 14	220 lbs. 28½ c. to 1 82½	30 per ct. ad val.	90	
Cotton	Free.	37 c. to 2 14	\$1 33½ to 3 23	" 32½ c. to 77	30 per ct. ad val.		
" manufactures	19 and 24	31½ c. to 4 67	51½ c. to 5 61½	" \$34 53 to 57 48	43 1-5 in. sq. 7 c. to 30	6 53	
Tobacco	24	Prohibited.	Prohibited.	" \$1 92 to 6 71	32 lbs. 6 53		
" manufactured	30	15 per ct. ad val.	18 p. c. ad val.	" \$6 70 to 45 98	60 per ct. ad val.		
Hemp-seed	15	25 lbs. 5½	6½	Ton. 4	2 per ct. ad val.		
Hemp, manufactured	15	\$16 96 to 120 24	\$21 33 to 149 64	220 lbs. \$5 75 to 187 82	40 per ct. ad val.		
Sugar, brown	24	10½ c. to 86	51 c. to 1 07	" 32½ c. to 83	30 per ct. ad val.		
" refined	24	6½ c. to 1 60	\$1 07 to 2 03	" 18 20	50 per ct. ad val.		
Spirits	30	15 per ct. ad val.	18 p. c. ad val.	22 gallons. 83 c. to 1 53	50 per ct. ad val.		
Molasses	24	15 per ct. ad val.	18 p. c. ad val.	Prohibited.			
Beer, ale, etc.	24	25 lbs. 56½	60½	22 gallons. 2 43½	3 pints. 33		
Linseed oil	15	" 40	48	" 2 36	Pound. 5½		
Spirits of turpentine	15	100 lbs. 80½	1 07	220 lbs. 11½	" 10		
Hats of fur and silk	15	30 per ct. ad val.	36 p. c. ad val.	" 10 per ct. ad val.	Each. 26 c. to 2 62		
Gunpowder	15	15 per ct. ad val.	18 p. c. ad val.	220 lbs. 6 49½	Pound. 19		
Boots and shoes	24	Prohibited.	Prohibited.	" 18 per ct. ad val.	Pair. 26 c. to 5 89		
Cables and cordage	19	100 lbs. 3 51	3 85	1000 No. 4 04	128 lbs. 4 90		
Salt	15	Prohibited.	Prohibited.	220 lbs. 6 49	1 peck. 17		
Lead	15	100 lbs. 96½	1 15½	" 2 64	128 lbs. 3 27		
Iron, pig	24	" 42½	51	" 2 50½	" 25 per ct. ad val.		
" bar	24	" \$2 14 to 2 56	\$2 56 to 3 03	" 2 43½	32 lbs. 2 62		
" nails and castings	24	" \$2 67 to 3 23	\$3 33 to 4 24	" 2 50½	" \$2 10 to 16 78		
" other manufact.	24	" 81½ c. to 32 07	42½ c. to 88 45	" \$1 32½ to 14 37	Dozen. 5½ c. to 16 34		
Copper and brass	Free.	" \$8 57 to 10 69	\$10 69 to 13 36	" 6 per ct. ad val.	25 per ct. ad val.		
" manufact.	24	" \$17 14 to 33 28	\$21 43 to 30 56	" 1 per ct. ad val.	Pound. 2½ c. to 19 60		
Drugs and medicines	15	Pound. 1 c. to 6 41	1 c. to 7 28	Free.	40 per ct. ad val.		
Wearing apparel	24	Prohibited.	Prohibited.	" 6 00	30 per ct. ad val.		
Books	8	25 lbs. 80½ c. to 5 35	96½ c. to 6 40	Ton. 3 to 15 per ct. ad val.	Ream. 9 c. to 1 96		
Paper, all kinds	15 and 24	" 21½ c. to 15	25½ c. to 3 77½	" 5 to 6 per ct. ad val.	4 to 30 per ct. ad val.		
Jewelry	24	6 per ct. ad val.	6 p. c. ad val.	" 2 to 12 per ct. ad val.	40 per ct. ad val.		
Glass, fancy	24 and 30	Each. 6½ c. to 60 10	8½ c. to 80 16	" 10 per ct. ad val.	Each. 2 c. to 15 60		
" other kinds	15 and 24	25 lbs. 53½	64	Free.	30 per ct. ad val.		
Bullion	Free.	Free.	Free.	" 2 88½	5 per ct. ad val.		
Coal	24	100 lbs. 2½	10½	Ton. 2 per ct. ad val.	1728 lbs. 1 97		
Ice	Free.	21½	20½	" 2 per ct. ad val.	30 per ct. ad val.		
India rubber manufact.	24	15 per ct. ad val.	18 p. c. ad val.	" 2 per ct. ad val.	30 per ct. ad val.		
Unenumerated	15	Manufactured.	18 p. c. ad val.	"	30 per ct. ad val.		
"	15	15 per ct. ad val.	"	"	"		
"	15	Raw	"	"	"		

NEW TARIFF ACT OF THE UNITED STATES.

AN ACT REDUCING THE DUTY ON IMPORTS, AND FOR OTHER PURPOSES.

Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, That on and after the 1st day of July, 1857, ad valorem duties shall be imposed, in lieu of those now imposed upon goods, wares, and merchandise imported from abroad into the United States, as follows, viz :

Upon the articles enumerated in Schedules A and B of the tariff act of 1846, a duty of 30 per cent., and upon those enumerated in Schedules C, D, E, F, G, and H of said act, the duties of 24 per cent., 19 per cent., 15 per cent., 12 per cent., 8 per cent., and 4 per cent., respectively, with such exceptions as hereinafter made; and all articles so imported as aforesaid, and not enumerated in the said schedules, nor in Schedule I, shall pay a duty of 15 per cent.

Sec. 2. And be it further enacted, That all manufactures composed wholly of cotton, which are bleached, printed, painted, or dyed, and de laines, shall be transferred to Schedule C.

Japanned leather, or skins of all kinds, shall be transferred to Schedule D. Ginger, green, ripe, dried, preserved, or pickled; ochreys and ochrey earths, medicinal roots, leaves, gums and resins in a crude state, not otherwise provided for; wares, chemical, earthen or pottery, of a capacity exceeding ten gallons, shall be transferred to Schedule E.

Borate of lime and codella, or tow of hemp or flax, shall be transferred to Schedule F.

Antimony, crude or regulus of; barks of all kinds, not otherwise provided for; camphor, crude; cantharides; carbonate of soda; emery, in lump or pulverized; fruits, green, ripe, or dried; gums, Arabic, Barbary, copal, East India, Jeddah, Senegal, substitute, tragacanth, and all other gums and resins in a crude state; machinery exclusively designed and expressly imported for the manufacture of flax and linen goods; sponges; tin in plates or sheets, galvanized or ungalvanized; woods, namely, cedar, ligum vitae, ebony, box, granadilla, mahogany, rose-wood, satin-wood, and all cabinet woods, shall be transferred to Schedule G.

Acids, acetic, benzoic, boracic, citric, muriatic, white and yellow, oxalic, pyroligneous and tartaric, and all other acids of every description used for chemical or manufacturing purposes, not otherwise provided for; aloes; amber; ambergris; anise seed; annato, roncon or Orleans; arsenic; articles not in a crude state, used in dyeing or tanning, not otherwise provided for; asafetida; asphaltum; barilla; bleaching powder, or chlorid of lime; borax, crude; boucho leaves; brimstone, crude, in bulk; cameos, mosaics, diamonds, gems, pearls, rubies, and other precious stones (not set); chalk; clay; cochineal; cocoa, cocoa-nuts, and cocoa-shells; cork-tree bark; cream of tartar; extract of indigo; extracts and

decoctions of logwood and other dye woods, not otherwise provided for; extract of madder; flint, ground; grindstones; gutta percha, unmanufactured; India rubber in bottles, slabs, or sheets, unmanufactured; India rubber, milk of; indigo; lac spirits; lac sulphur; lastings, cut in strips or patterns of the size and shape for shoes, slippers, boots, booties, gaiters, or buttons exclusively, not combined with India rubber; manufactures of mohair cloth, silk twist, or other manufactures of cloth suitable for the manufacture of shoes, cut in slips or patterns of the size and shape for shoes, slippers, boots, booties, gaiters or buttons exclusively, not combined with India rubber; music printed with lines, bound or unbound; oils, palm, teal, and cocoa-nut; Prussian blue; soda ash; spices of all kinds; watch materials and unfinished parts of watches and wood, or pastel, shall be transferred to Schedule II.

SEC. 3. *And be it further enacted*, That on and after the 1st day of July, 1857, the goods, wares, and merchandise mentioned in Schedule I, made part thereof, shall be exempt from duty and entitled to free entry.

SCHEDULE I. All books, maps, charts, mathematical, nautical instruments, philosophical apparatus, and all other articles whatever imported for the use of the United States.

All philosophical apparatus, instruments, books, maps, and charts; statues, statuary, busts and casts of marble, bronze, alabaster, or plaster of Paris; paintings and drawings; etchings; specimens of sculpture; cabinets of coins, medals, gems, and all collections of antiquities: *provided* the same be specially imported, in good faith, for the use of any society incorporated or established for philosophical or literary purposes, or for the encouragement of the fine arts, or for the use or by the order of any college, academy, school, or seminary of learning in the United States; animal carbon (boneblack); animals, living, of all kinds; argol, or crude tartar; articles in a crude state used in dyeing or tanning, not otherwise provided for.

Bark, Peruvian; bells, old, and bell-metal; berries, nuts, flowers, plants, and vegetables used exclusively in dyeing, or in composing dyes, but no article shall be classed as such that has undergone any manufacture; bismuth; bitter apples; boiling-cloths; bones, burned, and bonedust.

Books, maps, and charts imported by authority of the Joint Library Committee of Congress for the use of the Library of Congress: *provided* that if in any case a contract shall have been made with any bookseller, importer, or other person for books, maps, or charts, in which contract the bookseller, importer, or other person aforesaid shall have paid the duty, or included the duty in said contract, in such case the duty shall not be remitted; brass in bars and pigs, or when old, and fit only to be remanufactured; Brazil-wood, brazilletto, and all other dye-woods in sticks; bullion, gold and silver; burr stones, wrought or unwrought, but unmanufactured.

Cabinets of coins, medals, and other collections of antiquities; coffee and tea, when imported direct from the place of their growth or production in American vessels, or in foreign vessels entitled by reciprocal treaties to be exempt from discriminating duties, tonnage, and other charges; coffee, the growth or production of the possessions of the Netherlands, imported from the Netherlands in the same manner; coins, gold, silver, and copper; copper ore; copper, when imported for the United States Mint; copper, in pigs or bars, or when old and fit only to be remanufactured; cotton; cutch.

Dragon's blood.

Felt, adhesive, for sheathing vessels; flax, unmanufactured.

Garden seeds and all other seeds for agricultural, horticultural, medicinal, and manufacturing purposes, not otherwise provided for; glass, when old and fit only to be remanufactured; goods, wares, and merchandise, the growth, produce, or manufacture of the United States, exported to a foreign country and brought back to the United States in the same condition as when exported, upon which no drawback or bounty has been allowed: *provided* that all regulations to ascertain the identity thereof, prescribed by existing laws, or which may be prescribed by the Secretary of the Treasury, shall be complied with; guano.

Household effects, old and in use, of persons or families from foreign countries, if used abroad by them, and not intended for any other person or persons, or for sale.

Ice; ivory, unmanufactured; junk, old.

Lined, but not embracing flaxseed.

Madder root; madder, ground or prepared; maps and charts; models of inventions and other improvements in the arts: *provided* that no article or articles shall be deemed a model or improvement which can be fitted for use.

Oakum; oil, spermaceti, whale and other fish, of American fisheries, and all other articles the produce of such fisheries.

Paintings and statuary; palm leaf, unmanufactured; personal and household effects (not merchandise) of citizens of the United States dying abroad; plaster of Paris or sulphate of lime, unground; platha, unmanufactured.

Rags of whatever material, except wool; ratans and reeds, unmanufactured.

Sheathing copper, but no copper to be considered such and admitted free, except in sheets of forty-eight inches long and fourteen inches wide, and weighing from fourteen to thirty-four ounces the square foot; sheathing metal, not wholly or in part of iron, ungalvanized; shingle bolts, and stove bolts; silk, raw, or as reeled from the cocoon, not being doubled, twisted, or advanced in manufacture in any way; specimens of natural history, mineralogy, or botany; substances expressly used for manures.

Tin in pigs, bars, or blocks; trees, shrubs, bulbs, plants, and roots, not otherwise provided for.

Wearing apparel in actual use, and other personal effects (not merchandise); professional books, implements, instruments, and tools of trade, occupation or employment, of persons arriving in the United States: *provided* that this exemption shall not be construed to include machinery or other articles imported for use in any manufacturing establishment, or for sale.

Sheep's wool, unmanufactured, of the value of 20 cents per pound or less at the port of exportation, and hair of the alpaca, the goat, and other like animals, unmanufactured: *provided* that any wool of the sheep, or hair of the alpaca, the goat, and other like animals, which shall be imported in any other than the ordinary condition, as now and heretofore practiced, or which shall be changed in its character for the purpose of evading the duty, or which shall be reduced in value by the intentional admixture of dirt, or any foreign substance, to 20 cents per pound or less, shall be subject to pay a duty of 24 per cent. *ad valorem*, any thing in this act to the contrary notwithstanding.

SEC. 4. *And be it further enacted*, That all goods, wares, and merchandise which shall be in the public stores on the 1st day of July aforesaid, shall be subject, on entry thereof for consumption, to no other duty than if the same had been imported respectively after that day.

SEC. 5. *And be it further enacted*, That on the entry of any goods, wares, and merchandise imported on and after the 1st day of July aforesaid, the decision of the collector of the customs at the port of importation and entry, as to their liability to duty or exemption therefrom, shall be final and conclusive against the owner, importer, consignee, or agent of any such goods, wares, and merchandise, unless the owner, importer, consignee, or agent shall, within ten days after such entry, give notice to the collector in writing of his dissatisfaction with such decision, setting forth therein distinctly and specifically his grounds of objection thereto, and shall, within thirty days after the date of such decision, appeal therefrom to the Secretary of the Treasury, whose decision on such appeal shall be final and conclusive; and the said goods, wares, and merchandise shall be liable to duty or exempted therefrom accordingly, any act of Congress to the contrary notwithstanding, unless suit shall be brought within thirty days after such decision for any duties that may have been paid or may hereafter be paid on said goods, or within thirty days after the duties shall have been paid, in cases where such goods shall be in bond.

AN ACT TO AMEND THE ACT REDUCING THE DUTY ON IMPORTS, AND FOR OTHER PURPOSES, PASSED JULY 30, 1846.

Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, That the eighth section of the act approved July 30, 1846, and entitled "An act reducing the duty on imports, and for other purposes," be amended as follows:

SEC. 2. *And be it further enacted*, That it shall be lawful for the owner, consignee, or agent of imports which have been actually purchased or procured otherwise than by purchase, on entry of the same, to make such addition in the entry to the cost or value given in the invoice as, in his opinion, may raise the same to the true market value of such imports in the principal markets of the country whence the importation shall have been made; and to add thereto all costs and charges which, under existing laws, would form part of the true value at the port where the same may be entered, upon which the duties should be assessed. And it shall be the duty of the collector within whose district the same may be imported or entered to cause the dutiable value of such imports to be appraised, estimated, and ascertained, in accordance with the provisions of existing laws; and if the appraised value thereof shall exceed by 10 per cent. or more the value so declared on the entry, then, in addition to the duties imposed by law on the same, there shall be levied collected, and paid, a duty of 20 per cent. *ad valorem* on such appraised value: *Provided, nevertheless*, That under no circumstances shall the duty be assessed upon an amount less than the invoice or entered value, any law of Congress to the contrary notwithstanding.

Approved March 3, 1857.

COMPARATIVE TARIFFS OF THE UNITED STATES, 1846 AND 1857.

Articles.			Articles.		
	1846.	1857.		1846.	1857.
Absynthe; see <i>Cordials</i>	100	30	Barley, pearl or hulled; see <i>Pearl or Hull-</i>		
Acetic acid; see <i>Acids, acetic</i> , etc.	20	4	<i>ed Barley</i>	20	15
Acetous Acid; see <i>Acid, acetous</i> , etc.	20	15	Bars, iron; see <i>Iron in Bars</i>	30	24
Acids of every description used for chem-			Bars, steel; see <i>Steel in Bars</i>	15	12
ical or for manufacturing purposes, not			Bars, brass; see <i>Brass in Bars</i> , etc.	5	Free.
otherwise provided for	20	4	Bars, copper; see <i>Copper in Pigs</i> , etc.	5	Free.
Acids of every description used for medic-			Bar, tin; see <i>Tin in Pigs</i> , etc.	5	Free.
inal purposes or in the fine arts, not oth-			Barytes, sulphate of; see <i>Sulphate of Ba-</i>		
erwise provided for	30	15	<i>rytes</i>	20	15
Acid, sulphuric; see <i>Sulphuric Acid</i>	10	4	Baskets, and all other articles composed of		
Adhesive felt, etc.; see <i>Felt, adhesive</i>	Free.	Free.	grass, osier, palm-leaf, straw, whalebone,		
Alabaster statuary, etc., for use of colleges,			or willow, not otherwise provided for ..	30	24
etc.; see <i>Philosophical Apparatus</i> , etc.	Free.	Free.	Bay rum	30	24
Alabaster and spar ornaments	40	30	Beads, of amber, composition, or wax, and		
Alabaster; see <i>Argentine</i>	30	24	all other beads	30	24
Alcornuque	5	4	Beans, Vanilla; see <i>Vanilla Beans</i>	20	15
Ale, beer, and porter, in casks or bottles ..	30	24	Bed-sides; see <i>Carpets</i>	30	24
Almonds	40	30	Beds, feather; see <i>Floss Silks</i> , etc.	25	19
Aloes	20	4	Beef	20	15
Alum	20	15	Beer, in casks or bottles; see <i>Ale, Beer</i> , etc.	30	24
Amber beads; see <i>Beads</i>	30	24	Beeswax	20	15
Amber	20	4	Bells, old, and bell-metal	5	Free.
Ambergris	20	4	Bend leather; see <i>Leather, tanned</i> , etc.	20	15
Ammonia	10	8	Benzoates	30	24
Ammonia, sal; see <i>Sal Ammonia</i>	10	8	Benzoil, or Benjamin, gum; see <i>Gum Ben-</i>		
Anatto, roucou, or Orleans	10	4	<i>zoil</i> , etc.	30	24
Anchovies, sardines, and all other fish pre-			Benzoic acid; see <i>Acids, acetic</i> , etc.	20	4
served in oil	40	30	Berries, vegetables, and flowers, not oth-		
Angora, Thibet, and other goats' hair or			erwise provided for	20	15
mohair, unmanufactured, not otherwise			Berries, juniper; see <i>Juniper Berries</i>	20	15
provided for	20	15	Berries, nuts, flowers, plants, and vegeta-		
Animal carbon; see <i>Bone black</i>	20	Free.	bles, used exclusively in dyeing or in		
Animal oils; see <i>Oils, Neat's-foot</i> , etc.	20	15	composing dyest; but no article shall be		
Animals, living, of all kinds	20	Free.	classed as such that has undergone any		
Anise seed	20	4	manufacture	5	Free.
Antimony, crude, or regulus of	20	8	Bichromate of potash; see <i>Chromate</i>	20	15
Antiquarian paper; see <i>Paper</i>	30	24	Bismuth	20	Free.
Antiquities, collections of; see <i>Philosophi-</i>			Bitter apples	20	Free.
<i>cal Apparatus</i> , etc.	Free.	Free.	Bituminous substances in a crude state; see		
Antiquities, collections of; see <i>Cabinets of</i>			<i>Mineral and Bituminous Substances</i> ..	20	15
<i>Coins</i> , etc.	Free.	Free.	Black, Frankfort; see <i>Frankfort Black</i> ..	20	15
Apparatus for use of United States; see			Black, ivory; see <i>Ivory Black</i>	20	15
<i>Books, Maps</i> , etc.	Free.	Free.	Blank-books, bound or unbound	20	15
Apparatus for use of colleges, etc.; see <i>Phil-</i>			Blankets of all kinds	20	15
<i>osophical Apparatus</i> , etc.	Free.	Free.	Bleaching powder, or chlorid of lime	10	4
Apparel; see <i>Clothing, ready-made</i>	30	24	Blocks, tin; see <i>Tin in Pigs</i> , etc.	5	Free.
Apples, bitter; see <i>Bitter Apples</i>	20	Free.	Blooms; see <i>Iron in Bars</i> , etc.	30	24
Arabic, gum; see <i>Gum Arabic</i>	10	8	Blue or Roman vitriol, or sulph. of copper.	20	15
Argentine, alabata, or German silver, man-			Blue, fig; see <i>Fig Blue</i>	20	15
ufactured or unmanufactured	30	24	Blue, Prussian; see <i>Prussian Blue</i>	20	4
Argol, or crude tartar	5	Free.	Bone black; see <i>Animal Carbon</i>	20	Free.
Arms, fire; see <i>Muskets</i>	30	24	Boards, planks, staves, laths, scantling,		
Arms, side; see <i>Side Arms</i>	30	24	spars, hewn and sawed timber, and tim-		
Arack; see <i>Cordials</i>	100	30	ber to be used in building wharves ..	20	15
Arrow-root	20	15	Bookings; see <i>Baizes</i>	25	19
Arsenic	15	4	Bodies, hat, of wool; see <i>Hat Bodies</i>	20	15
Articles embroidered with gold, silver, etc.	30	24	Bologna sausages	30	24
Articles worn by men, women, or children,			Bolts; see <i>Iron in Bars</i>	30	24
of whatever material composed, made up,			Bolts, shingle and stove	20	Free.
or made wholly or in part by hand	30	24	Bolts, copper; see <i>Copper Rods</i> , etc.	20	15
Articles of metal; see <i>Manufactures</i>	30	24	Bolting cloths	25	Free.
Articles of leather; see <i>Manufactures</i>	30	24	Bone, manufactures of; see <i>Manufactures</i>		
Articles of marble; see <i>Manufactures</i>	30	24	<i>of Bone</i>	30	24
Articles of glass; see <i>Manufactures</i>	30	24	Bone black	20	Free.
Articles of paper-maché; see <i>Manufactures</i>			Bone-dust	20	Free.
Articles, all, imported for the use of United			Bones and bone tips, unmanufactured; see		
<i>States; see Books, Maps</i> , etc.	Free.	Free.	<i>Horn and Horn Tips</i>	5	4
Articles not in a crude state, used in dyeing			Bones, burned	20	Free.
or tanning, not otherwise provided for ..	20	4	Bonnets, flats, braids, etc., used for mak-		
Articles in a crude state, used in dyeing or			ing; see <i>Flats</i> , etc.	30	24
tanning, not otherwise provided for ..	5	Free.	Bonnets composed of certain materials; see		
Artificial flowers or feathers; see <i>Feathers</i>	30	24	<i>Hats and Bonnets</i>	30	24
Asb, soda; see <i>Soda-ash</i>	10	4	Books, maps, and charts, imported by au-		
Asphaltum	20	4	thority of the joint library committee of		
Asafetida	20	4	Congress for the use of the library of		
Asses' skins	30	24	Congress	Free.	Free.
Aubusson carpeting; see <i>Carpets</i>	30	24	Books, maps, and charts, mathematical and		
Bacon	20	15	nautical instruments, philosophical appa-		
Baizes, bookings, flannels, and floor-cloths,			ratus, and all other articles whatever, im-		
of whatever material composed, not oth-			ported for the use of the United States ..	Free.	Free.
erwise provided for	25	19	Books as personal effects of persons arriving		
Balsams, cosmetics, essences, extracts, per-			in the United States; see <i>Wearing Ap-</i>		
fumes, pastes, and tinctures	30	24	<i>parel</i>	Free.	Free.
Bananas	20	8	Books specially imported for societies; see		
Barbary gum; see <i>Gum Arabic</i>	10	8	<i>Philosophical Apparatus</i>	Free.	Free.
Barilla	10	4	Botany, specimens of; see <i>Specimens of</i>		
Bark of the cork-tree, manufactures of; see			<i>Natural History</i>	Free.	Free.
<i>Manufactures</i>	30	24	Books, blank; see <i>Blank Books</i>	20	15
Bark of the cork-tree, unmanufactured; see			Books, printed, magazines, pamphlets, and		
<i>Cork-tree Bark</i>	15	8	periodicals, illustrated newspapers, bound		
Barks of all kinds not otherwise provided for	20	8	or unbound, not otherwise provided for ..	10	8
Bark, Peruvian	15	Free.	Books in course of printing and republica-		
Bark, Quilla	15	15	tion; see <i>Periodicals</i>	20	15
Barley	20	12	Boracic acid; see <i>Acids, acetic</i> , etc.	20	4

UNITED STATES' TARIFFS—Continued.

Articles.	1846. Per Cent.	1857. Per Cent.
Borate of lime	12	
Borax, crude or tincal	25	4
Borax, not crude	25	19
Bottles, India rubber; see <i>India Rubber in Bottles</i>	10	4
Bottoms, copper; see <i>Copper Bottoms</i>	20	15
Bottoms, still; see <i>Still Bottoms</i>	20	15
Boucho leaves	20	4
Boxes, paper; see <i>Paper Boxes</i>	30	24
Boxes, fancy; see <i>Paper Boxes</i>	30	24
Box-wood, unmanufactured	20	8
Bracelets, braids, chains, curls, or ringlets, composed of hair, or of which hair is a component part	30	24
Braces, suspenders, webbing or other fabrics, composed wholly or in part of India rubber, not otherwise provided for	30	24
Braids, of hair; see <i>Bracelets</i>	30	24
Braids, for making hats or bonnets; see <i>Hats, Braids</i> , etc.	30	24
Braids, cotton; see <i>Cotton Laces</i> , etc.	25	19
Brandy, and other spirits distilled from grain or other materials	100	30
Brass, manufactures of; see <i>Manufactures of Brass</i>	30	24
Brass, in bars or pigs	5	Free.
Brass, old, and fit only to be remanufactured	5	Free.
Braziers' copper; see <i>Copper in Sheets</i> , etc.	20	15
Brazil paste	15	12
Brazil-wood, Braziletto, and all dye-woods in sticks	5	Free.
Breccia	20	15
Bricks; see <i>Paving and Roofing Tiles</i> , etc.	20	15
Brimstone, roll; see <i>Roll Brimstone</i>	20	15
Brimstone, crude, in bulk	15	4
Bristles	5	4
Broad window glass; see <i>Window Glass</i>	20	15
Bronze liquor	20	15
Bronze powder	20	15
Bronze, casts of; see <i>Philosophical Apparatus</i> , etc. ....	..	Free.
Bronze, metal, in leaf; see <i>Metals, Dutch</i> , etc.	20	15
Brooms and brushes of all kinds	30	24
Brushes	30	24
Brussels carpets; see <i>Carpets</i>	30	24
Buds, cassia; see <i>Cassia Buds</i>	20	4
Building stones	10	8
Bulbs; see <i>Trees, Shrubs</i> , etc.	Free.	Free.
Hullion, gold and silver	Free.	Free.
Burgundy; see <i>Wines</i>	40	30
Burgundy pitch	25	19
Burned starch; see <i>Gum substitute</i>	10	8
Burr stones, wrought or unwrought, but unmanufactured	10	Free.
Busts; see <i>Philosophical Apparatus</i> , etc.	Free.	Free.
Butter	20	15
Buttons and button-moulds of all kinds	25	19
Cabinet and household furniture	30	24
Cabinets of coins, medals, gems, and all collections of antiquities	Free.	Free.
Cables and cordage, tarred or untarred	25	19
Cadmium	20	15
Cake, saffron; see <i>Saffron and Saffron Cake</i>	20	15
Calamine	20	15
Calomel and all other mercurial preparations	25	19
Cameos, real and imitation; and mosaics, real and imitation, when set in gold, silver, or other metal	30	24
Cameos and mosaics not set	10	4
Cameos and mosaics, imitations thereof, not set	10	8
Camphor, refined	40	30
Camphor, crude	25	19
Candles, spermaceti; see <i>Spermaceti Candles</i>	20	15
Candles, stearin; see <i>Stearin Candles</i>	20	15
Candles, tallow; see <i>Tallow Candles</i>	20	15
Candles, wax; see <i>Wax Candles</i>	20	15
Canes and sticks for walking, finished or unfinished	30	24
Cantharides	20	8
Capers, pickles, and sauces of all kinds, not otherwise provided for	30	24
Caps, hats, muffs, and tippets of fur, and all other manufactures of fur, or of which fur shall be a component material	30	24
Caps, gloves, leggins, mits, socks, stockings, wove shirts and drawers, and all similar articles made on frames, worn by men, women, or children, and not otherwise provided for	30	24
Caps, gloves, leggins, mits, socks, stockings, wove shirts and drawers, made on frames, composed wholly of cotton	20	15

UNITED STATES' TARIFFS—Continued.

Articles.	1846. Per Cent.	1857. Per Cent.
Caps, gloves, leggins, mits, socks, stockings, wove shirts and drawers, made on frames, composed wholly of cotton, worn by men, women, and children, when bleached, printed, painted, or dyed	20	24
Carbonate of soda; see <i>Sal Soda</i> , etc.	20	8
Carbon, animal; see <i>Animal Carbon</i>	20	Free.
Card cases, pocket-books, shell boxes, sonnets, and all similar articles, of whatever material composed	30	24
Cards, playing; see <i>Playing Cards</i>	30	24
Carpets, carpeting, hearth-rugs, bed-sides, and other portions of carpeting, being either Aubusson, Brussels, ingrain, Saxony, Turkey, Venetian, Wilton, or any other similar fabric	30	24
Carriages and parts of carriages	30	24
Cassia	40	4
Cassia buds	20	4
Castings of iron	30	24
Cast-iron vessels; see <i>Iron, cast, Vessels of Cast-steel</i> ; see <i>Steel in Bars</i>	15	19
Castile-soap; see <i>Soap, Castile</i> , etc.	30	24
Castor oil	20	15
Castorum	20	15
Casts of marble, bronze, alabaster, or plaster of Paris; see <i>Philosophical Apparatus</i> , etc.	Free.	Free.
Cayenne pepper	30	1
Cedar-wood, manufactures of; see <i>Manufactures of Cedar-wood</i>	40	30
Cedar-wood, box-wood, ebony, granadilla, lignum-vite, mahogany, rose-wood, and satin-wood, and all cabinet woods, unmanufactured; see <i>Woods</i>	20	8
Cement, Roman; see <i>Roman Cement</i>	20	15
Chains of hair; see <i>Bracelets, Braids</i> , etc.	30	24
Chalk, red, pencils; see <i>Red Chalk Pencils</i>	30	24
Chalk	5	4
Chalk, French; see <i>French Chalk</i>	20	4
Chalk, red; see <i>Red Chalk</i>	20	4
Charts; see <i>Maps and Charts</i>	10	Free.
Cheese	30	24
China ware; see <i>Earthen, China, and Stone Ware</i>	30	24
China matting; see <i>Matting, China</i> , etc.	25	19
Chip hats and bonnets; see <i>Hats and Bonnets</i>	30	24
Chocolate	20	15
Chlorid of lime; see <i>Bleaching Powder</i>	10	..
Chromate of lead	20	15
Chromate, bichromate, hydriodate, and prussiate of potash	20	15
Chromic acid; see <i>Acids, astringent</i> , etc.	20	15
Chronometers, box or ships', and parts thereof	10	8
Cinnamon	30	24
Citric acid; see <i>Acids, acetic</i> , etc.	20	4
Claret; see <i>Wines</i>	40	30
Clay	5	4
Clay, unwrought	5	4
Clocks and parts of clocks	30	24
Clothing, ready-made, and wearing apparel of every description, of whatever material composed, made up or manufactured wholly or in part by the tailor, seamstress, or manufacturer	30	24
Cloth, suitable for the manufacture of shoes, buttons, etc., exclusively; see <i>Manufactures of Mohair Cloth</i> , etc.	5	4
Cloths, bolting; see <i>Bolting Cloths</i>	25	Free.
Cloves	40	4
Coach and harness furniture of all kinds	30	24
Coal	30	24
Cobalt	20	15
Cochineal	10	4
Cocoa-nuts	20	4
Cocoa	10	4
Cocoa shells	10	4
Cocoa-nut oil; see <i>Oils, Palms</i> , etc.	10	4
Coculus Indicus	20	15
Codilla, or tow of hemp or flax	15	12
Coffee and tea, when imported direct from the place of their growth and production, in American vessels, or in foreign vessels entitled by reciprocal treaties to be exempt from discriminating duties, tonnage, and other charges .....	..	Free.
Coffee, the growth or production of the possessions of the Netherlands, imported from the Netherlands in the same manner	Free.	Free.
Coins, gold, silver, and copper	Free.	Free.
Coins; see <i>Cabinets of Coins</i>	Free.	Free.
Coir; see <i>Jute</i> , etc.	25	10
Coke and culm of coal	30	24

UNITED STATES' TARIFFS—Continued.

UNITED STATES' TARIFFS—Continued.

Articles.	1846. Per Cent.	1857. Per Cent.
Collections of antiquities; see <i>Philosophical Apparatus</i> , etc.	Free.	Free.
Collections of antiquities; see <i>Cabinets of Coins</i> , etc.	Free.	Free.
Colored glass; see <i>Glass, colored</i>	30	24
Colors, water; see <i>Water Colors</i>	30	24
Combs of all kinds	30	24
Comfits, sweetmeats, or fruit, preserved in sugar, brandy, or molasses	40	30
Common saddlery; see <i>Saddlery</i>	20	15
Composition tops for tables, or other articles of furniture	40	30
Composition beads; see <i>Beads</i>	30	24
Composition of glass or paste, when set	30	24
Composition of glass or paste, not set	10	8
Confectionery of all kinds, not otherwise provided for	30	24
Copial gun; see <i>Guns</i>	10	8
Copper articles, vessels, and wares; see <i>Manufactures</i>	30	24
Copper bottoms	20	15
Copper rods, bolts, nails, and spikes	20	15
Copper in sheets or plates, called braziers' copper, and other sheets of copper not otherwise provided for	20	15
Copperas, or green vitriol, or sulph. of iron	20	15
Copper, in pigs or bars	5	Free.
Copper, when old, and fit only to be remanufactured	5	Free.
Copper, when imported for the U. S. Mint	Free.	Free.
Copper ore	Free.	Free.
Copper, sheathing; see <i>Sheathing Copper</i>	Free.	Free.
Copper coins; see <i>Coins</i>	Free.	Free.
Coral, cut or manufactured	30	24
Coral, marine; see <i>Marine Coral, unmanufactured</i>	20	15
Cordage; see <i>Cables and Cordage</i>	25	19
Cordials, absynthe, arrack, Curaçoa, kirschenwasser, liqueurs, maraschino, ratafia, and all other spirituous beverages of a similar character	100	30
Cords, cotton; see <i>Cotton Cords</i>	30	24
Corks	30	24
Cork-tree bark; see <i>Manufactures of the Bark of the Cork-tree</i>	30	24
Cork-tree bark	15	4
Corn, Indian; see <i>Indian Corn</i>	20	15
Corn meal, Indian; see <i>Indian Corn and Meal</i>	20	15
Cosmetics; see <i>Balsams, Cosmetics</i> , etc.	30	24
Cotton	Free.	Free.
Cotton cords, gimps, and galloons	30	24
Cotton, hat bodies of; see <i>Hat Bodies of Cotton</i>	30	24
Cotton, embroidered; see <i>Manufactures of Cotton</i> , etc., embroidered	30	24
Cotton, all manufactures of, bleached, printed, painted, or dyed; see <i>Manufactures of Cotton</i>	20 to 25	24
Cotton laces, cotton insertings, cotton trimming laces, cotton laces and braids	25	19
—when bleached, printed, painted, or dyed	25	24
Cotton, manufactures of, not otherwise provided for; see <i>Manufactures of Cotton not otherwise provided for</i>	25	19
Cotton, articles of, made on frames; see <i>Caps, Gloves</i> , etc.	20	15
—when bleached, printed, painted, or dyed	20	24
Cotton and silk, hatters' plush; see <i>Hatters' Plush</i>	20	15
Cotton velvet in the piece, composed wholly of cotton; see <i>Velvet in the Piece</i> , etc.	20	15
—when bleached, printed, painted, or dyed	20	24
Cotton and silk velvet in the piece, cotton of chief value; see <i>Velvet in the Piece, composed of Cotton and Silk</i> , etc.	20	15
Court-plaster	30	24
Crackers, fire; see <i>Fire-crackers</i>	30	24
Crayons of all kinds	30	24
Cream of tartar	20	4
Crown window glass; see <i>Window Glass</i>	20	15
Crude tartar; see <i>Argol</i>	5	Free.
Crude articles for dyeing, etc.; see <i>Articles in a crude state</i> , etc.	5	Free.
Crystals for watches; see <i>Glass Crystals</i>	30	24
Cubebs	20	15
Culdbear	10	8
Culm of coal; see <i>Coke</i>	30	24
Curaçoa; see <i>Cordials</i>	100	30
Curls of hair; see <i>Bracelets</i>	30	24
Curled hair for beds; see <i>Hair, curled</i> , etc.	20	15
Currants	40	8
Cutlery of all kinds	30	24
Cutch	10	Free.
Cylinder window glass; see <i>Window Glass</i>	20	15
Darning needles; see <i>Needles of all kinds</i>	20	15

Articles.	1846. Per Cent.	1857. Per Cent.
Dates	40	8
Demy paper; see <i>Paper, demy</i> , etc.	30	24
Decoctions of logwood, etc.; see <i>Extracts and Decoctions</i>	20	4
De laines	25	24
Diamonds, gems, pearls, rubies, and other precious stones, and imitations of precious stones, when set in gold, silver, or other metal	30	24
Diamonds, cameos, mosaics, gems, pearls, rubies, and other precious stones, when not set	10	4
Diamonds, cameos, mosaics, gems, pearls, rubies, and other precious stones, imitations thereof, not set	10	8
Diamonds, glaziers', set or not set	15	12
Dolls, and toys of all kinds	30	24
Downs of all kinds; see <i>Floss Silk</i> , etc.	25	19
Dragon's blood	15	Free.
Drawers wove on frames; see <i>Caps, Gloves</i> , etc.	30	24
Drawers wove on frames, wholly of cotton; see <i>Caps, Gloves</i> , etc.	20	15
Drawers, when bleached, printed, painted, or dyed	20	24
Drawing paper; see <i>Paper, demy</i> , etc.	30	24
Drawings; see <i>Philosoph. Apparatus</i> , etc.	Free.	Free.
Dressed and tanned skins; see <i>Skins, tanned</i> , etc.	20	15
Dried pulp	20	15
Dried fish; see <i>Fish, foreign</i> , etc.	20	15
Drugs, medicinal; see <i>Medicinal Drugs</i>	20	15
Dutch metal, in leaf; see <i>Metal, Dutch</i> , etc.	20	15
Dye-woods, extracts and decoctions of; see <i>Extracts and Decoctions</i>	20	4
Dye-woods in sticks; see <i>Brazil-wood</i> , etc.	5	Free.
Dye, lac; see <i>Lac Dye</i>	5	4
Dyeing, articles used for, not in a crude state; see <i>Articles not in a crude state</i> , etc.	20	4
Dyeing; see <i>Articles in a crude state used for dyeing</i>	5	Free.
Dyeing; see <i>Berries, Nuts</i> , etc., in a crude state	5	Free.
Earthen, China, and stone ware, and all other wares composed of earthy and mineral substances, not otherw. provided for	30	24
Earth, ochrey; see <i>Ochres and Ochrey Earths</i>	30	15
Earths, ochrey, crude or ground; see <i>Ochres and Ochrey Earths</i>	30	15
Earth, fullers'; see <i>Fullers' Earth</i>	10	8
East India gum; see <i>Gum Arabic</i> , etc.	10	8
Ebony-wood, manufactures of; see <i>Manufactures of Cedar-wood</i> , etc.	40	30
Ebony-wood, unmanufactured; see <i>Cedar-wood</i>	20	8
Effects, household; see <i>Household Effects</i>	Free.	Free.
Effects, personal and household; see <i>Personal and Household Effects</i>	Free.	Free.
Effects, not merchandise, of persons arriving in the United States; see <i>Wearing Apparel in actual use</i>	Free.	Free.
Elephant paper; see <i>Paper, demy</i> , etc.	30	24
Embroideries of gold, silver, etc.; see <i>Articles embroidered</i> , etc.	30	24
Embroidered manufactures of cotton, silk, wool, worsted; see <i>Manufactures of Cotton</i> , etc., embroidered	30	24
Emery, in lump or pulverized	20	8
Engravings or plates, bound or unbound	10	8
Envelopes, paper; see <i>Paper Envelopes</i>	30	24
Epaulets, galloons, laces, knots, stars, tassels, tresses, and wings of gold, silver, or other metal	30	24
Epsom salts; see <i>Salts, Epsom</i> , etc.	20	15
Essential oils; see <i>Oils, volatile</i> , etc.	30	24
Etchings; see <i>Philosoph. Apparatus</i> , etc.	Free.	Free.
Ether	20	15
Expressed oils; see <i>Oils, volatile</i> , etc.	30	24
Extracts; see <i>Balsams</i>	30	24
Extract of indigo	20	4
Extracts and decoctions of logwood and other dye-woods, not otherwise provided for	20	4
Extract of madder	20	4
Fabrics wholly or in part of India rubber; see <i>Braces</i> , etc.	30	24
Fancy boxes; see <i>Paper Boxes</i>	30	24
Fans and fire-screens of every description, of whatever material composed	30	24
Feathers and flowers, artificial or ornamental, and parts thereof, of whatever material composed	30	24
Feather-beds; see <i>Floss Silks</i> , etc.	25	19
Feathers for beds; see <i>Floss Silks</i> , etc.	25	19
Feldspar	20	15
Felt, adhesive, for sheathing vessels	Free.	Free.

UNITED STATES' TARIFFS—Continued.

Articles.	1846. Per Cent.	1857. Per Cent.
Fig blue	20	15
Fire-arms; see <i>Muskets</i> , etc.	30	24
Fire-crackers	30	24
Fire-screens; see <i>Fans and Fire-screens</i>	30	24
Fire-wood; see <i>Wood, unmanufactured</i>	30	24
Fish, preserved in oil; see <i>Anchovies</i>	40	30
Fish, foreign, whether fresh, smoked, salted, dried, or pickled, not otherwise provided for	30	15
Fish glue, or isinglass	30	15
Fish skins	30	15
Fish oils; see <i>Oils, neat's-foot</i> , etc.	20	15
Flags, matting, or mats of; see <i>Matting, China</i> , etc.	25	19
Flannels; see <i>Baizes</i> , etc.	25	19
Flats, braids, plaits, spargers and willow squares, used for making hats or bonnets	30	24
Flax, manufactures of; see <i>Manufactures of Flax</i> , etc.	20	15
Flax, unmanufactured	15	Free.
Flax, tow of; see <i>Codilla</i>	15	12
Flax-seed	20	15
Plints	5	4
Plint, ground	5	4
Floor-cloths; see <i>Baizes</i> , etc.	25	19
Floor matting; see <i>Matting, China</i> , etc.	25	19
Floss silk, feather-beds, feathers for beds, and down of all kinds	25	19
Flour, wheat; see <i>Wheat and Wheat Flour</i>	20	15
Flour, rye; see <i>Rye and Rye Flour</i>	20	15
Flour of sulphur	20	15
Flowers; see <i>Feathers and Flowers</i>	30	24
Flowers, used exclusively in dyeing, etc.; see <i>Berries, Nuts</i> , etc.	5	Free.
Flowers not otherwise provided for; see <i>Berries, Vegetables</i> , etc.	30	15
Foolscap paper; see <i>Paper, demy</i> , etc.	30	24
Frames and sticks for umbrellas, parasols, and sun-shades, finished or unfinished	30	24
Frankfort black	20	15
French chalk	20	4
Fresh fish; see <i>Fish, foreign</i> , etc.	20	15
Fruit preserved in sugar, brandy, or molasses; see <i>Comfits</i>	40	30
Fruit, green, ripe, or dried	20	8
Fullers' earth	10	8
Fulminates, or fulminating powders	20	15
Furniture, cabinet and household	30	24
Furniture; see <i>Composition Table-tops</i>	40	30
Fur manufactures; see <i>Caps, Hats, Muffs, and Pinnets of Fur</i>	30	24
Fur caps; see <i>Caps, etc.</i> , of <i>Fur</i>	30	24
Furs, dressed, on the skin	20	15
Furs, hatters', dressed or undressed, not on the skin	10	8
Furs, undressed when on the skin	10	8
Galloons, gold, silver, etc.; see <i>Epaulettes</i>	30	24
Galloons, cotton; see <i>Cotton Cords</i> , etc.	30	24
Galvanized tin plates; see <i>Tin Plates, galvanized</i>	15	8
Gamboge	20	15
Game, prepared; see <i>Prepared Vegetables, Meats</i> , etc.	40	30
Garden seeds, and all other seeds for agricultural, horticultural, medicinal, and manufacturing purposes, not otherwise provided for	Free.	Free.
Gelatin; see <i>Mucroni</i> , etc.	30	24
Gems, set; see <i>Diamonds</i> , etc., set	30	24
Gems; see <i>Philosophical Apparatus</i> , etc.	Free.	Free.
Gems, not set; see <i>Cameos</i> , etc., not set	10	4
Gems, imitations of, not set; see <i>Diamonds</i> , etc.	10	8
German silver; see <i>Argentine</i>	30	24
German steel; see <i>Steel in Bars</i> , etc.	15	12
Gilt ware; see <i>Plated and Gilt Ware</i>	30	24
Gimps, cotton; see <i>Cotton Cords</i> , etc.	30	24
Ginger, ground	30	24
Ginger, dried, green, ripe, preserved, or pickled	40	15
Glass, cut	40	30
Glass, colored, stained, or painted	30	24
Glass crystals for watches	30	24
Glasses or pebbles for spectacles	30	24
Glass tumblers, plain, moulded, or pressed, not cut or punctured	30	24
Glass, paintings on; see <i>Paintings on Glass</i>	30	24
Glass, porcelain; see <i>Porcelain Glass</i>	30	24
Glass, compositions of, set; see <i>Compositions of Glass or Paste, when set</i>	30	24
Glass, compositions of, not set; see <i>Compositions of Glass or Paste, not set</i>	10	8
Glass, window; see <i>Window Glass</i>	20	15
Glass, when old, and fit only to be remanufactured	30	Free.

UNITED STATES' TARIFFS—Continued.

Articles.	1846. Per Cent.	1857. Per Cent.
Glaziers' diamonds, set or not set; see <i>Diamonds, glaziers'</i>	15	12
Glauber salts; see <i>Salts, Epsom</i> , etc.	20	15
Gloves made on frames; see <i>Caps, Gloves</i> , etc., made on <i>Frames</i>	30	24
Gloves, wholly of cotton, made on frames; see <i>Caps, Gloves</i> , etc., made on <i>Frames</i>	20	15
Gloves, when bleached, printed, painted, or dyed	20	24
Glue	20	15
Glue, fish, manufactures of; see <i>Manufactures of Goats' Hair</i> , etc.	25	19
Goats' hair, unmanufactured; see <i>Angora, Thibet, and other Goats' Hair</i>	20	15
Gold embroideries; see <i>Articles embroidered with Gold</i>	30	24
Gold, manufactures of; see <i>Manufactures of Brass</i> , etc.	30	24
Gold coin; see <i>Coin</i>	Free.	Free.
Gold and silver leaf	15	12
Gold-beaters' skin	10	8
Goods, wares, and merchandise, the growth, produce, or manufactures of the U. States, exported to a foreign country, and brought back to the U. S. in the same condition as when exported, upon which no drawback or bounty has been allowed, provided that all regulations to ascertain the identity thereof, prescribed by existing laws, or which may be prescribed by the Secretary of the Treasury, shall be complied with	Free.	Free.
Granadilla wood, manufactures of; see <i>Manufactures of Cedar-wood</i> , etc.	30	24
Granadilla wood, unmanufactured; see <i>Woods</i> , etc.	30	24
Grapes	20	15
Grass bonnets; see <i>Hats and Bonnets composed of Straw</i> , etc.	30	24
Grass baskets; see <i>Baskets</i> , etc., composed of <i>Grass</i> , etc.	30	24
Grass cloth	25	19
Grass, Sisal; see <i>Jute</i> , etc., unmanufactured	25	19
Grass mats and matting; see <i>Matting, China</i> , etc.	25	19
Grease; see <i>Tallow</i> , etc.	10	8
Green vitriol; see <i>Copperas</i>	20	15
Green turtle	20	15
Grindstones	5	4
Ground plaster of Paris; see <i>Plast. of Paris</i>	30	24
Gum benzoin, or Benjamin	30	8
Gums, Arabic, Barbary, copal, East India, Senegal, substitute, tragacanth, and all other gums and resins in a crude state	10	8
Guano	Free.	Free.
Gunny cloth	20	15
Gunpowder	20	15
Gutta percha, unmanufactured	20	4
Hair, human, cleansed or prepared for use	30	24
Hair of all kinds, uncleaned and unmanufactured	10	8
Hair, goats', unmanufactured; see <i>Angora, Thibet, and other Goats' Hair</i>	20	15
Hair of the alpaca, the goat, and other like animals, in certain conditions; see <i>Wool</i>	30	24
Hair, curled, moss, sea-weed, and all other vegetable substances used for beds or mattresses	30	24
Hair-cloth, hair seating, and all other manufactures of hair not otherwise provided for	25	19
Hair, hats, etc., of; see <i>Hats and Bonnets of Straw, Hair</i> , etc.	30	24
Hair pencils	20	15
Hair seating; see <i>Hair-cloth</i> , etc.	20	15
Hams	30	24
Harness furniture; see <i>Coach Furniture</i>	30	24
Hats; see <i>Hats and Bonnets</i> , etc.	30	24
Hats, flats, braids for making; see <i>Flats</i> , etc.	30	24
Hat bodies of cotton	30	24
Hats and bonnets, for men, women, and children, composed of straw, satin-straw, chip, grass, palm-leaf, willow, or any other vegetable substance, or of hair, whalebone, or other material, not otherwise provided for	30	24
Hats of wool	20	15
Hat bodies, made of wool, or of which wool shall be a component material of chief value	30	15
Hatters' plush, composed of silk and cotton, but of which cotton is the component material of chief value	20	15
Hearth rugs; see <i>Carpets</i>	30	24

UNITED STATES' TARIFFS—Continued.

Articles.	1846. Per Cent.	1857. Per Cent.
Hemp, unmanufactured	20	15
Hemp, manufactured; see <i>Manufactures of Hemp</i>	15	12
Hemp, tow of; see <i>Codilla</i>	10	8
Hemp-seed and rape-seed	20	15
Hemp-seed or linseed, and rape-seed oil, and all other oils used in painting	5	4
Hides, raw, of all kinds; see <i>Raw Hides and Skins</i>	50	24
Honey	30	24
Horn, manufactures of; see <i>Manufactures of Bone, etc.</i>	5	4
Horns, horn tips, bones, bone tips, and teeth, unmanufactured	50	24
Household furniture; see <i>Furniture</i>		
Household effects, old and in use, of persons or families from foreign countries, if used abroad by them, and not intended for any other person or persons, or for sale	Free.	Free.
Hulled barley; see <i>Pearl or Hulled Barley</i>	20	15
Human hair, cleansed or prepared for use	30	24
Hydriodate of potash; see <i>Chromate, Bichromate, etc.</i>	20	15
Ice	20	15
Illustrated newspapers; see <i>Books, etc.</i>	10	8
Imitations of wines; see <i>Wines</i>	40	30
Imitations of cameos or mosaics, set; see <i>Cameos, etc., set.</i>	30	24
Imitations of precious stones, set; see <i>Diamonds, etc., set.</i>	25	24
Imitations of jewelry; see <i>Jewelry</i>	30	24
Imitations of cameos and mosaics, not set; see <i>Cameos and Mosaics, imitations of, not set.</i>	10	8
Imitations of diamonds, gems, etc., not set; see <i>Diamonds, imitations of, etc., not set.</i>	10	8
Imitations of jet; see <i>Jet and manufact. of Imperial paper; see Paper, antiquarian, etc.</i>	30	24
India rubber, fabrics of; see <i>Braces, etc.</i>	30	24
India rubber shoes; see <i>Shoes wholly of India Rubber</i>	30	24
India rubber, in bottles, slabs, or sheets, unmanufactured	10	4
India rubber, milk of		4
Indian corn and corn meal	20	15
Indigo, extract of; see <i>Extract of Indigo</i>	20	4
Indigo	10	4
Ingrain carpeting; see <i>Carpets</i>	30	24
Ink and ink powder	30	24
Insertings, cotton; see <i>Cotton Insertings</i>	25	19
Insertings, thread; see <i>Thread Laces, etc.</i>	20	15
Instruments, musical; see <i>Musical Instruments</i>	20	15
Ipecacuanha	20	15
Iridium	20	15
Iris, or orris root	20	15
Iron in bars, bloom, bolts, loops, pigs, rods, slabs, or other form, not otherwise provided for	30	24
Iron castings; see <i>Castings of Iron</i>	30	24
Iron, old or scrap; see <i>Old or Scrap Iron</i>	30	24
Iron, vessels of, cast; see <i>Vessels of Cast Iron</i>	30	24
Iron, manufactures of; see <i>Manufactures of Brass, etc.</i>	30	24
Iron, sulphate of; see <i>Copperas, etc.</i>	20	15
Iron liquor	20	15
Isinglass; see <i>Fish Glue</i>	20	15
Ivory, manufactures of; see <i>Manufactures of Bone, etc.</i>	30	24
Ivory, vegetable, manufactures of; see <i>Manufactures of Bone, etc.</i>	30	24
Ivory-black	20	15
Ivory, unmanufactured	5	Free.
Ivory nuts, or vegetable ivory	5	4
Jalap	20	15
Japanned ware of all kinds, not otherwise provided for	30	24
Japanned saddlery; see <i>Saddlery, common, etc.</i>	20	15
Japanned leather or skins of all kinds	20	15
Jeddo gum; see <i>Gum Arabic</i>	10	8
Jellies; see <i>Macaroni</i>	30	24
Jet, and manufactures of jet, and imitations thereof	30	24
Jewelry, real or imitation	30	24
Juice, licorice; see <i>Licorice Paste, etc.</i>	20	15
Juice, lemon or lime; see <i>Lemon and Lime Juice</i>	10	8
Juniper berries	20	15
Junk, old	Free.	Free.
Jute, Sisal grass, coir, and other vegetable substances, unmanufactured, not otherwise provided for	25	19

UNITED STATES' TARIFFS—Continued.

Articles.	1846. Per Cent.	1857. Per Cent.
Jute, mats, or matting; see <i>Matting, China, etc.</i>	25	19
Kelp	10	8
Kirschenwasser; see <i>Cordials</i>	100	30
Kermes, mineral; see <i>Mineral Kermes</i>	15	12
Kermes	5	4
Knitting needles; see <i>Needles of all kinds for sewing, darning, or knitting</i>	20	15
Knots of gold, silver, or other metal; see <i>Epaulets, etc.</i>	30	24
Lac spirits	20	4
Lac sulphur	20	4
Lac dye	5	4
Laces of gold, silver, or other metal; see <i>Epaulets</i>	30	24
Laces, cotton; see <i>Cotton Laces, etc.</i>	25	19
Laces, when bleached, etc.	25	24
Laces, thread; see <i>Thread Laces</i>	20	15
Lampblack	20	15
Lard	20	15
Lastings, cut in strips or patterns of the size and shape for shoes, boots, booties, slippers, gaiters, or buttons, exclusively, not combined with India rubber	5	4
Laths; see <i>Boards, Plank, etc.</i>	20	15
Lead pencils	30	24
Lead, manufactures of; see <i>Manufactures of Brass, etc.</i>	30	24
Lead, chromate of; see <i>Chromate</i>	20	15
Lead in pigs, bars, or sheets	20	15
Lead, nitrate of; see <i>Nitrate of Lead</i>	20	15
Lead, white and red; see <i>White and Red Lead</i>	20	15
Lead pipes	20	15
Lead shot	20	15
Leaf, gold and silver; see <i>Gold and Silver Leaf</i>	15	12
Leather, manufactures of; see <i>Manufactures of Leather</i>	30	24
Leather, tanned, bend, or sole	20	15
Leather, upper, of all kinds	20	15
Leather, japanned	20	19
Leaves, medicinal; see <i>Medicinal Drugs, etc.</i>	20	15
Leeches	20	Free.
Leggins; see <i>Caps, etc., made on Frames</i>	30	24
Leggins, wholly of cotton; see <i>Caps, etc., wholly of Cotton, made on Frames</i>	20	15
Leggins, cotton, when bleached, printed, painted, or dyed	20	24
Lemons and limes	20	8
Lemon-peel; see <i>Orange and Lemon peel</i>	20	15
Lemon and lime juice	10	8
Letter paper; see <i>Paper, antiquarian, etc.</i>	30	24
Limes; see <i>Lemons and Limes</i>	20	8
Lime-juice; see <i>Lemon and Lime juice</i>	10	8
Lime	10	8
Lime, sulphate of, unground; see <i>Plaster of Paris</i>	Free.	Free.
Lime, chlorid of; see <i>Bleaching Powder</i>	10	4
Linen, manufactures of, embroidered; see <i>Manufactures of Cotton, Linen, etc.</i>	30	24
Linen of all kinds	20	15
Linseed, but not embracing flax-seed	10	Free.
Linseed oils; see <i>Hemp-seed or Linseed Oil, etc.</i>	20	15
Liquors; see <i>Cordials</i>	100	30
Liquor, iron; see <i>Iron Liquor</i>	20	15
Licorice, paste, juice, or root	20	15
Listings, woolen; see <i>Woolen Listings</i>	20	15
Litharge	20	15
Logwood, extract or decoction of; see <i>Extracts and Decoctions</i>	20	4
Loops, iron; see <i>Iron in Bars, etc.</i>	30	24
Macaroni, vermicelli, gelatine, jellies, and all other similar preparations	30	24
Mace	40	4
Machinery, exclusively designed and expressly imported for the manufacture of flax and linen goods		8
Madder, extract of; see <i>Extract of Madder</i>	20	4
Madder, ground or prepared	5	Free.
Madder-root	5	Free.
Madeira; see <i>Wines</i>	40	80
Magazines; see <i>Books</i>	10	8
Mahogany - wood, manufactures of; see <i>Manufactures of Cedar-wood, etc.</i>	40	30
Mahogany - wood, unmanufactured; see <i>Woods, etc.</i>	20	8
Malt	20	15
Manganese	20	15
Manna	20	15
Manufactures of cedar-wood, granadilla, ebony, mahogany, rose-wood, and satin-wood	40	30
Manufactures of jet; see <i>Jet</i>	30	24

UNITED STATES' TARIFFS—Continued.

Articles.	1846.	1857.
	Per Cent.	Per Cent.
Manufactures of the bark of the cork-tree, except corks	30	24
Manufactures of bone, shell, horn, pearl, ivory, or vegetable ivory	30	24
Manufactures, articles, vessels, and wares, not otherwise provided for, of brass, copper, gold, iron, lead, pewter, platinum, silver, tin, or other metal, or of which either of those metals or any other metal shall be the component material of chief value	30	24
Manufactures composed wholly of cotton, bleached, printed, painted, or dyed	30	24
Manufactures of cotton, linen, silk, wool, or worsted, if embroidered or tambooured in the loom or otherwise, by machinery, or with the needle or other process	30	24
Manufactures, articles, vessels, and wares of glass, or of which glass shall be a component material, not otherwise provided for	30	24
Manufactures and articles of leather, or of which leather shall be a component part, not otherwise provided for	30	24
Manufactures and articles of marble, marble paving tiles, and all other marble more advanced in manufacture than in slabs or blocks in the rough	30	24
Manufactures of paper, or of which paper is a component material, not otherwise provided for	30	24
Manufactures, articles, and wares of papier-maché	30	24
Manufactures of wood, or of which wood is a component part, not otherwise provided for	30	24
Manufactures of wool, or of which wool shall be the component material of chief value, not otherwise provided for	30	24
Manufactures of hair; see <i>Hair-cloth, Hair Seating</i> , etc.	25	19
Manufactures of fur; see <i>Caps, Hats, Muffs, and Tippets of Fur</i> , etc.	30	24
Manufactures composed wholly of cotton, not otherwise provided for	25	19
Manufactures of goats' hair or mohair, or of which goats' hair or mohair shall be a component material, not otherwise provided for	25	19
Manufactures of silk, or of which silk shall be a component material, not otherwise provided for	25	19
Manufactures of worsted, or of which worsted shall be a component material, not otherwise provided for	25	19
Manufactures of flax, not otherwise provided for	20	15
Manufactures of hemp, not otherwise provided for	20	15
Manufactures of mohair cloth, silk twist, or other manufacture of cloth suitable for the manufacture of shoes, cut in slips or patterns of the size and shape for shoes, slippers, boots, booties, gaiters, or buttons, exclusively, not combined with India rubber	5	4
Manufactures of lastings suitable for shoes, boots, booties, or buttons, exclusively; see <i>Lastings</i>	5	4
Manures or substances expressly used for	Free.	Free.
Maps and charts	10	8
Maraschino; see <i>Cordials</i>	100	30
Marble, manufactures of; see <i>Manufactures of Marble</i>	30	24
Marble paving tile; see <i>Manufactures of Marble</i>	30	24
Marble in the rough slab or block, unmanufactured	20	15
Marine coral, unmanufactured	20	15
Marrow; see <i>Tallow, Marrow</i> , etc.	10	8
Matting, China, and other floor matting and mats, made of flags, jute, or grass	25	19
Meal, Indian corn; see <i>Indian Corn</i>	20	15
Meats, prepared; see <i>Prepared Vegetables, Meats</i> , etc.	40	30
Medals; see <i>Cabinets of Coins</i> , etc.	Free.	Free.
Medicinal preparations, not otherwise provided for	30	24
Medicinal drugs, roots, and leaves, in a crude state, not otherwise provided for	20	15
Mercurial preparations; see <i>Calomel</i>	25	19
Metal embroideries; see <i>Articles embroidered</i>	30	24
Metals, manufactures of; see <i>Manufactures of Brass</i> , etc.	30	24
Metals, silver plated; see <i>Silver-plated Metals</i>	30	24

UNITED STATES' TARIFFS—Continued.

Articles.	1846.	1857.
	Per Cent.	Per Cent.
Metal, Dutch and bronze, in leaf	20	15
Metals, unmanufactured, not otherwise provided for	20	15
Metal, type; see <i>Type Metal</i>	20	15
Metallic pens	30	24
Mineral waters	50	24
Mineral and bituminous substances, in a crude state, not otherwise provided for	20	15
Mineral kermes	15	12
Minerals; see <i>Specimens of Natural History</i>	Free.	Free.
Mits made on frames; see <i>Caps, Gloves</i> , etc.	20	15
Mits made on frames, when wholly of cotton; see <i>Caps, Gloves</i> , etc.	20	15
—when bleached, printed, painted, or dyed	20	15
Models of inventions and other improvements in the arts, provided that no article or articles shall be deemed a model or improvement which can be fitted for use.	Free.	Free.
Mohair and silk twist; see <i>Silk Twist</i> , etc.	30	24
Mohair, manufactures of; see <i>Manufactures of Goats' Hair</i> , etc.	25	19
Molasses	30	24
Mordant, patent; see <i>Patent Mordant</i>	20	15
Mosses, real and imitations, when set; see <i>Cameos</i> , etc.	30	24
Mosses, not set; see <i>Cameos</i> , etc., not set.	10	4
Mosses, imitations of, not set; see <i>Diamonds</i> , etc., not set	10	8
Moss for beds or mattresses; see <i>Hair, curled</i> , etc.	20	15
Moulds, button; see <i>Button and Button Moulds</i>	25	19
Muffs; see <i>Caps, Hats, Muffs</i> , etc.	30	24
Muriatic acid; see <i>Acids, acetic</i> , etc.	20	4
Musical instruments of all kinds, and strings for musical instruments, of whip-gut, catgut, and all other strings of the same material	20	15
Music, printed with lines, bound or unbound	10	4
Muskets, rifles, and other fire-arms	30	24
Nails, copper; see <i>Copper Rods</i> , etc.	20	15
Natron	10	8
Natural history, specimens of; see <i>Specimens</i> , etc.	Free.	Free.
Neat's-foot oil; see <i>Oils, Neat's-foot</i> , etc.	20	15
Needles of all kinds, for sewing, darning, or knitting	20	15
Newspapers, illustrated; see <i>Books</i> , etc.	10	8
Nickel	5	4
Nitrate of lead	20	15
Nitrate of soda, refined, etc.; see <i>Saltpetre, refined</i> , etc.	10	4
Nitrate of soda, when crude; see <i>Saltpetre, when crude</i>	5	4
Nitric acid; see <i>Acids, acetic</i> , etc.	20	15
Nutmegs	20	15
Nuts, not otherwise provided for	30	24
Nuts, cocoa; see <i>Cocoa-nuts</i>	20	4
Nuts used exclusively in dyeing, etc.; see <i>Berries, Nuts</i> , etc.	5	Free.
Nuts, ivory; see <i>Ivory Nuts</i>	5	4
Nut-galls	5	Free.
Nux vomica	10	8
Oakum	Free.	Free.
Oats and oatmeal	20	15
Ochres and ochrey earths	50	15
Oil-cloth of every description, of whatever material composed	30	24
Oils, volatile, essential, or expressed, and not otherwise provided for	30	24
Oil, castor; see <i>Castor Oil</i>	20	15
Oil, spermaceti, whale, and other fish, of American fisheries, and all other articles the produce of such fisheries	Free.	Free.
Oils, hemp-seed, linseed, rape-seed, and all other oils used in painting; see <i>Hemp-seed Oil</i> , etc.	20	15
Oils, neat's-foot, and other animal oil, spermaceti, whale, and other fish oil, the produce of foreign fisheries	20	15
Oils, palm, seal, and cocoa-nut	10	4
Oil of vitriol; see <i>Sulphuric Acid</i>	10	4
Old or scrap iron; see <i>Iron, old</i> , etc.	30	24
Old pewter; see <i>Pewter, when old</i> , etc.	5	4
Olive-oil in casks, other than salad oil	20	15
Olive salad oil, and all other olive-oil, not otherwise provided for	20	24
Olives	30	24
Opium	20	15
Oranges, lemons, and limes	20	4
Orange and lemon peel	20	15
Orleans; see <i>Anatto</i>	10	4
Ornamental feathers or flowers; see <i>Feathers</i>	20	15
Orpiment	10	8

UNITED STATES' TARIFFS—Continued.

Articles.	1846. Per Cent.	1857. Per Cent.
Orris or iris root; see <i>Iris</i> or <i>Orris Root</i> ...	20	15
Osier baskets; see <i>Baskets</i> composed of <i>Grass</i> , <i>Osier</i> , etc.	30	24
Osier or willow, prepared for basket-mak- ers' use	20	15
Oxalic acid; see <i>Acids</i> , <i>acetic</i> , etc.	20	4
Pack-thread; see <i>Twines</i> and <i>Pack-thread</i>	30	24
Paddy; see <i>Rice</i> or <i>Paddy</i> ...	20	15
Paintings and statuary	Free.	Free.
Paintings on glass	30	24
Painted glass; see <i>Glass</i> , <i>painted</i>	30	24
Paints, dry or ground in oil, not otherwise provided for	20	15
Palm leaf, unmanufactured	10	Free.
Palm-leaf baskets; see <i>Baskets</i> ...	30	24
Palm-leaf hats; see <i>Hats</i> and <i>Bonnets</i> ...	30	24
Palm oils; see <i>Oils</i> , <i>Palm</i> , etc.	10	4
Pamphlets; see <i>Books</i> , <i>printed</i> , etc.	10	8
Paper segars; see <i>Segars</i> , <i>Snuff</i> , etc.	40	30
Paper, manufactures of; see <i>Manufactures</i> of <i>Paper</i> , etc.	30	24
Paper, antiquarian, demy, drawing, ele- phant, foolscap, imperial, letter, and all other paper, not otherwise provided for.	30	24
Paper boxes, and all other fancy boxes...	30	24
Paper envelopes	30	24
Paper hangings	20	15
Paper for screens or fire-boxes	20	15
Paper, sheathing; see <i>Sheathing Paper</i> ...	20	15
Paper, music, bound or unbound; see <i>Mu- sic Paper</i>	10	4
Papier-maché; see <i>Manufactures</i> of <i>Pa- pier-maché</i>	30	24
Parchment	30	24
Parasols, frames or sticks for; see <i>Frames</i> or <i>Sticks</i>	30	24
Parasols and sun-shades	30	24
Paris white; see <i>Whiting</i> or <i>Paris White</i> ...	20	15
Paste; see <i>Balsams</i>	30	24
Paste compositions; see <i>Compositions</i> of <i>Glass</i> or <i>Paste</i> , when set	30	24
Paste, licorice; see <i>Licorice Paste</i> ...	20	15
Paste, Brazil; see <i>Brazil Paste</i>	15	12
Paste compositions, if not set; see <i>Compo- sitions</i> of <i>Glass</i> or <i>Paste</i> , not set.	10	8
Pastel; see <i>Wood</i> or <i>Pastel</i> ...	10	4
Patent mordant	20	15
Paving tiles, marble; see <i>Manufactures</i> of <i>Marble</i>	30	24
Paving stones	20	15
Paving and roofing tiles and bricks	20	15
Pearls, when set; see <i>Diamonds</i> , etc., set	30	24
Pearl, manufactures of; see <i>Manufactures</i> of <i>Bone</i> , <i>Shell</i> , <i>Pearl</i> , etc.	30	24
Pearl or hulled barley	20	15
Pearls, not set; see <i>Cameos</i> , <i>Mosaics</i> , <i>Dia- monds</i> , <i>Gems</i> , <i>Pearls</i> , etc., not set.	10	8
Pearls, imitations thereof, not set; see <i>Dia- monds</i> , <i>Pearls</i> , etc., imitations thereof, not set	10	8
Pearl, mother of	5	4
Pebbles for spectacles; see <i>Glasses</i> or <i>Peb- bles</i> for <i>Spectacles</i>	20	24
Pencils, hair; see <i>Hair Pencils</i> ...	30	24
Pencils, lead; see <i>Lead Pencils</i> ...	30	24
Pencils, red-chalk; see <i>Red-chalk Pencils</i>	30	24
Pens, metallic; see <i>Metallic Pens</i> ...	30	24
Pepper	30	4
Perfumes; see <i>Balsams</i> , etc.	30	24
Perfumed soap; see <i>Soap</i> , <i>perfumed</i>	30	24
Periodicals and other works in course of printing and republication in the U. S.	20	15
Periodicals; see <i>Books</i> , <i>printed</i> , etc.	10	8
Personal and household effects (not mer- chandise) of citizens of the United States dying abroad	Free.	Free.
Peruvian bark; see <i>Bark</i> , <i>Peruvian</i> ...	15	Free.
Pewter, manufactures of; see <i>Manufac- tures</i> of <i>Brass</i> , etc.	30	24
Pewter, when old, and fit only to be reman- ufactured	5	4
Pickles, capers, etc.; see <i>Capers</i> , etc.	30	24
Pickled fish; see <i>Fish</i> , <i>foreign</i> , whether <i>fresh</i> , etc.	20	15
Pigs, iron; see <i>Iron</i> in <i>Bars</i> , etc.	30	24
Pigs, lead; see <i>Lead</i> in <i>Pigs</i> , etc.	20	15
Pigs, brass; see <i>Brass</i> in <i>Bars</i> and <i>Pigs</i> ...	5	Free.
Pigs, copper; see <i>Copper</i> in <i>Pigs</i> , etc.	5	Free.
Pigs, tin; see <i>Tin</i> in <i>Pigs</i> , etc.	5	Free.
Pimento	40	4
Pine-apples	20	8
Pipes, lead; see <i>Lead</i> in <i>Pipes</i> , etc.	20	15
Pitch	20	15
Pitch, Burgundy; see <i>Burgundy Pitch</i>	25	19
Plaits for bonnets, etc.; see <i>Plats</i> , <i>Braids</i> , <i>Plaits</i> , etc.	30	24

UNITED STATES' TARIFFS—Continued.

Articles.	1846. Per Cent.	1857. Per Cent.
Planks; see <i>Boards</i> , <i>Planks</i> , etc.	Free.	Free.
Plants, not otherwise provided for; see <i>Trees</i> , <i>Shrubs</i> , etc.	Free.	Free.
Plants used exclusively in dyeing; see <i>Ber- ries</i> , <i>Nuts</i> , etc.	5	Free.
Plantains	20	8
Plaster of Paris, when ground	20	15
Plaster of Paris, or sulphate of lime, un- ground	Free.	Free.
Plated metal, silver; see <i>Silver</i> , <i>Plated</i> <i>Metal</i> , etc.	30	24
Plates, copper; see <i>Copper</i> in <i>Sheets</i> , etc.	20	15
Plates, stereotype; see <i>Stereotype Plates</i> ...	20	15
Plates, Terne tin; see <i>Terne Tin Plates</i> ...	15	8
Plates, tin, galvanized or ungalvanized; see <i>Tin Plates</i> , <i>galvanized</i> or <i>ungalvan- ized</i>	15	8
Plates, bound or unbound; see <i>Engravings</i> or <i>Plates</i>	10	5
Plated and gilt ware of all kinds	30	24
Platina, manufactures of; see <i>Manufac- tures</i> , etc.	30	24
Platina, unmanufactured	Free.	Free.
Playing cards	30	24
Plumbago	20	15
Plums	30	24
Plush, hatters'; see <i>Hatters' Plush</i> ...	20	15
Pocket-books; see <i>Card-cases</i> , etc.	30	24
Polishing stones	10	8
Porcelain glass; see <i>Glass</i> , <i>porcelain</i> ...	30	24
Pork	20	15
Porter, in casks or bottles; see <i>Ale</i> , <i>Beer</i> , and <i>Porter</i>	30	24
Port-wines; see <i>Wines</i> ...	40	30
Potash, nitrate of; see <i>Saltpetre</i> , <i>refined</i> or <i>partially refined</i>	10	8
Potash, nitrate of, when crude; see <i>Saltpetre</i> or <i>Nitrate</i> of <i>Soda</i> , etc., when crude	5	4
Potassium	20	15
Potash, chromate, bichromate, and prusi- ate of; see <i>Chromate</i> ...	20	15
Potatoes	30	24
Poultry, prepared; see <i>Prepared Vegeta- bles</i> , <i>Meats</i> , etc.	40	30
Powder, gun; see <i>Gunpowder</i> ...	20	15
Powders, fulminating; see <i>Fulminates</i> ...	20	15
Powders, bleaching; see <i>Bleaching Powder</i> , etc.	15	4
Powder, ink; see <i>Ink</i> and <i>Ink Powder</i> ...	30	24
Precious stones, and imitations thereof; see <i>Diamonds</i> , etc., when set	30	24
Precious stones, not set; see <i>Cameos</i> , etc., when not set	10	4
Precious stones, imitations of, not set; see <i>Diamonds</i> , etc., imitations of, not set	10	8
Prepared vegetables, meats, poultry, and game, sealed or inclosed in cans, or oth- erwise	40	30
Preparations, medicinal; see <i>Medicinal</i> <i>Preparations</i>	30	24
Preparations, mercurial; see <i>Calomel</i> , etc.	25	19
Preparations of salts; see <i>Salts</i> , <i>Epsom</i> , etc.	20	15
Preserved salmon; see <i>Salmon</i> , <i>preserved</i>	30	24
Printed books, magazines, etc.; see <i>Books</i> , <i>printed</i>	10	8
Prunes	40	8
Prussian blue	20	4
Prussiate of potash; see <i>Chromate</i> , etc.	20	15
Pulp, dried; see <i>Dried Pulp</i> ...	20	15
Pumice	10	8
Pumice-stone	10	8
Pumpkins	20	8
Putty	20	15
Pyroligneous acid; see <i>Acids</i> , <i>acetic</i> , etc.	20	4
Quicksilver	20	15
Quilla bark; see <i>Bark</i> , <i>Quilla</i> ...	15	12
Quills	20	15
Quinine, sulphate of; see <i>Sulphate</i> ...	20	15
Rags, of whatever material, except wool...	5	Free.
Raisins	40	8
Rape-seed; see <i>Hemp-seed</i> ...	10	8
Rape-seed oil; see <i>Hemp-seed</i> , etc., <i>Oil</i> ...	20	15
Ratafia; see <i>Cordials</i>	100	30
Ratans and reeds, unmanufactured	10	Free.
Raw silk; see <i>Silks</i> , <i>raw</i> , not more ad- vanced, etc.	15	12
Raw silk; see <i>Silk</i> , <i>raw</i> , or as reeled from the <i>cocoon</i> , etc.	15	Free.
Raw hides and skins of all kinds	5	4
Red-chalk pencils	30	24
Red-chalk	20	4
Red-lead; see <i>White</i> and <i>Red Lead</i> ...	20	15
Reeds, unmanufactured; see <i>Ratans</i> , etc.	10	Free.
Regulus of Antimony; see <i>Antimony</i> , etc.	20	8
Rhubarb	20	15
Rice or paddy	20	15
Rifles; see <i>Muskets</i> ...	30	24

UNITED STATES' TARIFFS—Continued.

Articles.	1848.	1857.
	Per Cent.	Per Cent.
Ringlets of hair; see <i>Bracelets</i>	20	24
Rods, iron; see <i>Iron in Bars</i> , etc.....	20	24
Rods, copper; see <i>Copper Rods</i> , etc.....	20	15
Roll brimstone.....	20	15
Roman vitriol; see <i>Blue or Roman Vitriol</i>	20	15
Roman cement.....	20	15
Roofing slates, etc.....	25	15
Roofing tiles; see <i>Paving and Roofing</i> , etc.....	20	15
Root, iris or orris; see <i>Iris or Orris Root</i>	20	15
Root, licorice; see <i>Licorice Paste</i> , etc.....	20	15
Roots, medicinal; see <i>Medicinal Drugs</i> , etc.....	20	15
Root, madder; see <i>Madder Root</i>	5	Free.
Roots used exclusively in dyeing; see <i>Berries, Nuts</i> , etc.....	5	Free.
Rose-wood, manufactures of; see <i>Manufactures of Cedar-wood</i> , etc.....	40	30
Rose-wood, unmanufactured; see <i>Woods</i>	10	8
Rotten-stone.....	10	8
Roucou; see <i>Anatto</i>	10	4
Rough marble; see <i>Marble in the rough</i>	20	15
Rubies and imitations, when set; see <i>Diamonds</i> , etc.....	30	24
Rubies, not set; see <i>Cameos</i> , etc., <i>not set</i>	10	4
Rubies, imitations thereof, not set; see <i>Diamonds</i> , etc., <i>imitations thereof</i> , <i>not set</i>	10	8
Rugs; see <i>Carpets</i>	30	24
Rye and rye flour.....	20	15
Saddlery of all kinds, not otherwise provided for.....	30	24
Saddlery, common lined or japanned.....	20	15
Safflower.....	5	Free.
Saffron and saffron cake.....	20	15
Sago.....	20	15
Salad oil; see <i>Olive Salad Oil</i>	30	24
Sai ammonia.....	10	8
Salmon, preserved.....	30	24
Sai soda, and all carbonates of soda by whatever name designated, not otherwise provided for.....	20	8
Salted fish; see <i>Fish, foreign</i> , etc.....	20	15
Saltpetre, or nitrate of soda or potash, when refined or partially refined.....	10	8
Saltpetre, or nitrate of soda or potash, when crude.....	5	4
Salts, Epsom, Glauber, Rochelle, and all other salts and preparations of salts, not otherwise provided for.....	20	15
Sardines; see <i>Anchovies</i>	40	30
Sarsaparilla.....	20	15
Satin-wood, manufactures of; see <i>Manufactures of Cedar-wood</i> , etc.....	40	30
Satin-wood, unmanufactured; see <i>Woods</i>	20	8
Satin straw hats, bonnets, etc.; see <i>Hats, Bonnets</i> , etc.....	30	24
Sauces; see <i>Sauces</i>	30	24
Saxony carpeting; see <i>Carpets</i>	30	24
Scagliola tops for tables, or other articles of furniture.....	40	30
Scantling; see <i>Boards</i> , etc.....	20	15
Scrap iron; see <i>Iron, old or scrap</i>	30	24
Sculpture, specimens of; see <i>Philosophical Apparatus</i> , etc.....	Free.	Free.
Sealing-wax.....	30	24
Seating, hair; see <i>Hair-cloth</i>	25	19
Sea-weed for beds, mattresses, etc.; see <i>Hair, curled</i> , etc.....	20	15
Seeds; see <i>Garden Seeds</i> , etc.....	Free.	Free.
Seeds, hemp-seed, rape-seed; see <i>Hemp-seed</i>	10	8
Seedlac.....	5	4
Segars, snuff, paper segars, and all other manufactures of tobacco.....	40	30
Senegal gum; see <i>Gum Arabic</i> , etc.....	10	8
Seppia.....	20	15
Sewing silk, in the gum or purified.....	30	24
Sewing needles; see <i>Needles of all kinds</i>	20	15
Shaddocks.....	20	8
Shear steel; see <i>Steel in Bars</i>	15	12
Sheathing paper.....	20	15
Sheathing copper, but no copper to be considered such, and admitted free, except in sheets of forty-eight inches long and fourteen inches wide, and weighing from fourteen to thirty-four ounces the square foot.....	Free.	Free.
Sheathing metal, not wholly or in part of iron, ungalvanized.....	Free.	Free.
Sheathing felt; see <i>Felt, adhesive</i> , etc.....	Free.	Free.
Sheep's wool, on certain conditions; see <i>Wool</i>	10	Free.
Sheets, silver-plated metal; see <i>Silver-plated Metal</i>	30	24
Sheets, copper; see <i>Copper in Sheets</i>	20	15
Sheets, India rubber; see <i>India Rubber</i> , etc.....	10	8
Sheets, lead; see <i>Lead in Pigs</i> , etc.....	20	15

UNITED STATES' TARIFFS—Continued.

Articles.	1848.	1857.
	Per Cent.	Per Cent.
Sheets, tin; see <i>Tin in Plates or Sheets</i>	15	8
Sheets, zinc, spelter, or tutenague; see <i>Zinc</i> , etc.....	15	19
Shell, manufactures of; see <i>Manufactures of Bone</i> , etc.....	30	24
Shells of cocoa; see <i>Cocoa Shells</i>	10	4
Shell boxes; see <i>Card-cases</i> , etc.....	10	24
Shells, unmanufactured; see <i>Tortoise and other Shells</i>	5	4
Shellac.....	5	4
Sherry; see <i>Wines</i>	45	30
Shingle bolts and stove bolts.....	..	Free.
Shirts made on frames; see <i>Caps, Gloves</i> , etc.....	50	24
Shirts made on frames, if wholly of cotton; see <i>Caps, Gloves</i> , etc.....	30	15
—when bleached, printed, painted, or dyed.....	20	24
Shoes composed wholly of India rubber.....	30	24
Shoddy; see <i>Waste or Shoddy</i>	15	4
Shot, leaden; see <i>Leadens Shot</i>	20	15
Shrubs; see <i>Trees, Shrubs</i> , etc.....	..	Free.
Side arms of every description.....	30	24
Singles, silk; see <i>Silk, raw, not more advanced</i> , etc.....	15	12
Silk, manufactures of, if embroidered; see <i>Manufactures of Cotton, Linen, Silk</i> , etc.....	30	24
Silk twist, and twist composed of mohair and silk.....	30	24
Silk, sewing, purified; see <i>Sewing Silk</i>	30	24
Silk, sewing, in the gum; see <i>Sewing Silk</i>	30	24
Silks, floss; see <i>Floss Silks</i>	25	19
Silk, manufactures of; see <i>Manufactures of Silk</i>	25	19
Silk and cotton hatters' plush; see <i>Hatters' Plush</i>	20	15
Silk and cotton velvet in the piece, cotton chief value; see <i>Velvet composed of Cotton and Silk</i>	20	15
Silk, raw, not more advanced in manufacture than singles, tram, and thrown, or organzine.....	15	12
Silk, raw, or as reeled from the cocoon, not being doubled, twisted, or advanced in manufacture in any way.....	..	Free.
Silk twist, suitable for the manufacture exclusively of shoes, cut in slips or patterns of the size and shape for shoes, boots, booties, or buttons, slippers, and gaiters, not combined with India rubber; see <i>Manufactures of Mohair Cloth</i> , etc.....	5	4
Silver embroideries; see <i>Articles embroidered</i> , etc.....	20	24
Silver, manufactures of; see <i>Manufactures of Brass</i> , etc.....	30	24
Silver-plated metal, in sheets or other form.....	30	24
Silver leaf; see <i>Gold and Silver Leaf</i>	15	13
Silver coin; see <i>Coins</i>	Free.	Free.
Sisal grass; see <i>Jute</i> , etc.....	25	19
Skins, fish; see <i>Fish Skins</i>	20	15
Skins, furs dressed on; see <i>Furs dressed on Skin</i>	20	15
Skins, gold-beaters'; see <i>Gold-beaters' Skins</i>	10	8
Skins of all kinds, japanned.....	25	19
Skins, tanned and dressed, of all kinds.....	20	15
Skins, raw, of all kinds; see <i>Raw Hides and Skins</i> , etc.....	5	4
Skins of all kinds, not otherwise provided for.....	20	15
Slabs, iron; see <i>Iron in Bars</i> , etc.....	30	24
Slabs, marble; see <i>Marble in the rough</i>	20	15
Slabs of India rubber, unmanufactured.....	10	4
Slates, roofing; see <i>Roofing Slates</i>	25	19
Slates other than roofing; see <i>Roofing Slates</i> , etc.....	25	19
Slates, pencils.....	20	15
Smalts.....	20	15
Smoked fish; see <i>Fish, foreign</i> , etc.....	40	30
Snuff; see <i>Segars, Snuff</i> , etc.....	40	30
Soap, Castile, perfumed, Windsor, and all other kinds.....	30	24
Soap stocks and stuffs; see <i>Tallow</i>	10	8
Socks made on frames; see <i>Caps, Gloves</i> , etc.....	30	24
Socks made on frames, wholly of cotton; see <i>Caps, Gloves</i> , etc., <i>made on frames, wholly of Cotton</i>	30	15
—when bleached, printed, painted, or dyed.....	20	8
Soda, sil; see <i>Sil Soda</i>	20	8
Soda, carbonates of; see <i>Sil Soda</i>	20	8
Soda, nitrate of, refined, etc.; see <i>Saltpetre, refined</i>	10	8
Soda, nitrate of, when crude; see <i>Saltpetre, crude</i>	5	4
Soda ash.....	10	8
Sole leather; see <i>Leather, tanned</i> , etc.....	20	15
Sonvairs; see <i>Card-cases</i>	30	24

UNITED STATES' TARIFFS—Continued.

Articles.	1846. Per Cent.	1857. Per Cent.
Spar ornaments; see <i>Alabaster and Spar Ornaments</i>	40	30
Spars; see <i>Boards, Planks, etc.</i>	20	15
Sparter for hats, bonnets, etc.; see <i>Plats, Braids, Spatterre, etc.</i>	30	24
Spectacles, glasses for; see <i>Glasses or Pebbles for Spectacles</i>	30	24
Specimens of sculpture; see <i>Philosophical Apparatus, etc.</i>	Free.	Free.
Specimens of natural history, mineralogy, or botany.....	Free.	Free.
Spelter in sheets; see <i>Zinc, Spelter, etc.</i>	15	12
Spelter, unmanufactured; see <i>Zinc, Spelter, etc., unmanufactured</i>	5	4
Spermaceti oil; see <i>Spermaceti, whale, and other Oils, of American fishery</i>	Free.	Free.
Spermaceti oil, foreign; see <i>Neat's-foot, etc.</i>	20	15
Spermaceti candles and tapers.....	20	15
Spices of all kinds.....	40	4
Spikes, copper; see <i>Copper Rods, etc.</i>	20	15
Spirits distilled from grain; see <i>Brandy</i>	100	30
Spirituous beverages; see <i>Cordials</i>	100	30
Spirits, lac; see <i>Lac Spirits</i>	20	4
Spirits of turpentine.....	20	15
Sponges.....	20	8
Spunk.....	20	15
Squills.....	20	15
Stained glass; see <i>Glass, colored, stained, or painted</i>	30	24
Starch.....	20	15
Stars of gold or silver; see <i>Epaulets</i>	30	24
Statuary; see <i>Paintings and Statuary</i>	Free.	Free.
Staves; see <i>Boards, Planks, etc.</i>	20	15
Stave bolts; see <i>Shingle and Stave Bolts</i>	20	15
Stearin candles and tapers.....	20	15
Steel, not otherwise provided for.....	20	15
Steel, in bars, cast, shear, or German.....	15	12
Stereotype plates.....	20	15
Sticks for walking; see <i>Canes, etc.</i>	30	24
Sticks for umbrellas; see <i>Frames and Sticks for Umbrellas, etc.</i>	30	24
Still-bottoms.....	20	15
Stockings made on frames; see <i>Caps, Gloves, etc., made on Frames</i>	30	24
Stockings, wholly of cotton, made on frames; see <i>Caps, Bonnets, etc., wholly of Cotton, made on Frames</i>	20	15
Stockings, when bleached, printed, painted, or dyed.....	20	24
Stones, precious, when set; see <i>Diamonds, etc., when set</i>	30	24
Stones, precious, when not set; see <i>Cameos, etc., not set</i>	10	4
Stones, precious, imitations thereof, not set; see <i>Diamonds, etc., imitations of, not set</i>	10	15
Stones, paving; see <i>Paving Stones</i>	20	8
Stones, building; see <i>Building Stones</i>	10	5
Stones, burr, unmanufactured; see <i>Burr Stones</i>	10	Free.
Stone-ware; see <i>Earthen, China, and Stone-ware</i>	30	24
Stones, polishing; see <i>Polishing Stones</i>	10	8
Stone, pumice; see <i>Pumice-stone</i>	10	8
Stone, rotten; see <i>Rotten-stone</i>	10	8
Straw baskets; see <i>Baskets composed of Grass, Straw, etc.</i>	30	24
Straw hats and bonnets; see <i>Hats and Bonnets composed of Straw, etc.</i>	30	24
Strings of whipgut or catgut for musical instruments; see <i>Musical Instruments</i>	20	15
Strings, all other, of the same material; see <i>Musical Instruments</i>	20	5
Substances expressly used for manures.....	Free.	Free.
Substitute gums or burned starch; see <i>Gum Arabic</i>	10	8
Sugar of all kinds.....	30	24
Sugar, sirup of; see <i>Sirup of Sugar</i>	30	24
Sulphate of lime, underground; see <i>Plaster of Paris</i>	Free.	Free.
Sulphate of copper; see <i>Blue or Roman Vitriol</i>	20	15
Sulphate of iron; see <i>Coppers</i>	20	15
Sulphate of barytes, crude or refined.....	20	15
Sulphate of quinine.....	20	15
Sulphate of zinc; see <i>White Vitriol</i>	20	15
Sulphuric acid, or oil of vitriol.....	10	4
Sulphur, flour of; see <i>Flour of Sulphur</i>	20	15
Sulphur, lac; see <i>Lac Sulphur</i>	20	4
Sumac.....	5	4
Sun-shades; see <i>Parasols and Sun-shades</i>	30	24
Sun-shades, frames and sticks for; see <i>Frames and Sticks for Parasols</i>	30	24
Suspenders, wholly or in part of India rubber; see <i>Braces</i>	30	24
Sweetmeats; see <i>Confits</i>	40	30

UNITED STATES' TARIFFS—Continued.

Articles.	1846. Per Cent.	1857. Per Cent.
Sirup of sugar.....	30	24
Tallow candles.....	20	15
Tallow, marrow, and all other greases and soap stocks and soap stuffs, not otherwise provided for.....	10	5
Tanned leather; see <i>Leather, tanned</i>	20	15
Tanned and dressed skins; see <i>Skins, tanned and dressed</i>	20	15
Tanning, articles used in, not in a crude state, not otherwise provided for; see <i>Articles used in Dyeing or Tanning</i>	20	Free.
Tapers, spermaceti; see <i>Spermaceti Candles and Tapers</i>	20	15
Tapers, stearin; see <i>Stearin Candles and Tapers</i>	20	15
Tapers, wax; see <i>Wax Candles and Tapers</i>	20	15
Tapioca.....	20	15
Tar.....	20	15
Tartaric acid; see <i>Acids, acetic</i>	20	4
Tartar, cream of; see <i>Cream of Tartar</i>	20	4
Tartar, crude; see <i>Argols</i>	5	Free.
Tassels of gold, silver, or other metal; see <i>Epaulets</i>	30	24
Tea from place of production; see <i>Coffee and Tea</i>	Free.	Free.
Teeth, unmanufactured; see <i>Horns, etc.</i>	5	4
Terne tin, in plates or sheets.....	15	8
Terra japonica, catechu, or cutch.....	10	Free.
Teutengue in sheets; see <i>Zinc, Spelter, and Teutengue, in Sheets</i>	15	12
Teutengue, unmanufactured; see <i>Zinc, etc., unmanufactured</i>	5	4
Thibet goats' hair, unmanufactured; see <i>Angora, Thibet, etc.</i>	20	15
Thread lacings and insertings.....	20	15
Thrown silk; see <i>Silk, raw, not more advanced, etc.</i>	15	12
Tiles, marble paving; see <i>Manufactures of Marble</i>	30	24
Tiles, roofing or paving; see <i>Paving and Roofing Tiles</i>	20	15
Timber, hewn and sawed; see <i>Boards, Planks, etc.</i>	20	15
Timber to be used in building wharves; see <i>Boards, Planks, etc.</i>	20	15
Tin, manufactures of; see <i>Manufactures of Brass, etc.</i>	30	24
Tin in plates or sheets, galvanized or ungalvanized.....	15	8
Tin in pigs, bars, or blocks.....	5	Free.
Tinned saddlery; see <i>Saddlery, common</i>	20	15
Tinical; see <i>Borax, crude</i>	25	4
Tinctures; see <i>Balsams</i>	30	24
Tippets of fur; see <i>Caps, etc., of Fur</i>	30	24
Tobacco, manufactures of; see <i>Segars</i>	40	30
Tobacco, unmanufactured.....	30	24
Tortoise and other shells, unmanufactured.....	5	4
Tow of hemp or flax; see <i>Codilla</i>	15	12
Toys; see <i>Dolls</i>	30	24
Tragacanth, gum; see <i>Gum Arabic, etc.</i>	10	8
Tram, silk; see <i>Silks, raw, not more advanced, etc.</i>	15	12
Trees, shrubs, bulbs, plants, and roots, not otherwise provided for.....	Free.	Free.
Tresses, gold, silver, or other metal; see <i>Epaulets</i>	30	24
Trimmings, cotton; see <i>Cotton Laces</i>	25	19
Tumblers, glass; see <i>Glass Tumblers</i>	30	24
Turkey carpeting; see <i>Carpets</i>	30	24
Turneric.....	5	4
Turpentine, spirits of; see <i>Spirits of Turpentine</i>	20	15
Turtle, green; see <i>Green Turtle</i>	20	15
Twines and pack-thread, of whatever materials composed.....	30	24
Twist, silk, or silk and mohair; see <i>Silk Twist</i>	30	24
Type metal.....	20	15
Types, new or old.....	20	15
Umbrellas.....	30	24
Umbrella frames and sticks; see <i>Frames</i>	30	24
Upper leather.....	20	15
Vanilla beans.....	20	15
Vegetable ivory, manufactured; see <i>Manufactures of Bone, etc.</i>	30	24
Vegetable ivory, or ivory nuts; see <i>Iv. Nuts</i>	5	4
Vegetables, prepared; see <i>Prepared Vegetables</i>	40	30
Vegetable substances used in making hats and bonnets; see <i>Hats and Bonnets</i>	30	24
Vegetable substances, unmanufactured; see <i>Tea</i>	25	13
Vegetables not otherwise provided for; see <i>Berries, Vegetables</i>	20	15
Vegetable substances used for beds and mattresses; see <i>Hair, curled</i>	20	15

UNITED STATES' TARIFFS—Continued.

Articles.	1846.	1857.
	Per Cent.	Per Cent.
Vegetables used exclusively in dyeing; see <i>Berries, Nuts</i>	5	Free.
Vellum.....	30	24
Velvet in the piece, composed wholly of cotton.....	20	15
Velvet, when bleached, printed, painted, or dyed.....	20	24
Velvet in the piece, composed of cotton and silk, but of which cotton is the component material of chief value.....	20	15
Venetian carpeting; see <i>Carpets</i>	30	24
Verdigris.....	20	15
Vermicelli; see <i>Macaroni</i>	30	24
Vermillion.....	20	15
Vessels of cast iron; see <i>Iron, cast</i> , etc.....	30	24
Vessels of metal; see <i>Manufactures of Brass</i> , etc.....	30	24
Vessels of glass; see <i>Manufactures of Glass</i>	30	24
Vinegar.....	30	24
Vitriol, green; see <i>Copperas</i>	20	15
Vitriol, white; see <i>White Vitriol, or Sulphate of Zinc</i>	20	12
Vitriol, oil of; see <i>Sulphuric Acid</i>	10	4
Volatile oil; see <i>Oils, volatile</i> , etc.....	30	24
Wafers.....	30	24
Wares composed of earthy and mineral substances, not otherwise provided for; see <i>Earthen</i> , etc.....	30	24
Wares, japanned; see <i>Japanned Wares</i>	30	24
Wares of metal; see <i>Manufactures of Brass</i> , etc.....	30	24
Wares of glass; see <i>Manufactures of Glass</i>	30	24
Wares of papier-maché; see <i>Manufactures of Papier-maché</i>	30	24
Wares, plated and gilt; see <i>Plated and Gilt Wares</i>	30	24
Waste, or shoddy.....	5	4
Watches, crystals for; see <i>Glass Crystals for Watches</i>	30	24
Watches and parts of watches.....	10	8
Watch materials and unfinished parts of watches.....	10	4
Waters, mineral; see <i>Mineral Waters</i>	30	24
Water colors.....	30	24
Wax beads; see <i>Beads</i>	30	24
Wax, sealing; see <i>Sealing-wax</i>	30	24
Wax, bees'; see <i>Bee-cwax</i>	20	15
Wax candles and tapers.....	20	15
Wearing apparel; see <i>Clothing, ready-made</i>	30	24
Wearing apparel in actual use, and other personal effects not merchandise, professional books, implements, instruments, and tools of trade, occupation, or employment, of persons arriving in the U. States, provided that this exemption shall not be construed to include machinery or other articles imported for use in any manufacturing establishment, or for sale.....	Free.	Free.
Webbing, composed wholly or in part of India rubber; see <i>Braces</i>	30	24
Weld.....	5	Free.
Whalebone baskets; see <i>Baskets</i>	30	24
Whalebone, the produce of foreign fisheries.....	20	15

UNITED STATES' TARIFFS—Continued.

Articles.	1846.	1857.
	Per Cent.	Per Cent.
Whalebone hats and bonnets; see <i>Hats and Bonnets</i>	30	24
Whale oil, foreign; see <i>Oils, Seal's-foot</i> , etc.....	20	15
Whale oil of American fisheries; see <i>Oils, spermaceti</i> , etc.....	Free.	Free.
Wheat and wheat flour.....	20	15
White acid; see <i>Acids, acetic</i> , etc.....	20	4
White and red lead.....	20	15
White, Paris; see <i>Whiting, or Paris White</i>	20	15
White vitriol, or sulphate of zinc.....	20	15
Whiting, or Paris white.....	20	15
Willow baskets; see <i>Baskets</i>	30	24
Willow hats and bonnets; see <i>Hats and Bonnets of Straw</i> , etc.....	30	24
Willow squares for hats and bonnets; see <i>Hats</i>	30	24
Willow prepared for basket-makers' use; see <i>Osier and Willow</i>	20	15
Wilton carpeting; see <i>Carpets</i>	30	24
Window glass, broad, crown, or cylinder.....	20	15
Windsor soap; see <i>Soap</i>	30	24
Wines, Burgundy, Champagne, claret, Madeira, port, sherry, and all other wines and imitations of wines.....	40	30
Wings of gold, silver, metal; see <i>Epaulets</i>	30	24
Wood or pastel.....	10	4
Wood, manufactures of; see <i>Manufactures of Wood</i>	30	24
Wood, unmanufactured, not otherwise provided for.....	30	24
Wood, fire; see <i>Fire-wood</i>	30	24
Woods, cedar, granadilla, ebony, mahogany, rose-wood, and satin-wood, when manufactured.....	40	30
Woods, namely, cedar, box, ebony, lignum-vita, granadilla, mahogany, rose-wood, satin-wood, and all other cabinet woods, unmanufactured.....	20	5
Woods, dye, extracts or decoctions of; see <i>Extracts and Decoctions</i>	20	4
Woods, dye; see <i>Brazil-wood, and all other Dye-woods in Sticks</i>	5	Free.
Wool, manufactures of; see <i>Manufactures of Wool</i> , etc.....	30	24
Wool, unmanufactured, not otherwise provided for.....	30	24
Wool costing 20 cents or less per pound.....	30	Free.
Woolen and worsted yarn.....	25	19
Wool hats; see <i>Hats of Wool</i>	20	15
Wool hat bodies; see <i>Hat Bodies of Wool</i>	20	15
Woolen listings.....	20	15
Worsted manufactures; see <i>Manufactures of Worsted</i>	25	19
Works, foreign, in course of republication; see <i>Periodicals</i>	20	15
Yams.....	20	15
Yarn, woolen and worsted; see <i>Woolen and Worsted Yarn</i>	25	19
Yellow acid; see <i>Acids, acetic</i> , etc.....	20	4
Zinc, sulphate of; see <i>White Vitriol</i>	20	15
Zinc, spelter or teuteneque, in sheets.....	15	12
Zinc, spelter, or teuteneque, unmanufactured.....	5	4

—For discussions on Protective Tariff, see *North American Review*, xi. 223 (E. EVERETT), xxx. 160, xxxii. 127 (A. H. EVERETT), xxxv. 265, lxxiii. 90 (BOWEN); *American Whig Review*, ii. iii. (GREELEY), iv. 215, 410, iii. 335, v. 313; *Edinburgh Review*, lxxii. 221; *Democratic Review*, vii. 341, ix. 329, x. 357, xiv. 291, 447; *American Quarterly Review*, x. 444, xi. 345; *Southern Quarterly Review*, ii. 582, vi. 206, viii. 213; NILES's *Reg.*, vols. xvii., xix., xx., xxi., xxii., xxiii., xxiv.; *Southern Literary Messenger*, viii. 421. The speeches of Mr. Clay, Mr. Adams, and other statesmen, may be found in the volumes of NILES's *Register*.

Tarpauling, a broad piece of canvas well daubed with tar, and used to cover the hatchways of a ship at sea, to prevent the penetration of the rain or sea-water which may at times rush over the decks.

Tartar (Gr. *raprapos*, infernal; because it is the sediment or dregs of wine), the substance which concretes upon the inside of wine-casks. It is called red and white *argol*, according to the wine from which it is obtained. When purified it is often called *cream of tartar*: it is a bitartrate of potash.—See ARGAL.

Tasman, Abel Jansen. History is silent in regard to the early days of this navigator and geograph-

ical discoverer. He was a Hollander by birth, and appointed by the Dutch East India Company to the command of three vessels which they had fitted out at Batavia for the discovery of new countries and a more extended commercial power. Tasman sailed September 5, 1642, and the first-fruits of his enterprise was the discovery of that part of New Holland called Van Diemen's Land, which the navigators made on 24th November. Early in December they set out again, and on the 13th they first saw the islands of New Zealand, on which the natives successfully opposed his landing. After visiting several islands in the South Sea, some of which were previously unknown, he returned to Batavia, June 15th, 1643, having sailed round the southern hemisphere of the globe. The short-sighted policy of the Dutch East India Company prevented the publication of any account of this voyage, but a map or chart of the discoveries of Tasman was preserved at the Stadt House at Amsterdam, and some years after Dirk Rembrandts published an extract from the journal of this enterprising seaman, of which later geographical writers have been content to avail themselves. In 1856 a proposition was made in England to restore to the whole district hitherto (but unjustly)

known as Van Diemen's Land, the name of *Tasmania*, in meritorious honor of its original discoverer.

Tatta, a town in the territory of Sinde, situated about 60 miles in a direct line from the sea, at a short distance from the western bank of the River Indus, in lat. 24° 44' N., long. 68° 17' E. Population uncertain, probably about 8000. The streets are narrow and dirty; but the houses, though built of mud, chopped straw, and timber, are superior to the low huts seen in the adjoining towns and villages. Being situated a little above the part where the Indus divides into the two great branches by which its waters are poured into the Indian Ocean, it might be supposed that Tatta would be a place of great trade. But, owing to the unwholesomeness of the climate, the barbarism of the tribes on its banks, and other causes, its commerce has never corresponded with what might have been anticipated, looking at its position on the map. It had probably attained the acme of its prosperity in the beginning of the 16th century. In 1555 the Portuguese, by way, as they stated, of avenging the treachery of the King of Sinde, inhumanly massacred 8000 of the inhabitants, and burned the town. — *Conquêtes des Portugais*, tome iv. p. 183. It is probable that Tatta never fully recovered from this dreadful blow; but Mr. Hamilton mentions that in the 17th century it was extensive and populous, possessing much commerce, with manufactures of silk, wool, and cabinet ware. The decayed state in which we now find it has been a consequence of the misgovernment and rapacity of its present rulers, the Ameers of Sinde, under whose sway it fell more than 50 years ago. In 1635 the English established a factory at Tatta, in the view of facilitating the disposal of woolens and other goods in the countries traversed by the Indus; and the building occupied by the factory, though far from magnificent, was recently, if it be not still, the best, not in Tatta only, but in the whole country of Sinde. The chief exports are rice, shawls from Cashmere, opium from Malwah, hides, ghee, cotton, goats' wool, carpets, drugs, etc. Putchock, an article largely consumed in China, is a peculiar export of Sinde. The imports comprise a variety of articles, but the quantities are trifling: they consist principally of spices, dye-stuffs, hardware, tin, iron, etc., broadcloths, English cottons, silks, etc. But at present the trade is quite considerable; and no one could believe, *à priori*, that the natural emporium of so great a river as the Indus, traversing many extensive countries, would cut so insignificant a figure in the trading world.

A very well-informed party, Dr. Buist, editor of the *Bombay Times*, has, in his work on the late expedition into Afghanistan, made the following observations on the trade of the Indus:

"The glowing descriptions of Burnes appear to have given a very exaggerated idea of the value of the internal traffic of the countries beyond the Indus. It was forgotten that where there was no industry, no manufactures or mineral wealth, no sea-coast or rivers

to permit exportation, there could be little or nothing to give in exchange for imports; and that the wants of a population purely nomade must at all times be simple and singularly few. The whole of our commerce with Persia has never exceeded two millions sterling a year, rarely above one; the total of our trade with Afghanistan certainly never exceeded a million annually, and has very rarely amounted to much more than the half of one. Besides this, the Indus in reality was never closed save by its own dangerous entrances and shallow depth of water. Lord Ellenborough has opened the Indus as far as Mithen Kote; and the Sutlej, in continuation of this, to the Markunda, where it ceases to be navigable for the smallest craft. Yet the gross value of the British goods consumed by the countries adjoining does not at present amount to a quarter of a million sterling, and will not, in all likelihood, be doubled for ten years to come; the expense of maintaining troops between Kurrachee and Bukkur, both stations included, exceeding £600,000 a year; with a less force it would be unwise to think of keeping these stations at all. The great line of traffic was not along but across the Indus, by the Delhi frontier, or parallel to it at a distance of 100 miles, by Soumeanee and Kelat. The countries beyond the Indus, besides, have always been open to the free admission of every variety of foreign imports on paying a moderate fixed duty. The chief obstruction in reaching these is irremediable by treaty, and arises from the attacks of the plundering tribes in the passes, which can not be restrained save by the payment of a black mail or subsidy."

The delta of the Indus has little in common with the delta of the Nile, except its shape. Not a fourth part of it is cultivated, and its few inhabitants principally lead a pastoral life. It is overgrown with tamarisks and other wild shrubs; and though intersected by the numerous mouths of the river, its surface is dry and arid, being almost destitute of fresh water.

Tax (Welsh *Tasg*; Fr. *Taxe*; Du. *Taxe*), a rate or duty laid by government on the income or property of individuals; an impost, a tribute, or an excise, according to the method of collecting, or the property from which collected. The first taxes levied on the people were by Solon, the first Athenian legislator, 540 B.C. The first class of citizens paid an Attic talent of silver, about £55 sterling. The next was by Darius, the son of Hystaspes, which was a land-tax by assessment, and deemed so odious that his subjects styled him, by way of derision, "Darius the Trader," 480 B.C.—*D'Eon's Historie des Finances*. Taxes in specie were first introduced in England by William I., 1067, and he raised them arbitrarily; yet subsidies in kind, as in wool, corn, and other products of England, continued till the accession of Richard II., 1377.—HAYDN.

The following table exhibits the several taxes of all the states of which there are any returns, and shows the aggregate of the taxes of each state, and also of the separate species of tax:

ANNUAL TAXES IN THE UNITED STATES, 1850.

States.	State.	County.	School.	Poor.	Road.	All others.	Total.
Alabama.....	\$423,690	\$202,960	\$7,519	\$2,104	\$8,000	\$12,029	\$663,446
Connecticut.....	67,947	1,101	48,660	80,444	80,117	288,065	566,343
Florida.....	58,616	23,600	105	...	...	2,876	58,287
Georgia.....	292,707	156,061	15,728	14,027	1,388	42,571	522,432
Indiana.....	552,463	449,616	96,736	54,838	171,554	58,153	1,383,360
Maine.....	391,911	141,705	234,842	102,747	568,887	327,945	1,753,037
Mississippi.....	779,163	436,993	81,106	7,461	4,698	80,979	1,540,400
New Hampshire.....	77,313	84,854	144,178	150,745	250,913	200,908	908,996
New Jersey.....	...	190,685	62,706	54,511	119,614	171,808	599,404
New York.....	...	...	...	...	...	...	7,160,255
North Carolina.....	114,086	144,189	42,340	66,162	660	87,906	455,343
Pennsylvania.....	1,536,662	1,689,212	840,066	353,757	816,867	847,871	6,089,455
Rhode Island.....	16,951	...	56,087	45,587	29,077	198,559	347,111
South Carolina.....	373,421	...	...	49,143	20,817	188,751	632,162
Texas.....	74,936	35,055	...	...	...	21,332	131,313
Vermont.....	138,583	3,678	88,930	90,809	247,801	147,763	719,414
Virginia.....	368,649	229,385	45,697	110,077	20,309	352,835	1,126,852
Wisconsin.....	93,982	151,835	75,980	9,194	72,103	167,375	570,469
Total, eighteen States...	...	...	...	...	...	...	\$25,056,129

Adam Smith lays down four general maxims upon the subject of taxation; which are as follows: "1. The subjects of every state ought to contribute toward the support of the government as nearly as possible in proportion to their respective abilities; that is, in proportion to the revenue which they respectively enjoy under the protection of the state." 2. The tax which each individual is bound to pay ought to be certain, and not arbitrary. The time of payment, the manner of payment, the quantity to be paid, ought all to be clear and plain to the contributor, and to every other person. 3. Every tax ought to be levied at the time, or in the manner most likely to be convenient for the contributor to pay it. 4. Every tax ought to be so contrived as both to take out and keep out of the pockets of the people as little as possible over and above what it brings into the public treasury of the state."

The subject of taxation is ably discussed in the *Edinburgh Review*, xxxiii. xc.; *Democratic Review*, xx.; *Quarterly Review*, xxxv.; *American Quarterly Register*, viii. For further articles, see DE BOW'S *Review*, xiii.; HUNT'S *Merchants' Magazine*, iv.; *Southern Review*, viii.; *North American Review*, xix. (DU PONCEAU); *Westm. Review*, xli., xlii.

Tea (in one Chinese dialect, *Cha*, in another *Te*; *Du Te*; *Fr. Thé*; *It. Te*; *Russ. Tchai*; *Hind. Cha*; *Malay, Teh*), the leaves of the tree or shrub (*Thea viridis*, Linn.). The tea-plant ordinarily grows to the height of from three to six feet, and has a general resemblance to the myrtle, as the latter is seen in congenial situations in the southern countries of Europe. It is a polyandrous plant, of the natural order *Columnifera*, and has a white blossom, with yellow style and anthers, not unlike those of a small dog-rose. The stem is bushy, with numerous branches, and very leafy. The leaves are alternate, on short, thick, channelled footstalks, evergreen, of a longish elliptic form, with a blunt, notched point, and serrated except at the base. These leaves are the valuable part of the plant. The *Camellias*, particularly the *Camellia sasanqua*, of the same natural family as the tea-tree, and very closely resembling it, are the only plants liable to be confounded with it by a careful observer. The leaves of the particular *camellia* just named are, indeed, often used in some parts of China as a substitute for those of the tea-tree. The effects of tea on the human frame are those of a very mild narcotic; and, like those of many other narcotics taken in small quantities—even of opium itself—they are exhilarating. The green varieties of the plant possess this quality in a higher degree than the black; and a stronger infusion of the former will, in most constitutions, produce considerable excitement and wakefulness. Of all narcotics, however, tea is the least pernicious; if, indeed, it be so in any degree, which we very much doubt.

The tea shrub may be described as a very hardy evergreen, growing readily in the open air, from the equator to the 45th degree of latitude. For the last sixty years it has been reared in this country, without difficulty, in green-houses; and thriving plants of it are to be seen in the gardens of Java, Singapore, Malacca, and Penang; all within six degrees of the equator. The climate most congenial to it, however, seems to be that between the 25th and 23d degrees of latitude, judging from the success of its cultivation in China. For the general purposes of commerce, the growth of good tea is confined to China; and is there restricted to five provinces, or rather parts of provinces; viz., Fokien and Canton, but more particularly the first, for black tea; and Kiang-nan, Kiang-si, and Che-kiang, but chiefly the first of these, for green. The tea districts all lie between the latitudes just mentioned, and the 115th and 122d degrees of east longitude. However, almost every province of China produces more or less tea, but generally of an inferior quality, and for local consumption only; or when of a superior quality, like some of the fine wines of France, losing its flavor when

exported. The plant is also extensively cultivated in Japan, Tonquin, and Cochin-China; and in some of the mountainous parts of Avis; the people of which country use it largely as a kind of *pickle preserved in oil*. Botanically considered, the tea-tree is a single species; the green and black, with all the diversities of each, being mere varieties, like the varieties of the grape, produced by difference of climate, soil, locality, age of the crop when taken, and modes of preparation for the market. Considered as an object of agricultural produce, the tea-plant bears a close resemblance to the vine. In the husbandry of China, it may be said to take the same place which the vine occupies in the southern countries of Europe. Like the latter, its growth is chiefly confined to hilly tracts, not suited to the growth of grain. The soils capable of producing the finest kinds are within given districts, limited and partial. Skill and care, both in husbandry and preparation, are quite as necessary to the production of good tea as to that of good wine.

Cultivation.—The best wine is produced only in particular latitudes, as is the best tea; although, perhaps, the latter is not restricted to an equal degree. Only the most civilized nations of Europe and America have as yet succeeded in producing good wines; which is also the case in the East with tea; for the agricultural and manufacturing skill and industry of the Chinese are there unquestionably pre-eminent. These circumstances deserve to be attended to in estimating the difficulties which must be encountered in any attempt to propagate the tea-plant in colonial or other possessions. These difficulties are obviously very great, and perhaps all but insuperable. Most of the attempts hitherto made to raise it in foreign countries were not, indeed, of a sort from which much was to be expected. Within the last few years, however, considerable efforts have been made by the Dutch government of Java to produce tea on the hills of that island; and having the assistance of Chinese cultivators from Fokien, who form a considerable part of the emigrants to Java, a degree of success has attended them, beyond what might have been expected in so warm a climate. The Brazilians have made similar efforts; having also, with the assistance of Chinese laborers, attempted to propagate the tea shrub near Rio de Janeiro; and a small quantity of tolerably good tea has been produced. But owing to the high price of labor, and the quantity required in the cultivation and manipulation of tea, there is no probability, even were the soil suitable to the plant, that its culture can be profitably carried on in that country. It may, perhaps, succeed in Assam, where its culture is now being attempted; for labor is there comparatively cheap, and the hilly and tablelands are said to bear a close resemblance to those of the tea districts of China; but we are not sanguine in our expectations as to the result.

Cultivation of the Tea-plant in the United States.—This plant, which has so long afforded a most grateful beverage to millions of people in every civilized country of the globe, there is much reason to believe, may be successfully cultivated in favorable situations and under proper management, for local consumption, at least, in most, if not all of our Southern States. This was partially realized from an experiment made at Greenville, in the mountainous parts of South Carolina, by the late Junius Smith, in 1848 to 1852. He imported several cases of black and green tea plants, of Chinese stock, of from five to seven years' growth, and planted them in the village above named, where they remained about two years. On their removal to a plantation in that vicinity, in March, 1851, Dr. Smith stated that "they grew remarkably last summer, and are now fully rooted, with fine large main and collateral roots, with an abundance of fibrous radicles. They all stood the snow, eight or nine inches deep upon the level on the 3d of January, and the severe frosts of winter, without the slightest covering or protection,

and without the loss of a single plant. They are now all forming part of the plantation, composed of those received from China last June, and a few planted the first week in June, which germinated the 17th of September. All these young plants were thinly covered with straw. Some of them have lost their foliage; others have not. The stems do not appear to have sustained any injury. The fresh buds are beginning to shoot. I can not help thinking that we have now demonstrated the adaptation of the tea-plant to the soil and climate of this country, and succeeded in its permanent establishment within our borders."

Considering the practical bearing this subject has on the economy and agricultural interests of our Southern States, it is surprising that a single herb, which has proved of such universal acceptance, should retain this position in the world for centuries, and yet still continue to be restricted in its production almost entirely to the country of its origin, although corresponding regions, with respect to latitude, elevation above the sea, and other circumstances, which modify the climate, are open to its introduction and culture, and the most intelligent, as well as the most enterprising merchants and others have ever sought to learn every fact connected with its growth and subsequent preparation. Though regarded, in general, as a luxury, and by some even as food, yet it is not an article from which the people of any country should be debarred. On the contrary, it is the policy in this case, as well as in most others, of every government to gratify the wishes of its people, and to facilitate the acquisition of this luxury by its economical importation, or, what would be far more desirable, to extend the production to its own soil. Respecting the expediency of such a measure in this country as that last named, little more need be stated than that most of our citizens will have it, and millions of dollars will annually be paid for its importation. To the argument which has often been advanced, that the very low rate of wages in China is the reason why the production of tea has not been encouraged in this country, it may be stated that, with improved machinery and other appliances, facility of transportation, robust and well-fed laborers, and probably with the aid of the Chinamen now in California, there can be little doubt that we can successfully compete, at least for local consumption, with the primitive utensils, tedious manipulations, and absence of railroads, canals, steam navigation, and even of common roads, of the enfeebled and poorly-fed Asiatics. The cost of the transportation of tea in China, say at a distance, upon an average, from the plantations to Canton, the port of shipment, of 800 to 1000 miles, at a waste of from six weeks' to two months' time, whole cargoes being constantly carried upon the backs of porters, is about four cents a pound, or about one-third of its value at the place of its growth. It is supposable that in no part of the United States, at a corresponding distance from the sea-board, would the cost of carriage be equal to one-fourth of that sum, or occupy one-tenth of the time. Dr. Jameson, superintendent of the tea plantations of the East India Company, on the Himalayan Mountains, in his report of 1847, remarks that the task-work of one laborer is to dress, weed, and keep in order three acres of tea land. In our Middle and Southern States one hand cultivates annually, and keeps in order, six acres of cotton, or fifteen of Indian corn. Therefore, assuming the amount of time for cultivating the respective crops to be equal, the American laborer would perform more than double the amount of work done by the Hindoo, which, undoubtedly, is about the difference in their physical force.

The tea-plant is not only found in China and Japan, chiefly in a cultivated state, but is indigenous in the mountains which separate China from the Burmese territories, especially in Upper Assam, bordering on the province of Yun-nan. It is also cultivated in Nepal, at an elevation of four thousand seven hundred

and eighty-four feet above Bengal, in latitude $27^{\circ} 42' N$.

Before proceeding in the inquiry, it would be desirable to ascertain whether one or several species of the genus *Thea* yield the several varieties of tea, as this might explain some of the discrepancies in the accounts respecting the soil and climate required for its cultivation. Some authors, among whom are Mr. Fortune and Dr. Lettson, who traveled extensively in China, and had ample opportunities for investigating this subject, consider that all the varieties of tea may be obtained from the same plant, and that the differences are therefore due to the soil or climate, or to the age of the leaf and the mode of preparation. Others, on the contrary, are of the opinion that they are produced from at least two distinct species, *Thea viridis* and *Thea bohea*. There is no doubt, however, that the plants usually known as "Green" and "Black," when cultivated under similar circumstances, retain permanently their characteristics, and that their leaves, respectively, generally resemble those obtained after infusing good specimens of green and black tea. The green-tea-plant, moreover, is much more hardy than the black; one of the former having lived twenty years in the open air, near London, and being only killed in the very severe winter of 1837-'38, when the thermometer fell to $4\frac{1}{2}^{\circ} F$. Yet, from the great extent of territory over which the tea-plant is found, and from the variety of situations in which it is produced, there can be but little doubt that it is grown in very different soils, though there are, doubtless, certain physical conditions that are best suited to the production of the finest-flavored teas.

The tea-plant loves to grow in valleys, at the foot of mountains, and upon the banks of streams, where it enjoys a southern exposure to the sun, though it endures considerable variations of dryness and moisture, and of heat and cold; for it flourishes in the climate of Pekin, in latitude 40° , as well as about Canton, in $23^{\circ} 8' N$; and it is observed that the degree of cold at the former place is nearly as severe in winter as it is in some of our Middle States. The best tea, however, grows in a mild, temperate climate, the country about Nankin producing a better article than either Pekin or Canton. Mr. Bruce, who traveled in Upper Assam in 1836, describes the tea districts as consisting of little mounds or hillocks of earth, on which large trees had grown, their roots alone appearing to save them from being washed away. One thing he observes as worthy of notice, that all the Assam tea grows near water, of which it appears to be very fond, for wherever there is a small stream tea is sure to be found. He subsequently discovered, however, that tea plantations in that country were very extensive, both on the hills and in the plains. But excessive moisture, either in the soil or in the air, is not congenial to the growth of the tea-plant, as it is evident from its preference for sandy or porous soils, or the moulds, in the moist climate of Assam, but which probably would not be requisite where the climate is dry.

Mr. Fortune, who had frequent opportunities to inspect some of the most extensive tea districts of Canton, Fokein, and Chekiang, states that the soil of those of the northern provinces is much richer than it is in Quantung. "Tea shrubs," he says, "will not succeed well unless they have a rich sandy loam to grow in. The continual gathering of their leaves is very detrimental to their health, and, in fact, ultimately kills them. Hence a principal object with the grower is to keep his bushes in as robust health as possible; and this can not be done if the soil be poor. The tea plantations in the north of China are always situated on the lower and most fertile sides of the hills, and never on the low lands. The shrubs are planted in rows, about four feet apart, and about the same distance between each row, and look at a distance like little shrubberies of evergreens. The farms are small,

each consisting of from one to four or five acres; indeed, every farmer has his own little tea garden, the produce of which supplies the wants of his family, and the surplus brings him in a few dollars that are spent on the other necessities of life." In Japan, tea is planted around the borders of fields, without regard to situation or soil.

Species of Tea.—The tea-plants are raised from nuts, or seeds, usually sown where they are to remain. Three or more are dropped into a hole, and covered with earth four or five inches deep; these come up without any further trouble, and require little culture, except that of removing weeds. The leaves are not collected from the cultivated plants until they are three years old; and, after growing nine or ten years, they are cut down, in order that the young shoots, which will then rise, may afford a greater supply of leaves. The best time to gather the tea is while the leaves are small, young, and juicy. The first gathering usually commences at about the end of February, when the leaves are young and unexpanded; the second about the beginning of April; and the third in June. The first collection, which only consists of fine tender leaves, is most esteemed, and is called by us "Imperial" tea. The second is denominated "Tootsjaa," or Chinese tea, because it is infused and imbibed after the Chinese manner. The last gatherings, which are the coarsest and cheapest of all, are drunk by the people of the lowest class. Besides the three kinds of tea named above, it may be observed that, by sorting these, the varieties become still further multiplied. The Chinese, however, know nothing of "Imperial" tea, "Flower" tea, and many other names, which in Europe and America serve to distinguish the quality and the price of the article; but, besides the common tea, they distinguish two other kinds, namely, the "Voui" and "Soumlo," which are reserved for people of the first order of society, and for those who are sick. The principal varieties used in Europe and in this country are the "Green" tea, which is the "Bing," or common tea of the Chinese, and is gathered in April; the "Voui," or "Vou-tche," a delicate kind of "Young Hyson," which differs only from the other in being gathered a few weeks earlier, and consists of the young leaf-buds just as they begin to unfold; and the various descriptions of "Black" tea, which diminish in quality and value as they are collected later in the season, until they reach the lowest kind, called by us "Bohea," and by the Chinese "Ta-cha," or large tea, on account of the maturity and size of the leaves. The early leaf-buds, in spring, being covered with a white, silky down, are gathered to make "Pekoe," a corruption of the Canton word *Pa-ko*, white down. A few days' later growth produces what is sometimes styled "Black-leaved Pekoe." The more fleshy and matured leaves constitute "Souchong;" as they grow still larger and coarser, they form "Congo;" and the last and latest picking of all is the "Bohea." The variety named above, called "Voui," is a scarce and expensive article, and the picking of the leaves in so young a state does considerable injury to the plantations. The summer rains, however, which fall copiously about this season, moisten the earth and air, and, if the plants are young and vigorous, they soon push out fresh leaves.

The process of gathering tea is one of great nicety and importance. Each leaf is plucked separately from the twig; the hands of the gatherer are kept clean; and in collecting some of the finer sorts, it has been stated, upon credible authority, that he is obliged for some weeks previous to abstain from all gross food, lest his breath or perspiration might injure the flavor; to wear fine gloves while at work, and to bathe two or three times a day during this period. In the general harvest seasons, the natives are seen in little family groups on the side of every hill, when the weather is dry, engaged in gathering the tea leaves, which are stripped off rapidly and promiscuously into round

baskets, made for the purpose, of split bamboo or rattan. When a sufficient quantity is gathered, it is carried home to the cottage or barn, where the operation of drying is performed. The Chinese dislike gathering the leaves on a rainy day for any description of tea, and never will do so unless necessity requires it. Some even pretend to distinguish the teas made on a rainy day from those made on a sunny day. The process of rolling and drying the leaves, it is stated, can only be learned by actual experience; yet the system adopted to attain this end is as simple as it is efficacious. Let it be borne in mind, however, that the grand object is to expel the moisture, and at the same time to retain as much as possible of the aromatic and other desirable secretions.

As to the differences of flavor and color peculiar to the green and black teas, it is well known that, in many instances, they are produced by art. In describing the green teas grown in the districts of Chekiang, Mr. Fortune remarks that "it must not be supposed that they are the green teas which are exported. The leaf has a much more natural color, and has little or none of what we call the beautiful bloom upon it, which is so much admired in Europe and America. There is now no doubt that all these blooming green teas, which are manufactured at Canton, are dyed with Prussian blue and gypsum, to suit the tastes of the 'foreign barbarians!' Indeed, the process may be seen any day during the season by those who will give themselves the trouble to seek after it. It is very likely that the same ingredients are also used in dyeing the northern green teas for the foreign market." The Chinese, it is asserted, never use these dyed teas themselves; and certainly their taste in this respect is more correct than ours. It is not to be supposed that the dye employed can produce any very bad effects upon the consumer, for, had this been the case, it would have long since been discovered. As to the opinion that green tea owes its verdure to an inflorescence acquired from plates of copper, on which it is supposed to be curled or dried, there is no foundation for the suspicion, as the infusions undergo no change on the addition of volatile alkali, which would detect the minutest portion of copper by turning the liquors blue. And, besides, the drying pans and furnaces used throughout China for this purpose are said to be invariably made of sheet-iron.—*Patent Office Report.*

Adulteration of Tea.—It might have been anticipated, from the high price of and the high duties in some countries on tea, and the facility with which it may be mixed up with foreign substances, that it would not escape adulteration; and the records of the courts of justice show that this is the case, several dealers having been convicted of this pernicious practice. The adulteration is usually effected either by the intermixture of sloe or ash leaves with fresh teas, or by mixing the latter with tea that has been already used. The penalties on such offenses are not specific; and the best, or rather the only, security on which any reliance can be placed, is to be found in the character and respectability of the parties dealing in tea. Even were he influenced by nothing else, it would be extreme folly in any person carrying on an extensive business to engage in such dishonest practices, for they can hardly fail of being detected; and the ruin of his business that would follow such exposure would far more than balance whatever gains he could hope to make by his fraudulent schemes.

Tea Trade in China.—The tea merchants commonly receive advances from the principal merchants and other capitalists of Canton; but, with this exception, are altogether independent of them; nor have the latter any exclusive privilege or claim of pre-emption. They are very numerous; those connected with the green-tea districts alone being about four hundred in number. The black-tea merchants are less numerous, but more wealthy. The greater part of the tea is

brought to Canton by land carriage or inland navigation, but chiefly by the first. It is conveyed by porters; the roads of China, in the southern provinces, not generally admitting of wheel carriages, and beasts of burden being very rare. A small quantity of black tea is brought by sea, but probably smuggled; for this cheaper mode of transportation is discouraged by government, which it deprives of the transit duties levied on inland carriage. The length of land carriage from the principal districts where the green teas are grown to Canton is probably not less than 700 miles; nor that of the black tea, over a mountainous country, less than 200 miles. The tea merchants begin to arrive in Canton about the middle of October, and the busy season continues until the beginning of March; being briskest in November, December, and January. Tea, for the most part, could, previously to the late changes, only be bought from the hong or licensed merchants; but some of these, the least prosperous in their circumstances, were supported by wealthy *outside* merchants, as they are called; and thus the trade was considerably extended. The prices in the Canton market vary from year to year with the crop, the stock on hand, and the external demand, as in any other article and in any other market. After the season is over, or when the westerly monsoon sets in, during the month of March, and impedes the regular intercourse of foreigners with China, there is a fall in the price of tea, not only arising from this circumstance, but from a certain depreciation in quality, from the age of the tea; which, like most

other vegetable productions, is injured by keeping, particularly in a hot and damp climate.

There seems to be little mystery in the selection and purchase of teas; for the business is both safely and effectively accomplished, not only by the supercargoes of the American ships, but frequently by the masters; and it was ascertained by the sales at the East India House, that there was no difference between the qualities of the teas purchased by the commanders and officers of the company's ships, without assistance from the officers of the factory, and those purchased for the company by the latter. An unusual degree of good faith, indeed, appears to be observed on the part of the Chinese merchants with respect to this commodity; for it was proved before the select committee of the House of Commons, in 1830, that it was the regular practice of the hong merchants to receive back, and return good tea for, any chest or parcel upon which any fraud might have been practiced, which sometimes happens in the conveyance of the teas from Canton on board ship. Such restitution has occasionally been made, even at the distance of one or two years. The company enjoyed no advantage over other purchasers in the Canton market except that which the largest purchaser has in every market, viz., a selection of the teas, on the payment of the same prices as others; and this advantage they enjoyed only as respects the black teas, the Americans being the largest purchasers of green teas.

We herewith subjoin a table for calculating the cost of tea:

COMPARISON OF THE COST OF TEA PER PICUL (133½ LBS. AVOIRDUPOIS), WITH THE RATE PER POUND, AND TON OF 9 CWT. OR 1008 POUNDS PER TON.

Per Picul.	Exchange 4s. per Dollar.			Exchange 4s. 3d. per Dol.			Exchange 4s. 4d. per Dol.			Exchange 4s. 5d. per Dol.			Exchange 4s. 6d. per Dol.		
	Per Lb.	Per Ton.	Pence.	Per Pound.	Per Ton.	Pence.	Per Pound.	Per Ton.	Pence.	Per Pound.	Per Ton.	Pence.	Per Pound.	Per Ton.	Pence.
Teas.	Pence.	£ s. d.		Pence.	£ s. d.		Pence.	£ s. d.		Pence.	£ s. d.		Pence.	£ s. d.	
20 =	10	42 0 0		10-625	44 12 6		10-833	45 10 0		11-042	46 7 6		11-250	47 5 0	
21 =	10½	44 2 0		11-156	46 17 1½		11-375	47 15 6		11-594	48 13 10½		11-813	49 12 3	
22 =	11	46 4 0		11-687	49 1 9		12-916	50 1 0		12-146	51 0 3		12-375	51 19 6	
23 =	11½	48 6 0		12-219	51 6 4½		12-458	52 6 6		12-698	53 6 7½		12-936	54 6 0	
24 =	12	50 8 0		12-750	53 11 0		13-000	54 12 0		13-250	55 13 0		13-500	56 14 0	
25 =	12½	52 10 0		13-281	55 15 7½		13-541	56 17 6		13-802	57 19 4½		14-063	59 1 3	
26 =	13	54 12 0		13-812	58 0 3		14-083	59 3 0		14-354	60 5 9		14-625	61 8 6	
27 =	13½	56 14 0		14-344	60 4 10½		14-625	61 8 6		14-306	62 12 1½		15-183	63 15 9	
28 =	14	58 16 0		14-875	62 9 6		15-166	63 14 0		15-458	64 18 6		15-750	66 3 0	
29 =	14½	60 18 0		15-406	64 14 1½		15-708	65 19 6		16-010	67 4 10½		16-313	68 13 0	
30 =	15	63 0 0		15-937	66 18 9		16-250	66 5 0		16-562	69 11 3		16-875	70 17 6	
31 =	15½	65 2 0		16-469	69 3 4½		16-791	70 10 6		17-114	71 17 7½		17-438	73 4 9	
32 =	16	67 4 0		17-000	71 8 0		17-333	72 16 0		17-666	74 4 0		18-000	75 12 0	
33 =	16½	69 6 0		17-531	73 12 7½		17-875	75 1 6		18-218	76 10 4½		18-563	77 19 3	
34 =	17	71 8 0		18-062	75 17 3		18-416	77 7 0		18-770	78 16 9		19-125	80 6 6	
35 =	17½	73 10 0		18-594	78 1 10½		18-958	79 12 6		19-323	81 8 1½		19-688	82 13 9	
36 =	18	75 12 0		19-125	80 6 6		19-500	81 18 0		19-875	83 9 6½		20-250	85 1 0	
37 =	18½	77 14 0		19-656	82 11 1½		20-041	84 3 6		20-427	85 15 10½		20-813	87 8 3	
38 =	19	79 16 0		20-187	84 15 9		20-583	86 9 0		20-979	88 2 3		21-375	89 15 6	
39 =	19½	81 18 0		20-719	87 0 4½		21-125	88 14 6		21-581	90 3 7½		21-988	92 2 9	
40 =	20	84 0 0		21-250	89 5 0		21-666	91 0 0		22-083	92 15 0		22-500	94 10 0	

Thus, 4s. 3d. per dollar, 1 tael per picul is equal to ½d. per pound.

USUAL NET WEIGHT AND MEASUREMENT OF A CHEST OF DIFFERENT DESCRIPTIONS OF TEA.

	Weight.	Solid Mens.
Bohea, whole chests....	catties 138	feet 8-956
" half	84	" 5-416
" quarter	46	" 3-374
Congo, chests.....	63 to 64	" 4-385
Souchong.....	60 to 62	" 4-025
Pekoe.....	49 to 50	" 4-333
Hyson.....	48 to 50	" 4
Hyson skin.....	48 to 50	" 4-125
Twankay, long chests.....	62 to 65	" 4-864
Gunpowder.....	80 to 84	" 4-100
Imperial.....	70 to 74	" 4-074
Young hyson.....	70 to 72	" 4-220

Consumption of Tea in Europe.—Of the Continental states, Russia and Holland are the only ones in which the consumption of tea is considerable. In 1848 the imports of tea into Russia amounted to 253,429 poods, or 9,123,444 pounds, in chests, and 116,249 poods in bricks. The former consists almost entirely of the finest varieties of black tea. The consumption of tea in Holland amounts to about 3,000,000 pounds a year, the duty on which varies from 1½d. to 4½d. per pound. The consumption of France does not exceed 350,000

pounds. The importations into Hamburg vary between 1,500,000 and 2,000,000 pounds, the greater part of which is forwarded to the interior of Germany.

IMPORTS OF TEA IN THE UNITED KINGDOM IN 1851 AND 1852.

Description of Tea.	1851.	1852.
	Pounds.	Pounds.
Bohea	2,000	.....
Congo	51,055,000	48,106,000
Pouchong	44,000	15,000
Caper { plain	91,000	100,000
{ scented	1,455,000	1,013,000
Souchong, Oolong, etc.	4,792,000	2,169,000
Flowerly and black leaf pekoe ..	825,000	825,000
Orange pekoe { plain	40,000	42,000
{ scented	3,444,000	2,694,000
Twankay.....	115,000	341,000
Hyson skin.....	49,000	83,000
Hyson.....	557,000	509,000
Young Hyson.....	2,744,000	2,561,000
Imperial.....	409,000	393,000
Gunpowder	4,857,000	4,883,000
Sorts and Assam tea.....	621,000	552,000
For exportation only .....	.....	7,000
Total.....	71,500,000	64,700,000
Black.....	62,214,000	55,386,000
Green.....	9,286,000	9,314,000

The Tea Trade of the United States.—Tea is the chief article imported from China into the United States. The consumption of the United States amounts to from

30,000,000 to 32,000,000 pounds a year. Duties on tea used to form one of the largest items of American revenue, having in some years produced \$3,250,000. Their magnitude, however, was justly complained of; and it is probably owing to this circumstance that, while the consumption of tea was for several years pretty stationary in the United States, that of coffee increased with even greater rapidity than in England. The Secretary of the Treasury of the United States, in his Report for 1827, observed: "The use of tea has become so general throughout the United States, as to rank almost as a necessary of life. When to this we add that there is no rival production at home to be fostered by lessening the amount of its importation, the duty upon it may safely be regarded as too high. Upon some of the varieties of the article it considerably exceeds 100 per cent., and is believed to be generally above the level which a true policy points out. A moderate reduction of the duty will lead to an increased consumption of the article, to an extent that, in all probability, would in the end rather benefit than injure the revenue. Its tendency would be to enlarge our trade and exports to China—a trade of progressive value, as our cottons and other articles of home production (aside from specie) are more and more entering into it. It would cause more of the trade in teas to centre in our ports; the present rate of duty driving our tea ships not unfrequently to seek their markets in Europe, not in the form of re-exportation, but in the direct voyage from China. It would also serve to diminish the risk of the United States losing any portion of a trade so valuable, through the policy and regulations of other nations." These judicious suggestions could not fail to command attention; and the flourishing state of the revenue in subsequent years having admitted of a very great reduction of duties, those on tea were wholly repealed. As was to be expected, the consumption has since rapidly increased. The whole imports from China to the United States in 1855 amounted to \$11,048,726, of which tea covered \$6,806,463. In 1854 the total imports reached \$10,506,329, of which tea amounted to \$6,545,115; and in 1853, \$10,573,710, of which tea covered \$8,174,670.

ESTIMATE, IN POUNDS' WEIGHT, OF THE QUANTITIES OF TEA EXPORTED BY SEA FROM CHINA IN 1851-'52, SPECIFYING THE COUNTRIES FOR WHICH THE SAME WERE SHIPPED, AND THE QUANTITY SHIPPED FOR EACH.

Countries.	Pounds.
The United Kingdom	65,100,000
The United States	34,327,000
Australia	8,829,000
Holland	3,000,000
India	500,000
Other places	2,200,000
Total	113,856,000

The exports of tea to Russia by land amount to 14,000,000 or 15,000,000 pounds a year.

The following tables afford a review of the quantities of tea imported into the United States from China since the commencement of that trade, so far as they can be gathered from various official returns:

Years.	Pounds.	Years.	Pounds.
1790.....	3,047,242	1802.....	4,269,828
1791.....	985,097	1803.....	6,053,529
1792.....	2,614,008	1804.....	3,692,593
1793.....	2,009,509	1805.....	5,119,441
1794.....	2,460,914	1806.....	6,870,806
1795.....	2,374,118	1807.....	8,108,774
1796.....	2,310,259	1808.....	4,812,638
1797.....	2,008,399	1809.....	1,482,090
1798.....	1,690,965	1810.....	7,839,457
1799.....	4,501,693	1811.....	3,018,118
1800.....	3,797,634	1812.....	3,066,089
1801.....	4,086,960		

Deducting the quantities ascertained to have been exported from the United States during the above period, we find the average annual consumption in the country to have been 3,350,000 pounds for twelve years, from 1801 to 1812, inclusive. From 1813 to 1820, inclusive, the total amount consumed or on hand can alone be given. It approximates very closely, how-

ever, the total amount imported during that period, and was as follows: Teas consumed or on hand, 26,717,917 pounds; or an average annual quantity of 3,339,740 pounds. The quantities of teas of all kinds imported into and exported from the United States, from 1821 to 1833, inclusive, together with the quantities retained for consumption, are shown as follows:

Years.	Imported. Pounds.	Exported. Pounds.	Consumed. Pounds.
1821.....	4,975,646	531,691	4,443,955
1822.....	6,639,434	1,333,846	5,305,588
1823.....	8,210,010	1,735,076	6,474,934
1824.....	8,534,487	1,148,868	7,385,619
1825.....	10,203,548	2,036,808	8,173,740
1826.....	10,098,900	1,998,672	8,100,228
1827.....	5,875,638	1,626,417	4,249,221
1828.....	7,707,427	1,417,946	6,289,581
1829.....	6,636,790	1,018,343	5,618,447
1830.....	8,609,451	1,736,324	6,873,091
1831.....	5,182,867	526,196	4,656,691
1832.....	9,906,606	1,279,262	8,627,344
1833.....	14,639,822	1,712,779	12,927,043

If from the imports are deducted the exports for each year, an average annual consumption, for the entire period, of 7,000,000 pounds will be given. The following statement shows the imports and exports of tea, the quantity remaining on hand or consumed each year, from 1834 to 1841, exclusive of 601,319 pounds imported during the entire period from other countries than China:

Years.	Imported. Pounds.	Exported. Pounds.	Consumed. Pounds.
1834.....	10,282,877	3,681,308	13,201,669
1835.....	14,415,572	2,832,506	12,332,706
1836.....	16,382,114	1,836,342	14,485,772
1837.....	16,982,384	2,568,586	14,473,988
1838.....	14,418,112	2,435,302	11,982,810
1839.....	9,349,817	1,592,093	7,767,784
1840.....	20,066,535	3,123,496	16,883,049
1841.....	11,560,301	666,532	10,899,469
Total.....	119,397,872	17,380,565	102,017,307

The preceding table will show that the average annual amount consumed, or retained on hand, during this period, was 12,752,163 pounds. The following statement exhibits the values of all imports from China into the United States from 1833 to 1841, inclusive, distinguishing the values of teas; together with the number of vessels and the tonnage employed in the trade:

Years.	Number of Vessels.	Tonnage.	Values of Imports.	Values of Teas.
1833.....	41	15,394	\$7,541,570	\$5,484,693
1834.....	43	15,550	7,892,327	6,217,949
1835.....	36	13,495	5,987,187	4,552,806
1836.....	43	16,445	7,324,816	5,342,811
1837.....	42	16,160	8,965,337	5,903,054
1838.....	29	11,821	4,764,536	3,471,156
1839.....	18	7,392	3,678,509	2,428,419
1840.....	35	14,771	6,640,829	5,427,010
1841.....	28	11,486	3,695,368	3,466,247
Total.....	315	122,954	\$56,490,499	\$42,200,053

From the preceding table it may be seen that the value of teas reached annually, during the period designated, about \$4,698,894, and constituted 75 per cent. of the value of the entire imports; while the trade employed annually about thirty-five vessels, averaging 390 tons each. The preceding table is continued as follows, down to 1855, and exhibits generally the same proportion between the value of total imports from China into the United States and the value of teas:

Years.	Tonnage.	Values of Imports.	Values of Teas.
1842.....	12,488	\$4,934,645	\$4,367,101
1843.....	13,460	4,385,566	3,776,464
1844.....	15,399	4,931,255	4,075,191
1845.....	21,682	7,285,914	5,730,101
1846.....	19,243	6,593,881	5,022,600
1847.....	17,775	5,893,343	4,278,448
1848.....	24,383	8,083,496	6,217,111
1849.....	19,418	5,513,785	4,071,759
1850.....	29,414	6,593,462	4,585,720
1851.....	38,914	7,065,144	4,633,529
1852.....	78,085	10,593,950	7,144,500
1853.....	92,864	10,537,710	8,174,670
1854.....	70,426	10,506,329	6,545,115
1855.....	70,815	11,048,726	6,806,463

TEA EXPORTED FROM CHINA TO GREAT BRITAIN AND THE UNITED STATES, RESPECTIVELY, FOR A PERIOD OF TEN YEARS, ENDING JUNE 30, 1854. —(MADE UP FROM THE "CHINA MAIL.")

Years.	To Great Britain.	To United States.
	Pounds.	Pounds.
1845.....	53,570,200	20,762,558
1846.....	57,584,600	18,502,288
1847.....	53,365,000	18,171,625
1848.....	47,094,300	19,338,640
1849.....	47,242,700	18,672,300
1850.....	53,961,800	21,757,800
1851.....	64,020,100	28,760,800
1852.....	65,187,200	34,354,000
1853.....	72,906,100	40,974,500
1854.....	77,217,900	27,867,500

It will be noticed that these statistics agree with those given below, the latter being taken from the United States Treasury Reports.

TEA EXPORTED FROM CHINA TO GREAT BRITAIN, FRANCE, AND THE UNITED STATES, FROM 1821 TO 1840.—(FROM FRENCH AUTHORITIES.)

Years.	England.	France.	United States.	Total.
	Kilograms.	Kilograms.	Kilograms.	Kilograms.
1821.....	13,520,000	56,040	2,258,000	16,114,000
1822.....	12,515,000	14,000	2,587,000	15,316,000
1823.....	13,072,000	15,000	5,694,000	16,781,000
1824.....	14,302,000	6,000	4,010,000	18,318,000
1825.....	13,206,000	3,000	4,581,000	17,790,000
1826.....	13,428,000	151,000	2,641,000	18,112,000
1827.....	17,886,000	276,000	2,641,000	20,803,000
1828.....	14,706,000	.....	3,460,000	18,166,000
1829.....	13,745,000	121,000	2,968,000	16,834,000
1830.....	14,554,000	9,000	3,863,000	18,226,000
1831.....	14,242,000	237,000	2,330,000	16,809,000
1832.....	14,269,000	47,000	4,452,000	19,768,000
1833.....	14,427,000	356,000	6,557,000	21,400,000
1834.....	14,415,000	648,000	7,319,000	22,380,000
1835.....	19,725,000	46,000	6,432,000	26,203,000
1836.....	21,800,000	116,000	7,361,000	29,277,000
1837.....	16,426,000	35,000	7,628,000	24,089,000
1838.....	18,187,000	124,000	6,485,000	24,796,000
1839.....	17,172,000	93,000	4,184,000	21,449,000
1840.....	12,610,000	264,000	9,063,000	21,937,000

In addition to the foregoing, large quantities of tea are exported from China to the Netherlands, Hanse Towns, the Levant, the Mediterranean, and Russia. To the last-named country there were exported in 1839, 3,442,000 kilograms; and in 1840, 3,585,000 kilograms; which, added to the totals for 1839, will give for that year 24,891,000 kilograms; and for 1840, 25,522,000 kilograms.

"In the consumption of tea, the United States rank next to Great Britain. From 1815 to 1834 there were exported to the former, for consumption and re-exportation, 35,805,000 kilograms. In 1832, 4,028,000 kilograms, of which 20,000 kilograms were re-exported. In 1833-'34 the Americans exported from Canton for Europe 1,044,000 kilograms. Consumption in the United States has largely increased since tea was put on the free list of that country."

The following is a statement of the exports of tea from China to the United States for ten years, from 1845 to 1854, inclusive:

Year ending June 30.	Green.	Black.	Total.
	Pounds.	Pounds.	Pounds.
1845.....	13,812,099	6,950,459	20,762,558
1846, in 40 vessels.....	14,236,082	4,216,168	18,502,248
1847, in 37 ".....	13,853,132	4,318,496	18,171,828
1848, in 38 ".....	15,346,030	3,993,617	19,338,647
1849, in 37 ".....	13,818,700	4,853,600	18,672,300
1850, in 44 ".....	14,396,400	7,361,400	21,757,800
1851, in 64 ".....	15,205,700	13,515,100	28,760,800
1852, in 63 ".....	20,937,300	13,396,700	34,334,000
1853, in 72 ".....	26,439,800	14,484,700	40,974,500
1854, in 47 ".....	18,280,300	9,397,200	27,667,500

For the year ending June 30, 1855, the total number of pounds exported to the United States was 31,515,900, in forty-eight vessels, distributed among three ports, as follows:

	Pounds.
Canton.....	2,561,900
Foo-chow.....	5,400,800
Shanghai.....	23,553,200
Total, year 1854-'55.....	31,515,900

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For the year ending June 30, 1856, it was 40,247,800 pounds, in fifty-eight vessels, distributed as follows:

	Pounds.
Canton.....	8,240,800
Foo-chow.....	10,873,900
Shanghai.....	21,127,100
Total, year 1855-'56.....	40,247,800

From July 1, 1856, to January 15, 1857, the exports to this country were 16,299,600 pounds.

	Pounds.
From Canton.....	997,500
From Foo-chow.....	5,857,200
From Shanghai.....	9,444,900
Total, 64 months.....	16,299,600

The exports to Great Britain during the year 1855-'56 were 91,931,800 pounds; and from July 1, 1856, to January 15, 1857, 39,991,400 pounds.

EXPORTS OF TEA FROM THE UNITED STATES.

To	Year ending June 30.			
	1854.		1855.	
	Pounds.	Value.	Pounds.	Value.
England.....	816,918	\$257,586	1,352,266	\$478,631
Br. Am. Colonies.....	1,583,653	400,080	1,179,219	282,613
Canada.....	2,340,193	566,379	2,190,573	981,178
Other places.....	431,432	170,542	786,886	277,020
Total.....	5,177,196	\$1,794,587	5,508,944	\$2,019,442
Paying duty.....	4,403	1,307	60,560	16,947
Total.....	5,181,599	\$1,795,894	5,569,504	\$2,036,389

IMPORTS OF TEA INTO THE UNITED STATES.

From	Year ending June 30.			
	1854.		1855.	
	Pounds.	Value.	Pounds.	Value.
China.....	23,583,638	\$6,545,115	24,366,615	\$6,806,463
Other places.....	717,267	170,611	827,269	124,523
Total.....	24,306,906	\$6,715,726	25,203,884	\$6,930,986
Paying duty as non-producers.....	110,806	13,721	129,213	43,013
Total.....	24,417,712	\$6,729,447	25,333,097	\$6,973,999

IMPORTS OF TEA INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857, FROM PLACES OTHER THAN THAT OF ITS PRODUCTION, AND PAYING DUTIES AD VALOREM.

Whence imported.	Pounds.	Value.
Hamburg.....	23,698	\$12,481
Holland.....	83	42
England.....	5,563	2,708
Scotland.....	30	9
Ireland.....	50	18
Canada.....	4,726	587
Other British North American Possess.	376	168
British West Indies.....	788	148
British Australia.....	1,000	223
British East Indies.....	576	25
France on the Atlantic.....	40	92
Cuba.....	2,040	165
Central Republic.....	814	167
Brazil.....	605	83
Sandwich Islands.....	1,474	153
China.....	360	226
Total.....	42,283	\$17,315

IMPORTS OF TEA, THE GROWTH OF THE COUNTRIES EXPORTING IT, INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.—(FREE OF DUTY.)

Whence imported.	Pounds.	Value.
Dutch East Indies.....	21,193	\$3,964
British East Indies.....	793,456	135,120
Philippine Islands.....	630	174
China.....	19,505,282	5,618,702
Total.....	20,325,541	\$5,757,860

In England there are certain ports where teas may be imported. There are warehouses which may be approved of for the deposit of teas, and are to be exclusively appropriated to that purpose. No package shall be divided into smaller packages, except for the purpose of stores, nor shall the mixing of tea of any sort or sorts be permitted in the warehouses, either for home consumption or exportation. The packages shall be sorted and arranged in the warehouse by the occupier, according to their respective "chops" or "beds," so as to enable the officers to select from each the required number of packages for taring, and to ascertain the proper tare to be allowed on the package therein.

EXPORTS OF TEA, THE GROWTH OF FOREIGN COUNTRIES, FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported	Pounds.	Value.
Russian Poss. in North America...	23,037	\$12,336
Swedish West Indies.....	66	44
Danish West Indies.....	11,560	4,235
Hamburg.....	111	55
Other German ports.....	182	67
Dutch Guiana.....	40	10
England.....	77,814	27,673
Gibraltar.....	860	144
Canada.....	2,070,112	876,661
Other British N. American Poss.	1,013,034	262,692
British West Indies.....	12,946	4,906
British Honduras.....	8,480	3,660
British Guiana.....	33	25
British Possessions in Africa...	188	79
Other ports in Africa.....	3,657	1,829
British Australia.....	9,200	2,000
France on the Atlantic.....	250	100
French N. American Possessions.	32,307	8,686
French West Indies.....	850	140
Canary Islands.....	800	105
Cuba.....	3,489	1,700
Porto Rico.....	363	172
Portugal.....	22,588	10,199
Madeira.....	1,627	694
Capo de Verd Islands.....	1,068	588
Azores.....	21,164	10,552
Sardinia.....	4,036	1,606
Turkey in Europe.....	4,000	1,550
Turkey in Asia.....	1,820	619
Hayti.....	604	270
Mexico.....	34,609	9,907
Central Republic.....	163	71
New Granada.....	8,827	3,764
Venezuela.....	6,409	2,444
Brazil.....	282,079	123,873
Uruguay, or Cisplatine Republc.	29,500	8,937
Buenos Ayres, or Argentine Rep.	79,709	25,324
Chili.....	56,631	12,943
Peru.....	4,610	1,100
Sandwich Islands.....	13,243	2,728
China.....	23,000	3,877
Whale-fisheries.....	4,098	1,903
Total.....	3,867,479	\$1,430,212
From warehouse.....	23,037	\$12,336
Not from warehouse.....	3,844,442	\$1,417,876

Duty on Teas.—Tea or coffee, shipped from the country of production, but not for a distinct and specific destination to persons or places in the United States, and transhipped at a foreign intermediate port for the United States, is, on importation, liable to a duty of 20 per cent. But if originally shipped in national vessels, or vessels placed on that footing by treaty, for a specific party and place in the United States, from the country of production, and so imported into the United States, these articles are entitled to free entry, although a mere transhipment may have taken place at a foreign intermediate port.

Tea or coffee, entitled to free entry when originally imported into the United States, afterward exported to a foreign port and brought back as part of the returning cargo of the exporting vessel, not having been landed abroad, is entitled to free entry on its reimportation under these circumstances. Tea and coffee, when imported direct from the place of their growth or production in American vessels, or in foreign vessels so entitled by reciprocal treaties, are exempt from duty.

Coffee, the product of a possession of the Netherlands, imported into the United States in a vessel of the Netherlands direct from such possessions, or from the Netherlands, is admitted free of duty under the tariff law of 1846, and the first article of the treaty between the United States and the Netherlands of August 26, 1852. Tea or coffee imported direct from the place of its production, in vessels of the kingdom of Prussia, and of the Hanseatic republics of Hamburg, Bremen, and Lübeck, is placed on the same footing with that imported in American or Dutch vessels.

Tea or coffee, the production of China, imported via Singapore, is admitted to free entry, if it be satisfactorily shown at the time of entry that it was laden on board the American importing vessel from Chinese boats or junks in Chinese waters, intended in good

faith to be conveyed therein direct to a specified port of the United States, as its ultimate destination.

Teak Wood, or Indian Oak, the produce of the *Tectona grandis*, a large forest tree that grows in dry and elevated districts in the south of India, the Burman empire, Pegu, Ava, Siam, Java, etc. Teak timber is by far the best in the East; it works easily, and, though porous, is strong and durable; it is easily seasoned, and shrinks very little; it is of an oily nature, and therefore does not injure iron. Mr. Crawford says that in comparing teak and oak together, the useful qualities of the former will be found to preponderate. "It is equally strong, and somewhat more buoyant. Its durability is more uniform and decided; and to insure that durability it demands less care and preparation; for it may be put in use almost green from the forest, without danger of dry or wet rot. It is fit to endure all climates and alternations of climate."—See TREGOLD'S *Principles of Carpentry*; CRAWFORD'S *Eastern Archipelago*; REES' *Cyclopædia*. The teak of Malabar, produced on the high table-land of the south of India, is deemed the best of any. It is the closest in its fibre, and contains the largest quantity of oil, being at once the heaviest and the most durable. This species of teak is used for the keel, timbers, and such parts of a ship as are under water; owing to its great weight, it is less suitable for the upper works, and is not at all fit for spars. The teak of Java ranks next to that of Malabar, and is especially suitable for planking. The Rangoon or Burman teak, and that of Siam, is not so close-grained or durable as the others. It is, however, the most buoyant, and is therefore best fitted for masts and spars. Malabar teak is extensively used in the building-yards of Bombay. Ships built wholly of it are almost indestructible by ordinary wear and tear, and instances are not rare of their having lasted from 80 to 100 years. They are said to sail indifferently, but this is probably owing as much to some defect in their construction as to the weight of the timber. Calcutta ships are never wholly built of teak; the timbers and frame-work are always of native wood, and the planking and deck only of teak. The teak of Burma, being conveyed with comparatively little difficulty to the ports of Rangoon and Maulmain, is the cheapest and most abundant of any; and it is mainly owing to the facility with which supplies of it are obtained that ship-building is now carried on so very extensively at Maulmain. It is largely exported to Calcutta and Madras.—See RANGOON. A species of timber called African teak is exported from the west coast of Africa; but in point of fact it is not teak, and it is destitute of several of its most valuable properties. It is, however, for some purposes, a useful species of timber.

Teasel, or Fullers' Thistle (Ger. *Weberdistel*, *Kratzdistel*; Fr. *Chardon à carder*; It. *Cardo da cardare*; Sp. *Cardencha*, *Cardo peinador*). This plant, which is cultivated in the north and west of England, is an article of considerable importance to clothiers, who employ the crooked awns of the heads for raising the nap on woolen cloths. For this purpose they are fixed round the periphery of a large, broad wheel, against which the cloth is held while the machine is turned. In choosing teasels, the preference should be given to those with the largest bur, and most pointed, which are generally called *male teasels*. They are mostly used in preparing and dressing stockings and coverlets; the smaller kind, commonly called the fullers' or drapers', and sometimes the *female teasels*, are used in the preparation of the finer stuffs, as cloths, ratens, etc.

Tehuantepec, Gulf of, a bay of the Pacific Ocean, Central America, bounded northwest by the state of Oaxaca, and northeast by the republic of Guatemala, lat. 16° N., long. 94° to 95° W. It receives the River Tehuantepec 10 miles south of the town.

The *Isthmus of Tehuantepec*, states of Oaxaca, Vera Cruz, and Tabasco, is the narrowest part of the land

separating the Gulf of Mexico from the Pacific, and is 130 miles across. It produces mahogany, fustic, logwood, cotton, drugs, cacao, indigo, gum, salt, with various kinds of grain; and its uplands abound with fine pastures. It is traversed almost throughout by the River Coatzacoalcas. This is one of the places where it has been proposed to unite the Atlantic and Pacific oceans by a canal, of which the river and some lakes would form a part.

This new inter-oceanic route is by the River Coatzacoalcas to Suchil, something over 100 miles from the sea, all the windings included, thence overland by stage to Ventosa, 130 to 140 miles; making in all about 240 miles from the Atlantic to the Pacific, to be accomplished in a day and a half from the sea. This distance will be materially diminished—the time still more so—on completion of a projected railroad from Minatitlan to Suchil, already surveyed.

From the mouth of the river to Minatitlan, twenty miles, the channel is excellent, capacious enough for the largest ocean steamships. The depth of water on the bar at low tide is 15 to 16 feet (Major Barnard says 13), and only one obstruction, a large rock, has been discovered, and that easily avoidable. From Minatitlan to Suchil the river becomes more difficult, and must be traversed by steamboats; those contemplated are, in size and fashion, not dissimilar from the Cumberland River boats. The *Leonora*, built in New York, and placed on this portion of the river a short time since, had proved of too large draught. The current is about two miles and a half an hour—from Suchil to Minatitlan, thirty-six hours. These are the termini of the projected railway, by which, when completed, a distance of 45 miles will be saved.

From Suchil to Ventosa, on the Pacific, 130 to 140 miles, the route is by the newly-made stage-road over a rough, sometimes mountainous country. The heaviest work has been on this end of the road, where also the River Puerta, fordable at times, but high and marshy in the rainy season, is to be spanned by a bridge a mile and a half in length. Some compensation is made on the other side of the mountain, however, by an old road, which has proved available from Chivela Pass to the Pacific plain. The time contracted for on the stage-road is five miles per hour—twenty-six to twenty-eight hours; between Minatitlan and Suchil the passage by steamboat will be from six to eight hours, in all about thirty-five hours, or a day and a half from ocean to ocean. The harbor of Ventosa is good, but a breakwater will be necessary. As to the probable amount of travel and business on the Tehuantepec road, when in full operation, we have no further information than is already, in various speculations, before the public. The shortest route from England, New York, and New Orleans, to the ports of the Pacific, the most flattering expectations are of course entertained respecting it.

The present population of the territory of Tehuantepec is estimated at 50,000, descendants, for the most part, of the original Aztecs. They are gregarious in their habits, living in communities numbering 3000 to 4000 each, and distant from each other five to ten miles. They are industrious, kind-hearted, and docile, but very thriftless. The government is, of course, that which at any time our *mobile* Mexican neighbors may chance to have. In general, the rights and privileges of the old Spanish colonial towns are fully enjoyed. Titles to landed property are good, and always respected. The town of Minatitlan, the capital and emporium of the territory, has at present a population of about five hundred. The commerce in the native products of the country, mahogany, dyewoods, coffee, etc., is large and increasing. The last quarter Mr. P. cleared twelve American vessels, averaging 200 tons each, and the foreign export business was about the same. The government, a short time since, appropriated the handsome sum of \$50,000 for the erec-

tion of a new custom-house, the foundation of which is already laid. On the whole, what with present business and future expectations, our Tehuantepec neighbors are evidently looking up.—*United States Consul at Minatitlan.*

Tehuantepec Route.—The following figures show the distances on the Tehuantepec route from New York to San Francisco:

	Miles.
From New York to the mouth of the Coatzacoalcas	2275
Transit distance	236
Ventosa to San Francisco	2804
Total	4815

Telegraph. Long before the electric telegraph had been imagined, the art of rapidly conveying intelligence from point to point had occupied the attention of mankind, and various expedients for the accomplishment of this object had been devised. The most primitive modes of telegraphing were by means of signal-fires, torches, trumpets. More recently, since the invention of gunpowder, the cannon and sky-rockets have been used. On the invention of the aerial telegraph, or semaphore, these means were abandoned.

In the year 1684 Dr. Hooke described a plan for an aerial telegraph, and about 1704 M. Amontons instituted experiments with the same end in view. However, neither of these plans were carried into effect; and it was not until 1794 that the semaphore was actually used. In that year an aerial telegraph, the invention of M. Claude Chappé, was employed for the transmission of intelligence between Paris and Lille; the conveyance of a signal from one of these places to the other occupying only two minutes. Semaphores, mostly modifications of the plan of Chappé, were soon in use throughout Europe—in England, in 1795; Denmark, in 1802; India, in 1823; Prussia and Austria, about 1833; and Russia, in 1839.

This method of telegraphing is still in use, but is rapidly being superseded by the electric telegraph. In 1852 the only aerial telegraph line in England was between Liverpool and Holyhead. This has now, we believe, been superseded by the establishment of electric communication between those two places.

The cost of working the aerial telegraph was enormous. The line above mentioned cost in the vicinity of £1500 (about \$7500) per annum; and a similar line, between London and Portsmouth, cost £3300 (about \$16,500) per annum.

These telegraphs were necessarily imperfect; being limited in their power of conveying intelligence, exceedingly slow, and liable to total interruption by storms of rain and snow, fogs and darkness.

The idea of the employment of electricity as a means of conveying intelligence to a distance appears to have been long entertained, and experiments to ascertain the practicability of electrical communication between distant places were early made by scientific men throughout the civilized world. In 1729 Grey and Wheeler discovered that a current of electricity could be made to flow through considerable lengths of wire. In 1746 Winckler at Leipsic, and Le Monnier at Paris, experimented on the same subject of the transmission of the electric current through conducting bodies. In 1747 Dr. Watson, in England, repeated and extended these experiments, sending a current through two miles of wire and two of earth; sending shocks across the Thames and the New River. Dr. Franklin in 1748, and De Luc in 1749, repeated many of these experiments. In addition, experiments bearing more or less on the subject of electric telegraphy were made by Lesage in 1774, Reusser in 1794, Cavallo in 1795, Betancourt in 1798, Söenmering in 1807, and Prof. Oersted in 1819.

The first electric telegraph actually applied seems to have been the invention of M. D. F. Salva. Humboldt says his telegraph was established between Madrid and Aranjuez in 1798—a distance of about 26 miles.

In 1816 Francis Ronalds, of Hammersmith, England, constructed a telegraph of eight miles in length. This

telegraph was one of the best that had then been invented, and was capable of transmitting intelligence with considerable rapidity. In 1823 he urged the importance of his invention for government purposes, writing to Lord Melville on the subject, but without effect.

In 1827 Harrison G. Dyer, an American, constructed a telegraph on Long Island, using frictional electricity. The line was about two miles in length.

Previous to 1809 no mode of electric telegraphing capable of any extended use had been discovered. The principal cause of failure seems to have been in the employment of frictional electricity, which is, on account of its high intensity, confined with great difficulty to conducting bodies, rapid and incontinuous in its action, and, from its small quantity, devoid of energetic force.

Sömmering made a step forward by his application of galvanism to the purposes of telegraphing. In 1809 he constructed, at Munich, a telegraphic apparatus, using 35 wires. The signals were made by the decomposition of water in 35 tubes, which were in connection with the 35 wires of the line. Telegraphs employing the pure galvanic force were also invented by Schweigger, De Haer, R. Smith (Scotland, about 1843); Bain, 1846; and Morse, 1849.

Bain's was the only telegraph on this principle that was extensively used. He used a very simple apparatus, receiving the galvanic current upon chemically-prepared paper, where it made a light-blue mark. A combination of dots constituted his alphabet. This telegraph was exceedingly rapid, being capable of transmitting 1200 letters per minute. In 1850 about 200 miles of telegraph in England, and 1500 in America, were worked under Bain's patents. His plan has gone now almost entirely out of use, other and better instruments superseding it.

The property which lightning possesses of reversing or destroying the poles of the natural magnet, and of imparting magnetism to iron, had long been known; but not until 1820 was the fact turned to any useful purpose. Professor Oersted, of Copenhagen, discovered, during 1819, that if a wire charged with electricity is placed parallel to a magnetic needle, the needle will deviate from its natural position, tending to assume a position at right angles with the conducting wire; and that this deviation follows a regular law. Proceeding on the groundwork of Professor Oersted, many other discoveries were made by Arago, Ampère, Faraday, Davy, Sturgeon, and Professor Henry.

Arago and Ampère in France, and Sir H. Davy in England, discovered that a current of electricity would render steel magnetic; and Ampère found that by coiling the wire in the form of a helix round steel the effect was greatly increased. William Sturgeon, of London, in the year 1825, discovered and constructed the electro-magnet. The electro-magnet is one of the most valuable parts of the electric telegraph now in use, and has entered more or less into nearly every telegraph invented since its discovery.

Oersted's great discovery gave a new direction to the science of electric telegraphing. Galvanic telegraphs were, in turn, discarded, and magneto-electric telegraphs took their place.

Ampère was the first to make use of Oersted's discovery in telegraphing. In 1820 he invented a telegraph, using 36 magnetic needles. His plan was not practically carried into effect.

Baron de Schilling invented a needle telegraph in 1832, at St. Petersburg. His instrument had five needles, which, by their vibrations to the right or left, indicated signals. He afterward improved his instrument, using but one needle.

In 1837 Dr. Steinheil had a telegraphic instrument working a distance of 12 miles. His telegraph of one wire, and either one or two magnetic needles, as might be desired, made permanent marks on paper, and also telegraphed by sound. When writing, his needles were

furnished with ink-tubes, and by their motions marks were recorded on paper; when telegraphing by sound, the needles were made to strike bells of different tones. He used the earth as part of the circuit. This was very nearly a perfect instrument, and is infinitely superior to the majority of telegraphic instruments since invented.

June 12, 1837, Messrs. Cooke & Wheatstone, in England, obtained a patent for "improvements in giving signals and sounding alarms in distant places, by means of electric currents transmitted through metallic circuits." This seems to have been the first telegraph that was patented in Europe. Cooke & Wheatstone's first telegraph was a needle telegraph. They used five magnetic needles and five wires. An electro-magnet was used to sound an alarm. A second patent, taken out by Cooke only, was issued in April, 1838. These instruments were found to be very imperfect, and after a short trial were abandoned.

A different form of telegraph, the invention of the same parties, having but two needles, has, until very recently, been in general use in England; but the Morse system is now being adopted there and upon the Continent.

The last patent taken out by Cooke & Wheatstone is dated May 6, 1845. During the same year an act of Parliament was obtained incorporating "The Electric Telegraph Company," working these patents.

The needle telegraph is, comparatively, very slow; the average speed per message being but 14 words per minute. It is, however, yet extensively used in England. Cooke & Wheatstone took out a patent in America, but their instrument was never practically used in the United States.

Since Cooke & Wheatstone's first patent, upward of 40 patents have been taken out in England alone. Very few of the instruments since invented are in practical operation.

Morse's Telegraph.—In the year 1832 Professor S. F. B. Morse first conceived the idea of an electric telegraph; and in the year 1835 he had a telegraph constructed, the basis of his present simple and beautiful instrument. In September, 1837, he exhibited his instrument at the New York University, working through 1700 feet of wire.

Morse applied for a patent in the United States in April, 1838. This application was afterward withdrawn, and his patent was not taken out until June, 1840. In 1842 he petitioned Congress, who appropriated \$30,000 to his use for the construction of a line between Washington and Baltimore. In June, 1844, Morse had his invention in successful operation between Washington and Baltimore—a distance of 40 miles. This was the only line in the United States constructed under government patronage.

The Morse Electro-magnetic Telegraph consists mainly of two parts—the receiving magnet and the registering apparatus. The receiving magnet is surrounded by fine wire, and is of the horseshoe form. An adjustable armature is placed before the poles of the receiving magnet. The main circuit passes unbroken through the receiving magnet to the next station.

The registering apparatus has a powerful horse-shoe magnet placed vertically. Above the poles of the magnet is an armature attached to one end of a movable lever, on the other end of which is a steel style for the purpose of impressing marks on paper placed immediately above the style. Intelligence is transmitted by means of breaking and closing the main circuit. For this purpose a small key is employed. When this key is pressed down, the current passes to the receiving magnet of the distant station, causing the receiving magnet to close the local circuit. On the local circuit being closed, the registering magnet becomes excited and attracts the armature downward, causing a mark on the paper, placed above the lever of

the armature. On the circuit being opened again by the operator's raising the key, all returns to its usual quiescent position. This operation is performed at every closing and breaking of the circuit. By keeping the key depressed for an instant, a dot is made; if it is depressed for a longer time, a line. A combination of dots and lines forms the telegraphic alphabet used with this system. The speed of this instrument is, in the hands of an expert, about twenty words per minute.

Professor Morse's instrument was for some time the only instrument in use in this country, and is now used to a greater extent than all other telegraphs combined.

The House Telegraph, the invention of Royal E. House, differs materially from all previously invented telegraphic instruments, printing messages in the ordinary Roman letters. Directly under a set of keys like those of the piano-forte is a shaft inclosed by a cylinder. This shaft is made to revolve rapidly by means of a treadle. The shaft and cylinder are so arranged that the cylinder can be arrested while the shaft still revolves. On one end of this cylinder is a brass wheel having fourteen teeth. A spring is so arranged, that when the shaft and cylinder revolve it will alternately strike a tooth of this brass wheel and pass into an open space; thus alternately breaking and closing the electric circuit. On the cylinder two lines of teeth project, fourteen in each line, one for each tooth and each space of the circuit wheel. These teeth are immediately below the keys, so that by pressing down a key the motion of the cylinder is stopped. By making the cylinder revolve, the circuit is rapidly broken and closed, which continues till a key is depressed. On the key being released, the revolution goes on as before. The electrical pulsations produced by the breaking and closing of the circuit are conveyed to the magnet of the distant instrument, each pulsation causing the magnet to act.

The type-wheel, a wheel having the letters of the alphabet cut upon it, is made to revolve, but is so checked by an escapement wheel that only one letter goes forward at a time. This escapement is connected by a lever with the piston of an air-chamber. This piston is caused to move horizontally backward and forward, by means of compressed air admitted alternately on different sides of the piston. A valve attached to the magnet regulates the pressure of the air on the piston. Every breaking and closing of the circuit causes the magnet, piston, and escape to act, so that for every time the circuit is broken or closed the type-wheel is advanced one letter. If any letter of the type-wheel is placed in a certain position, and the key corresponding to it is depressed, raised, and again depressed, the circuit wheel at the transmitting station and the type-wheel at the receiving station make one revolution, bringing the letter back to its former position. Any other letter is brought into the required position by pressing down its key on the keyboard of the instrument. The letter first brought into position is the dash. The type-wheel is stopped at the dash, after which the printing goes regularly on as the keys are depressed. Immediately before the type-wheel is the press, containing a narrow strip of paper. At the depression of a key the type-wheel stops, sets a crank in motion, which presses the paper forcibly against the letter opposite to it on the type-wheel. On the key being raised, the type-wheel revolves until the depression of another key, which again unlocks the press and prints a letter.

The electric current is used in this instrument to preserve equal time, that the letters in one machine may correspond to those in the other. The number of pulsations required to indicate a succession of letters is exceedingly unequal; from *a* to *b* requires one, from *A* to *A* twenty-eight pulsations.

House obtained a second patent in December, 1852. The House instrument is used to a limited extent in

this country. It is still less used in England, where it is known as Jacob Brett's Telegraph. This instrument is more rapid than Morse's, printing accurately from twenty-five to thirty words per minute.

The Hughes Telegraph is the invention of David E. Hughes, of Kentucky, who obtained a patent in 1855 and in 1858. This, like the House Telegraph, is a printing telegraph, but in principle and in mechanism it is totally unlike that instrument.

The Hughes system of telegraphing combines not only all the advantages of all other existing systems, but reduces the labor which electricity has to perform to the lowest possible point. In all other systems it requires several distinct electrical impulses to form a single letter. In the House system, which is based upon the number of waves sent, the average number of impulses required to determine the intended letter is seven: in the Morse system, which is based upon the number and duration of the waves sent, the average is three and a half. To print a letter every closing or breaking of the circuit, so that every electrical impulse should determine a letter, has long been a desideratum, more particularly since the discovery that it requires an appreciable time to charge a long wire with electricity; so that on long circuits we should be obliged to send a less number of electrical waves in a given time than on a short circuit. On submerged cables this and other effects are still more marked, reducing the speed of transmission upward of two-thirds. If every wave, instead of every three waves, produced a letter, it is evident enough that the speed of transmission through the cable would be equal to that of the air-lines with the systems now in use, and that the speed of the air-lines would be increased two-thirds. The Hughes system uses but one electrical impulse per letter, and by the use of a new and exceedingly sensitive magnet can work on lines of far greater length, and with a rapidity exceeding that of any telegraph now in existence.

To carry out the one-wave system, it is essential that the type-wheels of the different instruments should revolve at precisely the same speed, so that the same letter on each type-wheel should be opposite a given point at the same time. Clock-work governed by means of a pendulum would be too slow for any practical use. Instead of a pendulum, Hughes employs as a governor a vibrating spring. This spring allows the type-wheels to revolve with any desired degree of rapidity. This governor is dependent for its correct action on a law of acoustics, viz., "that a certain number of vibrations per second produces a certain musical tone; and if there are two or more springs of the same tone, they invariably give the same number of vibrations per second." If these springs by their vibrations are made to unlock an escapement, it follows that all instruments governed by springs of the same tone must revolve in exactly the same time. The type-wheels, thus governed, revolve at the rate of 100 revolutions per minute, and the average number of letters sent at each revolution being two, it follows that the speed of the instrument is 200 letters per minute, equal to about forty words.

This is about the speed that an ordinary operator touches the keys, but not by any means the utmost speed of the instrument, as the type-wheels would revolve with undeviating accuracy at a speed of 500 instead of 100 revolutions per minute.

The magnet of the Hughes instrument, which receives the electric current from the distant station, is a combination of a natural and an electro-magnet. The attractive power of the natural magnet, exerted through the electro-magnet, holds a small armature in contact with the poles of the electro-magnet. A spring attached to the armature is so adjusted as nearly to pull the armature away from the poles of the electro-magnet. The slightest change in polarity causes the spring to pull the armature away from its resting-

place. The armature is restored to its place by means of a lever, which acts upon it at the instant it is pulled away from the electro-magnet's poles. This arrangement employs the current of electricity merely to effect a slight change in the force by which the armature is held to the magnet's poles, and it is so remarkably sensitive that the mere contact of a piece of zinc against a copper wire has been found amply sufficient to work the magnet. From its sensitiveness it requires scarcely a tenth of the battery-power used by the most sensitive of other systems.

Another wonderful and beautiful feature of this instrument is its power of writing both ways, sending and receiving messages at the same instant over one wire. This instrument thus doubles the capacity of the wire, making it do the service of two; transmitting with certainty and accuracy 200 letters each way per minute, an actual transmission of 400 letters, or 80 words, per minute. This result is accomplished by means of a peculiar arrangement of the batteries and magnets, so that the current from the transmitting station does not influence its own magnet, while it affects that of the receiving station, each magnet thus being placed under control of the distant operator.

The machinery which accomplishes results so astonishing is simple in the extreme. It consists mainly of four clock-wheels used to turn the type-wheel. These wheels are governed by the vibrating spring before explained. At the moment a current from the distant station enters the magnet the armature flies off, opens a detent which causes a small press to be locked to the wheel-work of the instrument, and then to press a strip of paper against the letter of the type-wheel opposite the press at that instant. A current is sent upon the line by means of keys arranged like those of a piano, and having the letters of the alphabet engraved upon them. At the moment one of these keys is depressed the magnet of the receiving station is made to act, and the press to print the letter corresponding to the touched key. The receiving operator has nothing to do but to tear off the messages as they arrive.

This instrument, after more than ten years of persevering thought and labor, is at last perfected, and now fulfills all the requisites of a perfect telegraph instrument—more than realizing all that has ever been claimed for it by the inventor. The remarkable ingenuity, talent, and knowledge of the principles of electrical science displayed by Professor Hughes, in the invention of his beautiful machine, deservedly place him foremost in the ranks of the laborers in this branch of art, and justify his claim of having invented a telegraph instrument which, for speed, neatness, and economy, is without a rival.

The numerous advantages that the Hughes instrument possesses over all other existing systems, particularly in the matter of speed and power of working on long circuits, will probably give it the preference in the selection of telegraphic machines with which to work the Atlantic Submarine cable. Indeed it may well be doubted if any other system can be made practically available for that purpose.

The following brief summary of the telegraph lines of the world at the close of the year 1857 will furnish some idea of the importance of the telegraphic art, and of its claims to public attention:

United States have upward of 35,000 miles of telegraph, employing a capital, as near as can be ascertained, of \$4,000,000. The instruments used are the Hughes, House, and Morse machines.

British Provinces have 5000 miles of telegraph, employing a capital of \$500,000.

Cuba and Mexico have short and unreliable lines, which are controlled by the governments.

England has about 10,000 miles of telegraph lines—upward of 40,000 miles of conducting wire—employing a capital estimated at a million and a half pounds sterling. In England the government has the power of ordering all government messages to take precedence of any other communications,

and when deemed necessary all telegraphs are required to be placed at the sole disposal of the government. Only one instance of this kind has occurred; on the occasion of the anticipated Chartist riots in April, 1849.

France has 8000 miles of telegraph in operation, under the exclusive control of the government.

Belgium has about 550 miles of telegraph lines, constructed and controlled by the government.

Germany and Austria have nearly 10,000 miles of telegraph, controlled by the governments.

Prussia has about 4000 miles of telegraph in operation. The wires are mostly underground—controlled by the government.

Holland has 600 miles of telegraph.

Saxony and Bavaria have government lines of about 1700 miles.

Italy has 2500 miles, controlled by its different governments.

Switzerland has 1500 miles, under control of the Federal government.

Spain and Portugal have some 800 miles—controlled by the governments.

Russia.—Of the number and extent of Russian telegraph lines little is known. As near as can be estimated, they extend over 5000 miles—under government control.

India has now in operation 5000 miles of telegraph, constructed and controlled by the East India Company.

Australia has 500 miles in operation, and 800 miles nearly or quite completed.

RECAPITULATION.

	Miles.
America	45,000
England	10,000
France	8,000
Germany and Austria.....	10,000
Prussia	4,000
Russia	5,000
Rest of Europe	7,650
India.....	5,000
Australia	1,200
Other parts of the world	500
Total length of telegraph lines...	95,350

The number of messages passing over all lines in the United States is estimated at about 4,000,000 per annum.

In addition to the land lines, numerous submarine cables have been laid in different parts of the world. Annexed is a brief account of the different submarine cables, lengths, when laid, etc.

The first submarine cable was laid between Dover, England, and Calais, France, during August, 1850. This cable was about 24 miles in length. Electrical communication between England and France continued uninterrupted for about a month, when the cable was broken. Upon examination it was found that the chafing of the cable against rocks off Cape Grienez had caused it to part. A second cable was immediately relaid, larger and stronger than its predecessor, which has remained in good working order up to the present time.

In May, 1852, a submarine cable was successfully laid between Holyhead and Howth, thus connecting England with Ireland. This cable is 64 miles in length.

During May, 1853, "the Port Patrick and Carrickfergus" cable, 24 miles in length, connecting Scotland and Ireland, was laid.

In June, 1854, a cable 115 miles in length was laid between Orfordness, England, and the Hague, Holland.

A third cable, 75 miles in length, was laid in 1852, between Dover and Ostend.

In 1854 cables from Italy to Corsica, thence to Sardinia, were, after much difficulty, successfully laid down, a distance of about 75 miles.

The New York, Newfoundland, and London Telegraph Company, in 1855 made an attempt to connect the islands of Newfoundland and Cape Breton. The attempt was unsuccessful. In 1856 another attempt was made, resulting in complete success.

Summary of Submarine Cables.—The following is a correct table of the number and length of the submarine cables laid down in different parts of the world:

By the act of February, 1857, "all former acts authorizing the currency of foreign gold and silver coins, and declaring the same a legal tender in payment of debts, are hereby repealed."

In the absence of any special agreement, the only payment known to the law is by cash. The tender should properly be in cash, and must be so, if that is required. A tender of a larger sum than is due, with a requirement of change or of the balance, is not good. A lawful tender, and payment of the money into court, is a good defense to an action for the debt. But the creditor may break down this defense by proving that he demanded the money of the debtor, and the debtor refused to give it, subsequently to the tender.—*PARSONS on Mercantile Law.*

Teneriffe, the largest island of the group called the Canaries, lies between Canary and Gomera. It is of an irregular shape, 60 miles in length, with an extreme breadth of 30 miles. Not more than one-seventh is cultivable. A chain of mountains traverses the island in the direction of its greatest length, and in the middle of the broadest part rises the celebrated peak locally known as the Pico de Teyde, which, with its supports and spurs, occupies nearly two-thirds of the whole island.

The Canary Islands are in the North Atlantic Ocean, between lat. 27° 40' and 29° 30' N., and long. 13° 30' and 18° 20' W. The names of the seven principal

islands, their respective area in English square miles, and their population in 1835, are given in the following table:

Islands.	Area.	Population.
Teneriffe.....	877	85,000
Grand Canary.....	758	68,000
Palma.....	718	33,000
Lanzarote.....	323	17,400
Fuerteventura.....	326	13,800
Gomera.....	169	11,700
Hierro.....	83	4,400

Formerly the total annual produce was estimated at about 40,000 pipes, of which 25,000 pipes were produced in Teneriffe. Between 8000 and 9000 pipes were exported. The chief exports are wine, cochineal, barilla, and orchilla. The imports consist of woolen, silk, cotton, and iron manufactures, glass, etc.

Principal Ports.—The ports of Santa Cruz de Teneriffe, Orotana, Ciudad Real de los Palmas, Anciciffe de Langarole, Puerto de Cabras, and San Sebastian, in the Canary Islands, having been declared free by royal decree proclaimed on the 10th of October, 1852, and vessels of the United States and their cargoes arriving in said ports being thus placed on the same footing with those of Spain, no discriminating duty is levied on Spanish vessels and their cargoes arriving from those ports in the ports of the United States; provided that on every such arrival the required consular certificate be filed with the collector of the port.—*See CANARIES.*

COMMERCE OF THE UNITED STATES WITH TENERIFFE AND THE CANARIES, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.			Tonnage cleared.	
	Domestic.	Foreign	Total	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	\$74,828	\$48,637	\$123,465	\$265,089	\$7,284	....	3,003	92
1822.....	55,937	29,140	115,077	241,195	3,650	\$470	2,849	....
1823.....	53,002	21,216	79,218	203,434	....	600	2,296	....
1824.....	42,845	20,144	62,989	95,573	6,767	3,000	1,732	....
1825.....	70,380	21,271	91,651	165,718	6,240	....	3,067	130
1826.....	42,761	21,742	64,503	173,369	4,607	....	1,901	119
1827.....	46,163	39,817	85,980	123,360	4,316	4,064	2,163	....
1828.....	33,529	8,351	42,080	222,740	2,350	1,700	1,516	....
1829.....	42,830	23,317	66,155	25,283	5,108	....	1,714	....
1830.....	19,049	610	19,660	99,878	....	....	796	....
Total...	\$516,324	\$234,445	\$750,769	\$1,615,725	\$43,322	\$10,434	21,037	341
Sept. 30, 1831.....	\$54,931	\$3,446	\$58,377	\$115,159	....	....	1,418	....
1832.....	14,567	7,351	22,418	151,837	\$6,975	\$2,160	925	....
1833.....	24,513	15,355	39,668	148,090	8,000	....	2,342	97
1834.....	20,638	787	21,425	148,180	....	....	1,826	352
1835.....	40,195	12,710	52,905	196,862	4,842	679	2,151	164
1836.....	21,637	4,264	25,951	203,953	2,061	670	1,615	....
1837.....	27,553	7,648	35,201	285,276	7,200	....	2,157	....
1838.....	34,619	18,696	53,305	151,366	12,540	593	2,177	....
1839.....	15,572	11,939	27,511	156,765	11,652	190	1,192	....
1840.....	11,816	11,679	23,355	150,522	9,000	....	713	368
Total...	\$245,891	\$94,265	\$340,156	\$1,730,950	\$62,870	\$4,232	16,516	1011
Sept. 30, 1841.....	\$12,290	\$3,499	\$15,789	\$144,654	....	....	1,200	....
1842.....	12,723	518	13,241	91,411	....	....	426	473
9 mos., 1843*.....	7,099	3,925	11,024	15,058	....	....	456	....
June 30, 1844.....	14,493	1,042	15,535	61,633	....	\$1,900	861	148
1845.....	5,895	....	5,895	55,032	....	....	467	387
1846.....	13,072	4,840	17,912	62,075	....	....	645	....
1847.....	15,148	....	15,148	61,864	....	....	856	....
1848.....	9,921	1,229	11,150	35,061	....	....	839	115
1849.....	17,840	654	18,494	88,919	....	....	912	235
1850.....	20,524	5,065	25,589	55,228	\$4,840	....	647	1376
Total...	\$129,005	\$20,772	\$149,777	\$650,970	\$4,840	\$1,900	7,339	2734
June 30, 1851.....	\$13,540	\$5,639	\$19,179	\$27,718	\$5,506	....	753	157
1852.....	16,471	45	16,516	51,015	....	....	713	1133
1853.....	23,215	1,000	24,215	64,021	....	\$460	1,046	1235
1854.....	19,316	804	20,120	39,698	....	....	1,046	....
1855.....	43,211	3,086	46,297	45,155	....	....	2,147	1356
1856.....	30,941	2,505	33,446	16,704	....	....	2,346	1113
1857.....	69,027	913	69,942	44,065	....	....	3,749	1090

* Nine months to June 30, and the fiscal year from this time begins July 1.

Tennessee, one of the United States, lies between lat. 35° and 36° 30' N., and long. 81° 30' and 90° 10' W. Its mean length is 400 miles, and its mean breadth 114 miles, containing 44,000 square miles. Population in 1790 was 35,691; in 1800, 105,602; in 1810, 261,727; in 1820, 422,818; in 1830, 681,904; in 1840, 829,210; and in 1850, 1,002,625. The soil is various, but generally fertile. The western part has a dark rich soil; in the middle are great quantities of excellent land. In

the eastern part the mountains are mostly sterile, but the valleys are very fertile. The country has a great profusion of native timber, poplar, hickory, walnut, oak, beach, sycamore, locust, cherry, sugar-maple, etc. There are many medicinal plants. The soil produces abundantly cotton and tobacco, the staple commodities of the State; also grain, grass, and fruit. The eastern portion of the State contains the principal mineral deposits, among which are ores of iron, copper, lead, and beds

of coal. Mineral springs occur; granite and limestone abound. In the latter formation are many caverns of great extent; some have been explored for miles. There were in this State in 1850, 5,175,173 acres of land improved, and 13,808,849 unimproved land in farms. Cash value of farms, \$97,851,212; and the value of implements and machinery, \$5,360,210. *Live Stock*.—Horses, 270,636; asses and mules, 75,303; milch cows, 250,456; working oxen, 86,255; other cattle, 414,051; sheep, 811,591; swine, 3,104,800; value of live stock, \$29,978,016.

Agricultural Products, etc.—Wheat, 1,619,386 bushels; rye, 89,137; Indian corn, 52,276,228; oats, 7,703,086; barley, 2737; buckwheat, 19,427; peas and beans, 369,321; potatoes, 1,067,844; sweet potatoes, 2,777,716; rice, 258,854 lbs.; value of products of the orchard, \$52,894; produce of market gardens, \$97,183; pounds of butter made, 3,139,585; of cheese, 177,681; sugar, 248 hhds.; maple-sugar, 158,557 lbs.; molasses, 7223 gallons; beeswax and honey, 1,036,572 lbs.; wool, 1,364,378 lbs. produced; cotton, 194,532; flax, 368,131; silk cocoons, 1923; hops, 1032; tobacco, 20,148,932 lbs.; hay, 74,091 tons; hemp, 597 tons; clover-seeds, 5096 bushels; other grass seeds, 9118; flax-seed, 18,904; and were made, 92 gallons of wine; value of home-made manufactures, \$3,137,000; and of slaughtered animals, \$6,401,000.

The Tennessee River has its chief source in this State; it is 1250 miles long, and is navigable for steamboats to Florence in Alabama, 276 miles above its entrance into the Ohio, and from the head of the Muscle Shoals for boats 250 miles farther. Cumberland River, which, rising in Kentucky, runs mainly in Tennessee, is navigable for steamboats 198 miles to Nashville, and for boats 300 farther. It enters the Ohio River in Kentucky, 60 miles from the Mississippi River. The Holston, Clinch, French, Broad, and Hiwassee, are branches of the Tennessee; Obion, Forked Deer, and Wolf rivers, in the western part of the State, flow into the Mississippi, and are navigable for boats.

Manufactures, etc.—There were in the State in 1850, 33 cotton factories, with a capital invested of \$669,600, employing 310 males and 581 females, producing 363,250 yards of sheeting, etc., and 2,326,250 lbs. of yarn, valued at \$510,624; four woolen factories, with a capital of \$10,900, employing fifteen males and two females, manufacturing articles valued at \$6310; 23 establishments making pig-iron, with a capital of \$1,021,400, employing 1822 persons, producing 30,420 tons of pig-iron, etc., valued at \$676,100; 16 establishments with a capital of \$139,500, employing 269 persons, and making 3384 tons of castings, etc., valued at \$264,325; 42 establishments with a capital of \$755,050, employing 786 persons, manufacturing 10,348 tons of wrought iron, etc., valued at \$670,618. Capital invested in manufactures, \$7,044,144; value of manufactured articles, \$9,443,701. There were in this State in 1857, 51 banks and branches, with an aggregate cash capital of \$10,576,000; and in January, 1856, 15 railroads, with 455 miles of road completed and in operation.

Teredo, or Ship Worm. The following account of this worm is from a paper written by James Jarvis, who has been engaged since 1849 in a series of experiments concerning the teredo or ship worm, by order of Commodore Smith, chief of the Bureau of Yards and Docks. In order to ascertain the best composition for resisting the attacks of the teredo upon wood, he painted a number of blocks and boxes with various compounds—some he left unprepared, and some partly painted—and sunk them in Elizabeth River in the month of April. "About the 12th June the blocks and boxes were generally lifted and examined, but he never was able to discover any of the animalcule (young teredo) until about the 20th of June. At this period of the year he generally discovered minute holes in the wood by the use of a magnifying glass. After this the creature daily grows ahead, for it has no powers

of locomotion; it grows like an oyster, and has a calcareous or shelly sheathing, which adheres to the surface of its burrow."

In Norfolk harbor, Virginia, they grow from six to twelve inches in length, and from three-eighths to half an inch in diameter. The wood excavated by one twelve inches long, in a season, amounted to more than a cubic inch, if in a solid piece. No signs of the teredo were discovered by him in wood deposited after. Mr. Jarvis supposes that the teredo commences to develop about the 1st of July, and continues until cold weather arrives; in Charleston, South Carolina, and further south, they develop during the whole year; whereas in the colder blasts, such as in the harbors of New England, they do but little injury, because the worm is feeble there, being like a fine thread. It is believed to be a native of the torrid seas. The teredo is not so destructive on piles sunk under water at New York city docks as those on the opposite side of the river, on the Jersey and Long Island shores; this is owing, Mr. Jarvis thinks, to the amount of filth carried down in the city sewers. In Boston, and Portsmouth, New Hampshire, harbor piles will stand twenty-five years. One open nail-hole in a sheet of copper upon a vessel's bottom will allow the worm access to pursue its work of destruction. All kinds of wood used in ship-building are attacked by it. To secure the bottoms of ships from the salt-water worm, and from coral deposits, Mr. Jarvis recommends putting three coats of white zinc paint on the dry bottom of the vessel, then copper them; and to make the whole invulnerable, put three more coats of white zinc paint upon the outer surface of the copper. To preserve piles, drive them with the bark on. There is no danger while the bark remains. The barnacle on piles does no injury. Charring is excellent, provided the fissures are well filled with hot coal tar or zinc paint, which will be found excellent to keep the shell-fish from the wood where piles may have the bark broken off before being driven.

Terra Japonica, the commercial name of catechu (cutch) and gambir. It is stated that it is obtained by boiling the wood of the trees of which it is a product. But catechu is also obtained direct from the tree by tapping in the same way as caoutchouc (India rubber). Terra japonica gives out the large portion of tannin which it contains more readily than oak bark or most other substances, and is, therefore, preferred by those tanners who work on the quick process. Later, also, it has been extensively used as a dye, producing a brown color.

Texas, the most southern State in the Union, is situated between lat. 26° and 36° 30' N., and between long. 94° and 107° W. from Greenwich, and contains 325,520 square miles.

Early History of Texas.—The regions which we now comprise under the name of Texas, to the northwest of the Gulf of Mexico, were called by the Spanish governor of Jamaica, Garay, when his Captain, Pineda (1519), had sailed along them, *Provincia de Amichel*. It is a name of the origin of which we are quite in the dark. Perhaps, also, the whole northern shore of the Gulf was comprised under it. This expression, *Provincia de Amichel*, was pointed out as the original Indian name of the land. Because it was discovered by the exertions of Garay, the Spanish geographers, therefore, gave to it also the Spanish name, *Tierra de Garay* (Garay's country), which name we see on many old maps round the whole northern shore of the Gulf, including Texas. When (about 1521) the King of Spain divided the discoveries and governments of Cortez and Garay, and put the Rio de las Palmas as the northern boundary of the government of Mexico, the countries to the north were very often called *El Gobierno del Rio de las Palmas* (the government of the Palm River); and this also included a great part of the countries to the north. Because, however, the efforts of Garay to form a province in the north were

unfortunate, and because all the first attempts toward the north were either made from Mexico or from the peninsula of Florida, so these two names prevailed, and divided the whole region among each other. The great conquerors of the north, Narvaez and De Soto, entered from Cuba and from the peninsula of Florida. The names *Provincia Amichel*, *Tierra Garay*, *Gobierno del Rio de las Palmas*, disappeared soon after, and every thing round the whole Gulf of Mexico, up to the Palms River in the west, was comprised under the general name of Florida. As soon as Mexican travelers traversed the Palms River they considered themselves to be in Florida. When Moscoso (1542) made his excursion from the Red River westward to the centre of Texas, he found there innumerable herds of buffaloes, and called this country, from which he returned to the east, *La Provincia de los Vaqueros* (the province of the Herds). Some authors consequently gave that name to what we now call Texas. The Spaniards in Mexico commonly called all those wild Indians to the north of the civilized empire of Montezuma *Los Indios bravos* (the savage Indians), or *Los Chichimecas*. The whole country north of the Palms River was, therefore, very often designated as "the Province of the Chichimecas, or of the Savage Indians" (*La Provincia de los Chichimecas, or de los Indios bravos*). It was a custom from which also grew out the name of the Rio Bravo. When the French, under La Salle, arrived on the coasts of Texas (1685), they took possession of it under the name and as a part of their great country, *La Nouvelle France* (New France); which name, according to their notions, covered as much ground as the name of Florida, according to the Spanish ideas; that is to say, the whole eastern half of North America. The French from this time considered Texas to be a part of their dominion as far south as the Rio Bravo, and called it also Louisiana, when they had erected their Mississippi colony after 1699, and had given to it officially that name after 1712. All their old maps of Louisiana go as far down as Rio Bravo, and include Texas. Meanwhile the Spaniards had, however, taken actual possession of that province, and gave another name to it.

Some believe the word Texas to be Indian, and say that when Alonzo de Leon, in 1689, arrived among them he heard them often use the word Texas as a term of love or friendship. Others suppose that the word is Spanish, and that it implies some indication of "the manner of the Indians in constructing or covering tents or wigwams." But this seems a not well-founded supposition; for the Spanish word *Teja* (*plur. Tejas*) does not appear to have any thing to do with a covering of a tent or wigwam; it means simply "a tile."—See YOKUM, *History of Texas*.

The first Frenchman who pronounced this name, in the year 1719, La Harpe (an officer in Louisiana, well known by his travels and writings), received it evidently through the Spaniards. He calls the country of the Cenis Indians *Las Tekas*. Some old French authors write also *La province de Lastikas*. In the year 1727, for the first time, a separate "governor for the province of Texas" alone was nominated; but this province extended then only as far south as the River Medina. The southwestern part of our present Texas belonged still for a long while to "the province of Coahuila."—YOKUM, I. 393.

It is supposed that with this establishment of Texas as a new and separate government for itself (in 1727) was also connected an introduction of a new name—of *Las Nuevas Filipinas* (the new Philippines), given to this government in honor of King Philip V. At least neither Barcia nor any other author used this name before this time, while we afterward find it repeatedly in official papers and documents. The old and popular name of *Los Texas* was, however, used besides it. We see both names still on maps of a very late date; as, for instance, on a Mexican map of the

year 1813, *Provincia de Texas o Nuevas Filipinas* (the province of Texas, or the new Philippines). Until 1824, the dominion of this name did, however, southward, not reach the Rio Bravo. The province of Coahuila and of Nuevo Sant Ander took away the whole southwestern quarter of Texas, as far east and north as the Rio Medina and the sources of the Colorado and Brazos. Eastward, toward Louisiana, the province of Texas and New Philippines extended to the neighborhood of the Red River, and on the shores of the Mexican Gulf to the Rio Calcasieu, and sometimes as far as the Merrmentau. In the year 1824, under the dominion of the Mexican Republic, the old connected provinces of Coahuila and Texas were again melted together into one state, under the name of *El Estado de Texas y Coahuila*. The southern part of our Texas, about the lower Rio Bravo, as far northeast as the Medina River, was not yet included in this name. It became a part of the new created *Estado de Tamaulipas*. Sometimes, and on some maps, it was tried at this period to apply to the whole of Texas the name of Fredonia, which was the particular name of Austin's colony. This has been done, for instance, in that otherwise excellent *Dictionnaire de Geographie*, edited by a society of French geographers. In the year 1836 Coahuila and Texas were divided again, and *Texas became a separate and independent State*, which was (1845) annexed to the United States, and received, then, after the war of 1846, its present boundaries. These boundaries extend from this time along the Gulf of Mexico, from the mouth of the Rio Bravo in the south to the mouth of the Sabina in the east. To show how far and in what manner the boundaries of this name and State were extended toward the interior does not belong to our hydrographical researches.—J. G. KOHL.

The general aspect of the country is that of a vast inclined plane, gradually sloping from the mountains eastward to the sea, and traversed by numerous rivers, all having a southeast direction. It may be naturally divided into three regions; the first, which is level, extends along the coast with a breadth varying from 100 to 80 miles, being narrowest at the southwest. The soil of this region is principally a rich alluvion, with scarcely a stone, and singularly free from stagnant swamps. Broad woodlands fringe the banks of the rivers, between which are extensive and rich pasture lands. The second division, the largest of the three, is the undulating prairie region which extends for 150 or 200 miles farther inland, its wide, grassy tracts alternating with others that are thickly timbered. Limestone and sandstone form the common substrata of this section. The third, or mountainous region, situated principally on the west and southwest, forming part of the Sierra Madre, or Mexican Alps, is but little explored. At its remote extremity it consists of an elevated table-land, resembling the vast steppes of Asia, except in their superior fertility. The mountain sides are clothed with forests, and there are few, if any districts of country of the same extent as Texas, with so little unproductive land.

The principal rivers in the State are the Sabine, Neches, Trinidad, Brazos, Colorado, Guadalupe, San Antonio, Nueces, and the Rio Grande. The Neches is navigable for small steamboats for more than 100 miles, Trinidad River for 300 or 400 miles, and the Brazos for half that distance. The Rio Colorado is obstructed by a raft 10 miles from its mouth; it will, when removed, be navigable for steamboats 200 miles to Austin City. The San Antonio and Nueces are navigable for only a short distance; but the Rio Grand del Norte, a noble stream, having a course of 1800 miles, will most probably, though in parts broken by rapids, become hereafter an important commercial channel. Galveston Bay, into which the Trinidad flows, is about 35 miles in length, and from 12 to 18 miles wide. The Gulf of Mexico bounds its southeastern border, on which are many bays and some good harbors. The Texan year

is divided into wet and dry seasons; the former lasts from December to March, and the latter from March to December. Snow is seldom seen except on the mountains. The country is in most parts covered with a luxuriant native grass, and it is amply supplied with timber, among which are the live oak, white, black, and post oak, hickory, walnut, sycamore, caoutchouc, etc., and on the high lands pine and cedar. The "Cross Timbers" are two lines of continuous forests of great extent. Cotton and sugar-cane are the great agricultural staples, both of which attain to great perfection. The grains chiefly cultivated are Indian corn and wheat. Peaches, melons, figs, oranges, lemons, pine-apples, dates, olives, grapes, etc., grow abundantly. Great numbers of cattle and horses are reared, and vast herds of buffaloes and wild horses wander over the prairies, while deer and game are abundant. Among its minerals are coal of a superior quality, iron ore, limestone, granite, slate, gypsum, etc. Silver

mines have been wrought in the mountains, and bitumen and salt are abundant.

Manufactures, etc.—There were in the State in 1850 one woolen factory, with a capital invested of \$8000, employing four males and four females, manufacturing 14,000 yards of cloth, etc., valued at \$15,000; two establishments with a capital of \$16,000, employing 35 persons, and making 200 tons of iron castings, etc., valued at \$55,000; 88 flouring and grist mills, 89 saw-mills, 22 tanneries, 34 printing-offices, three tri-weekly, two semi-weekly, and 32 weekly publications. Capital invested in manufactures, \$613,238; value of manufactured articles, \$1,202,885.

The principal places in the State are Austin, the capital, Galveston, Houston, Washington, Matagorda, San Felipe de Austin, San Augustine, Nacogdoches, San Antonio de Bexar, Corpus Christi, and Brownville. There were, January 1st, 1856, 36 miles of railroad built.

FOREIGN COMMERCE OF THE STATE OF TEXAS, FROM JULY 1, 1845, TO JULY 1, 1857, SHOWING ALSO THE DISTRICT TONNAGE IN 1846.

Years ending	Exports.			Imports.	Tonnage cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
June 30, 1846.....	....	....	....	\$17,266	695	2,500	....	....
1847.....	....	....	....	29,826	117	5,587	500	987
1848.....	\$12,089	\$131,521	\$143,610	94,024	730	9,057	....	....
1849.....	82,791	....	82,791	16,649	1035	1,631	....	....
1850.....	....	24,958	24,958	25,650	....	....	....	....
Total...	\$34,880	\$156,479	\$251,359	\$183,415	2577	11,775	....	....
June 30, 1851.....	\$75,442	....	\$75,442	\$84,715	858	1,479	....	....
1852.....	229,334	\$483,741	713,075	77,892	2269	5,199	....	....
1853.....	509,915	459,763	1,029,681	281,459	2751	5,226	....	....
1854.....	762,443	552,001	1,314,449	231,425	4875	4,833	....	....
1855.....	694,057	222,904	916,961	262,565	4924	6,040	....	....
1856.....	1,252,925	689,664	1,942,589	321,534	7504	3,965	....	....
1857.....	1,491,375	....	1,491,375	300,774	6519	6,192	....	....

—See SPANISH COLONIES for commerce prior to the year 1846.

Thaler, a German silver coin, first coined in Joachimsthal, a valley in Bohemia. The value of the thaler is about seventy cents.—See COINS, GERMANY, and DOLLAR.

Thames (*Tamesis*), the principal though not the longest river of England, through the south part of which it flows mostly in an easterly direction. It rises under the name of the Isis, about two miles south of Cirencester, and 376 feet above the sea, flows at first south to near Cricklade, then east-northeast past Lechlade to near Oxford, and southeast past Oxford, Abingdon, and Wallingford to Reading, after which its course is mostly eastward to Gravesend. A few miles beyond this it expands into an estuary, which at its junction with the North Sea at the Nore, between the Isle of Sheppey and Foulness Point, is fifteen miles across, and has on its opposite banks the towns Sheerness and Southend. Total course estimated at 215 miles. At Dorchester it receives the Thamer from the north, and thenceforth assumes its proper name; other principal affluents are the Churnet, Coln, Wainrush, Evenlode, Cherwell, Colne, Brent, Lea, and Roding from the north, and the Cole, Kennet (its chief affluent), Wey, Mole, and some smaller rivers from the south. The Mersey joins its estuary at Sheerness. Its basin is of less size than that of the Severn, but no river in the world has more commercial importance. The tide flows up it for about eighty miles; it is navigable for ships of any burden to Deptford, for vessels of 200 tons to London Bridge, and for barges 180 miles farther, where it is united by the Thames and Severn Canal with the Severn, below Gloucester; it is also connected with all the centre of England by the Oxford and Warwick and Grand Junction Canals, and by other canals with Bristol, Basingstoke, Arundel, etc. Under the Romans it formed the north boundary of the province of *Britannia prima*.

The Thames is the richest river in the world. It has been erroneously said that its name is Isis till it arrives at Dorchester, when, being joined by the

Thame or Tame, it assumes the name of Thames. What was the origin of this common error can not now be traced: poetical fiction, however, has perpetuated the error, and invested it with a kind of classical sanctity. It was called Thames or Tems before it came near the Thame.—CAMDEN. The river rose so high at Westminster that the lawyers were brought out of the hall in boats, A.D. 1235. Again it rose to great height, 1736, 1747, 1762, and 1791. The conservation of the Thames was given to the mayors of London, 1489. The Thames was made navigable to Oxford, 1624. It ebbed and flowed twice in three hours, 1658. Again, three times in four hours, March 22, 1682. Again, twice in three hours, November 24, 1777.—See article TUNNEL.

Thermometer. The invention of this instrument is ascribed to several scientific persons, all about the same time. Galileo, 1597.—LIBRI. Invented by Drebbel of Alcmara, A.D. 1609.—BOERHAAVE. Invented by Paulo Larpi in 1609.—FULGENTIO. Invented by Santorio in 1610.—BORELLI. Fahrenheit's thermometer was invented about 1726; and the scale called Reaumur's soon after, 1730. The mode of construction by substituting quicksilver for spirits was invented some years subsequently.—HAYDN.

Thimble. This simple yet useful, and now indispensable appendage to the ladies' work-table, is of Dutch invention. The art of making them was brought to England by John Lofting, a mechanic from Holland, who set up a work-shop at Islington, near London, and practiced the manufacture of them in various metals with profit and success, about 1695.—HAYDN.

Thread (Ger. *Zwirn*; Du. *Garen*; Fr. *Fil*; It. *Refe*; Sp. *Hilo*, *Torzal*; Russ. *Nitki*), a small line made up of a number of fibres of some vegetable or animal substance, such as flax, cotton, or silk; whence its names of linen, cotton, or silk thread.—See COTTON MANUFACTURE.

Tide Gauge, a mechanical contrivance for registering the state of the tide continuously at every in-

stant of time. In the *Philos. Trans.* for 1838, there is a description of a very complete self-registering machine for this purpose, erected at Bristol by Mr. Bunt. The principal parts are an eight-day clock, which turns a vertical cylinder revolving once in twenty-four hours; a wheel, to which an alternate motion is communicated by a float rising and falling with the tide, and connected with the wheel by a wire passing over a pulley, and kept constantly strained by a counterpoise; and a small drum on the same axis with the wheel, which, by a suspending wire, communicates one-eighteenth of the vertical motion of the float to a bar carrying a pencil, which describes a curve on the cylinder, and thereby marks the fluctuations, and the time and height of high water.

Tides, the alternate rise and fall of the waters of the ocean. The moon is the principal agent in the production of the tides; but they are modified, both with respect to their height and the times at which they happen, by the action of the sun. The effect of the planets is inappreciable. Homer is the earliest profane author who speaks of the tides. Posidonius of Apamea accounted for the tides from the motion of the moon, about 79 B.C.; and Cæsar speaks of them in his fourth book of the Gallic War. The theory of the tides was first satisfactorily explained by Kepler, A.D. 1598; but the honor of a complete explanation of them was reserved for Sir Isaac Newton, who laid hold of this class of phenomena to prove universal gravitation, about 1683.

The attractive force of a body on a distant particle of matter varying inversely as the square of the distance, the particles of the earth on the side next the moon will be attracted with a greater, and those on the opposite side with a smaller force, than those which are situated intermediately. The gravitation toward the earth's centre of the particles nearest the moon will therefore be diminished, and consequently, if at liberty to move among themselves, they will rise above the general level. In like manner, the moon's attraction on the most distant particles being less than on the central ones, their relative gravitation toward the centre will also be diminished, and the waters will consequently be heaped up on the side of the earth which is turned away from the moon. Hence, if the earth were at rest, the ocean would take the form of an oblong spheroid, with its longer axis passing through the attracting body; and it may be shown from theory that the spheroid would be in equilibrium under the influence of the moon's attraction, if the longer semi-axis exceeded the shorter by about 58 inches. But in consequence of the rapid rotation of the earth about its axis, the spheroid of equilibrium is never fully formed; for before the waters can take their level, the vertex of the spheroid has shifted its position on the earth's surface, in consequence of which an immensely broad and very flat wave is formed, which follows the motions of the moon at some interval of time. In the open sea the time of high water is, in general, from two to three hours after the moon's transit over the meridian either above or below the horizon. The tidal wave, it is to be observed, is entirely different from a current: the particles of water merely rise and fall; but except when the wave passes over shallows, or approaches the shore, there is little or no progressive motion.

The waters of the ocean are affected in a similar manner by the action of the sun, under the influence of which they have a tendency to assume at every instant the form of an elongated spheroid; but although the attractive force of the sun is immensely greater than that of the moon, yet, by reason of the greater distance of the sun, the difference of the effect on particles situated on opposite sides of the earth (on which difference the phenomena depend) is very much less. The solar tides are therefore comparatively small with respect to the lunar tides, and, in fact, are never per-

ceived as distinct phenomena, but become sensible only from the modifications which they produce in the heights and times of those which primarily depend on the moon. At the syzygies, when the sun and moon come to the meridian together, the tides are, *ceteris paribus*, the highest; at the quadratures, or when the sun and moon are 90° distant, the tides are least. The former are called *spring tides*, the latter *neap tides*. Although we are not in possession of data to enable us to compute the exact height either of the spring or neap tides, yet their relative heights in the open ocean probably correspond very nearly to the ellipticities of the spheroids of equilibrium that would be formed under the action of the two bodies exerted separately. Now the ellipticity of the aqueous spheroid formed by the moon's action is about five feet, and the ellipticity of that formed by the sun's action about two feet; therefore, the spring and neap tides being the sum and difference of the separate effects, the average spring tide will be to the average neap in the ratio of about 7 to 3.

The apparent time of high water at any port, in the afternoon of the day of new or full moon, is what is usually called the *establishment of the port*. Mr. Whewell calls this the *vulgar establishment*, and the mean of all the intervals of tide and transit for a half lunation he terms the *corrected establishment*. This corrected establishment is consequently the lunitidal interval corresponding to the day on which the moon passes the meridian exactly at noon or midnight.

The two tides immediately following one another, or the tides of the day and night, vary, both in height and time of high water, at any particular place with the distance of the sun and moon from the equator. As the vertex of the tide wave always tends to place itself vertically under the luminary which produces it, it is evident that, of two consecutive tides, that which happens when the moon is nearest the zenith or nadir will be greater than the other; and consequently, when the moon's declination is of the same denomination as the latitude of the place, the tide which corresponds to the upper transit will be greater than the opposite one, and *vice versa*, the differences being greatest when the sun and moon are in opposition, and in opposite tropics. This is called the *diurnal inequality*, because its cycle is one day; but it varies greatly at different places, and its laws, which appear to be governed by local circumstances, are very imperfectly known.

We have now described the principal phenomena that would take place were the earth a sphere, and covered entirely with a fluid of uniform depth. But the actual phenomena of the tides are infinitely more complicated. From the interruption of the land, and the irregular form and depth of the ocean, combined with many other disturbing circumstances, among which are the inertia of the waters, the friction on the bottom and sides, the narrowness and length of the channels, the action of the wind, currents, difference of atmospheric pressure, etc., great variation takes place in the mean times and height of high water at places differently situated; and the inequalities above alluded to, as depending on the parallax of the moon, her position with respect to the sun, and the declination of the two bodies, are, in many cases, altogether obliterated by the effects of the disturbing influences, or can only be detected by the calculation and comparison of long series of observations.

By reason of these disturbing causes, it becomes a matter of great difficulty to trace the propagation of the tide wave, and the connection of the tides in different parts of the world. In the *Philosophical Transactions* for 1832, Sir John Lubbock published a map of the world, in which he inserted the times of high water at new and full moon at a great number of places on the globe, collected from various sources, as works on navigation, voyages, sailing directions, etc.; and,

in order that the march of the tide wave might be traced more readily, the times were expressed in Greenwich time as well as the time of the place. In the same *Transactions* for 1833, Mr. Whewell prosecuted this subject at greater length; and availing himself of *a priori* considerations, as well as of a mass of information collected in the hydrographer's office at the Admiralty, inserted in the map a series of *cotidal lines*, or lines along which high water takes place at the same instant of time. But these cotidal lines, as Sir J. Lubbock remarks, are entirely hypothetical; for we have few opportunities of determining the time of high water at a distance from the coast, though this is sometimes possible by means of a solitary island, as St. Helena.—LUBBOCK'S *Elementary Treatise on the Tides*, 1839.

According to Mr. Whewell's deductions, the general progress of the great tide wave may be thus described: It is only in the Southern Ocean, between the latitudes of 30 and 70 degrees, that a zone of water exists of sufficient extent to allow of the tide wave being formed. Suppose, then, a line of contemporary tides, or *cotidal lines*, to be formed in the Indian Ocean, as the theory supposes, that is to say, in the direction of the meridian, and at a certain distance to the eastward of the meridian in which the moon is. As this tide wave passes the Cape of Good Hope, it sends off a derivative undulation, which advances northward up the Atlantic Ocean, preserving always a certain proportion of its original magnitude and velocity. In traveling along this ocean the wave assumes a curved form, the convex part keeping near the middle of the ocean, and ahead of the branches, which, owing to the shallower water, lag behind on the American and African coasts; so that the cotidal lines have always a tendency to make very oblique angles with the shore, and, in fact, run nearly parallel to it for great distances. The main tide, Mr. Whewell conceives, after reaching the Orkneys, will move forward in the sea bounded by the shores of Norway and Siberia on the one side, and those of Greenland and America on the other, will pass the pole of the earth, and finally end its course on the shores in the neighborhood of Behring's Straits. It may even propagate its influence through the straits, and modify the tides of the North Pacific. But a branch tide is sent off from this main tide into the German Ocean; and this, entering between the Orkneys and the coast of Norway, brings the tide to the east coast of England, and to the coasts of Holland, Denmark, and Germany. Continuing its course, part of it, at least, passes through the Strait of Dover, and meets in the British Channel the tide from the Atlantic, which arrives on the coast of Europe twelve hours later; but in passing along the English coast, another part of it is reflected from the projecting land of Norfolk upon the north coast of Germany, and again meets the tide wave on the shores of Denmark. Owing to this interference of different tide waves, the tides are almost entirely obliterated on the coast of Jutland, where their place is supplied by continual high water.

In the Pacific Ocean the tides are very small, but there are not sufficient observations to determine the forms and progress of the cotidal lines. Off Cape Horn, and round the whole shore of Terra del Fuego, from the western extremity of the Strait of Magalhães to Staten Island, it is very remarkable that the tidal wave, instead of following the moon in its diurnal course, travels to the eastward. This, however, is a partial phenomenon; and a little farther to the north of the last-named places the tides set to the north and west. In the Mediterranean and Baltic seas the tides are inconsiderable, but exhibit irregularities for which it is difficult to account. The Indian Ocean appears to have high water on all sides at once, though not in the central parts at the same time.

Since the tides on our coasts are derived from the

oscillations produced under the direct agency of the sun and moon in the Southern Ocean, and require a certain interval of time for their transfer, it follows that, in general, the tide is not due to the moon's transit immediately preceding, but is regulated by the position which the sun and moon had when they determined the primary tide. The time elapsed between the original formation of the tide and its appearance at any place is called the *age* of the tide, and sometimes, after Bernoulli, the *retard*. On the shores of Spain and North America the tide is a day and a half old; in the port of London it appears to be two days and a half old when it arrives.

Velocity of the Tide Wave.—In the open ocean the crest of the tide travels with enormous velocity. If the whole surface were uniformly covered with water, the summit of the tide wave, being mainly governed by the moon, would every where follow the moon's transit at the same interval of time, and consequently travel round the earth in a little more than twenty-four hours. But the circumference of the earth at the equator being about 25,000 miles, the velocity of propagation would therefore be about 1000 miles per hour. The actual velocity is perhaps nowhere equal to this, and is very different at different places. In latitude 60° south, where there is no interruption from land (excepting the narrow promontory of Patagonia), the tide wave will complete a revolution in a lunar day, and consequently travel at the rate of 670 miles an hour. On examining Mr. Whewell's map of cotidal lines, it will be seen that the great tide wave from the Southern Ocean travels from the Cape of Good Hope to the Azores in about twelve hours, and from the Azores to the southernmost point of Ireland in three hours more. In the Atlantic the hourly velocity in some cases appears to be 10° of latitude, or near 700 miles, which is almost equal to the velocity of sound through the air. From the south point of Ireland to the north point of Scotland the time is eight hours, and the velocity about 160 miles an hour along the shore. On the eastern coast of Britain, and in shallower water, the velocity is less. From Buchanness to Sunderland it is about sixty miles an hour; from Scarborough to Cromer, thirty-five miles; from the North Foreland to London, thirty miles; from London to Richmond thirteen miles an hour in that part of the river.—WHEWELL, *Phil. Trans.*, 1833 and 1836. It is scarcely necessary to remind the reader that the above velocities refer to the transmission of the undulation, and are entirely different from the velocity of the current to which the tide wave gives rise in shallow water.

Theory of the Tides.—The theory of the tides, considered as a consequence of solar and lunar attraction, was first sketched by Newton in the *Principia*. In the 36th and 37th propositions of the third book, he determines the forces of the sun and moon to elevate the waters of the ocean, on the supposition that the sea is a fluid of the same density as the earth, covering the whole terrestrial surface, and which takes at every instant the figure of equilibrium. He assumes, without demonstration, that this figure is an elongated spheroid. One spheroid he supposes to be formed under the action of the sun, another under the action of the moon; and, by reason of the smallness of their eccentricities, they may be conceived as superposed the one on the other. From these suppositions he deduced the general phenomena of the ebb and flow of the sea; and by comparing his theory with observations of the heights of the spring tides made at the mouth of the Avon, near Bristol, he determined the ratio of the attraction of the moon to that of the sun to be nearly 4.48 to 1; whence he deduced the mass of the earth to be to that of the moon as 39.788 to 1, the density of the sun to that of the earth as 1 to 4, and the density of the moon to that of the earth as 11 to 9. Newton's theory was defective in many points of view, but fifty

years elapsed before it received any improvement. In 1788 the subject of the tides was proposed as a prize question by the French Academy of Sciences, which gave occasion to the celebrated treatises of Daniel Bernoulli, Maclaurin, and Euler. Maclaurin's Essay is remarkable, as containing a demonstration of the theorem assumed by Newton, that the elliptic spheroid affords an equilibrium under the action of the disturbing forces: those of Bernoulli and Euler, though they furnish no new principle of equal or similar importance in point of theory, enter more into details, and contain many useful illustrations. That of Bernoulli, indeed, contains a table which has served as the model for all those (not purely empirical) which have since been formed. The next important step in the theory of the tides was taken by Laplace, who first treated the subject as a general question of hydrodynamics, and attempted to deduce the principal phenomena from the equations of the motions of fluids. But in order to simplify the equations, which are of a very complicated nature, he was forced to have recourse to the hypothesis of a fluid covering entirely a spheroid of a regular surface, and consequently the results were far from representing the actual observations of the tides at any port. The late Dr. Thomas Young (*Ency. Brit., article TIDES*) extended Laplace's method to the more general case of an ocean covering a part only of the earth's surface, and more or less irregular in its form, and attempted also to include in his calculation the effects of hydraulic friction on the times and magnitudes of the tides.

Influence of Atmospheric Pressure and Winds.—Besides the numerous causes of irregularity depending on the local circumstances, the tides are also affected by the state of the atmosphere. At Brest, the height of high water varies inversely as the height of the barometer, and rises more than eight inches for a fall of about half an inch of the barometer. At Liverpool, a fall of one-tenth of an inch in the barometer corresponds to a rise in the River Mersey of about an inch; and at the London Docks, a fall of one-tenth of an inch corresponds to a rise in the Thames of about seven-tenths of an inch. With a low barometer, the tides may therefore be expected to be high, and *vice versa*. The tide is also liable to be disturbed by winds. Sir J. Lubbock states that, in the violent hurricane of January 8, 1839, "there was no tide at Gainsborough, which is twenty-five miles up the Trent—a circumstance unknown before. At Saltmarsh, only five miles up the Ouse from the Humber, the tide went on ebbing, and never flowed till the river was dry in some places; while at Ostend, toward which the wind was blowing, contrary effects were observed. During strong northwesterly gales the tide marks high water earlier in the Thames than otherwise, and does not give so much water, while the ebb-tide runs out late, and marks lower; but upon the gales abating and the weather moderating, the tides put in, and rise much higher while they also run longer before high water is marked, and with more velocity of current; nor do they run out so long or so low.—BRANDE'S *Cyclopædia*.

The tidal observations of the Pacific coast have casually led to a determination of great scientific interest, that of the average depth of the Pacific Ocean between the coasts of Japan and California. On the 23d of December, 1854, an earthquake occurred in Japan by which the town of Simoda, in the island of Nippon, was destroyed. From the imperfect accounts which have reached us, it appears that at nine A.M. on that day the severe shock of an earthquake was felt on board the Russian frigate *Diana*, then lying in the harbor of Simoda. Half an hour later the sea came into the bay in an immense wave thirty feet in height, overwhelming the town and then receding. This advance and recession occurred five times, and by 2:30 P.M. all was again quiet. The depth of the sea during these changes varied from less than eight to more

than forty feet. Upon the same day an extraordinary rise and fall of water was observed at Peel's Island, one of the Bonin Islands, and the tide continued to rise and fall during the day at intervals of fifteen minutes, gradually lessening until evening.—*American Journal of Science*, January, 1858 [Prof. BACHE].

The following table contains the revised data for the principal tidal elements of a number of points on the coast of the United States, with additions to the tables published last year, furnished by the discussions of the tidal observations. These elements are selected from a large number of results obtained in the progress of the Coast Survey, only those stations being reported, as a general rule, where the observations extended through at least two lunations.

GENERAL TIDE TABLE FOR THE COAST OF THE UNITED STATES.

Stations.	States.	Rise and Fall.		
		Mean.	Spring.	Neap.
		Feet.	Feet.	Feet.
<i>Coast from Portland to New York.</i>				
Portland.....	Maine.....	8.8	10.0	7.6
Portsmouth.....	New Hampshire.....	8.6	9.8	7.2
Newburyport.....	Massachusetts.....	7.8	9.1	6.6
Salem.....	Do.....	9.2	10.6	7.6
Boston Light.....	Do.....	9.3	10.9	8.1
Boston.....	Do.....	10.0	11.3	8.5
Nantucket.....	Do.....	3.1	3.6	2.6
Edgartown.....	Do.....	2.0	2.5	1.6
Holmes's Hole.....	Do.....	1.7	1.8	1.3
Tarpaulin Cove.....	Do.....	2.4	2.6	2.0
Wood's Hole, south side.	Do.....	3.0	..	..
" north side.	Do.....	1.5	..	..
Bird Island Light.....	Do.....	4.4	5.3	3.5
New Bedford harbor.....	Do.....	3.8	4.6	2.8
Newport.....	Rhode Island.....	3.0	4.6	3.1
Point Judith.....	Do.....	3.1	3.7	2.6
Montauk Point.....	New York.....	2.0	2.5	1.4
Sandy Hook.....	New Jersey.....	4.8	5.6	4.0
New York.....	New York.....	4.3	5.4	3.4
<i>Long Island Sound.</i>				
Watch Hill.....	Rhode Island.....	2.7	3.1	2.4
Stonington.....	Connecticut.....	2.3	3.4	2.1
Little Gull Island.....	New York.....	2.5	2.9	2.3
New London.....	Connecticut.....	2.6	3.1	2.1
New Haven.....	Do.....	5.8	6.6	5.1
Bridgeport.....	Do.....	6.5	8.0	4.7
Oyster Bay, Long Island	New York.....	7.3	9.2	5.4
Sand's Point.....	Do.....	7.7	8.9	6.4
New Rochelle.....	Do.....	7.6	8.6	6.6
Throg's Neck.....	Do.....	7.3	9.2	6.1
<i>Coast of New Jersey.</i>				
Cold Spring Inlet.....	New Jersey.....	4.4	5.4	3.6
Cape May.....	Do.....	4.8	6.0	4.3
<i>Delaware Bay and River.</i>				
Delaware Breakwater.....	Delaware.....	3.5	4.5	3.0
Higbies.....	New Jersey.....	4.9	6.2	3.9
Egg Island Light.....	Do.....	6.0	7.0	5.1
Mahon's Ditch.....	Delaware.....	5.9	6.9	5.0
New Castle.....	Do.....	6.5	6.9	6.6
Philadelphia, Navy Yard	Pennsylvania.....	6.1	7.0	5.2
" Walnut-st. whf.	Do.....	5.9	6.6	5.1
<i>Chesapeake Bay.</i>				
Old Point Comfort.....	Virginia.....	2.5	3.0	2.0
Point Lookout.....	Maryland.....	1.4	1.9	0.7
Annapolis.....	Do.....	0.9	1.0	0.8
Bodkin Light.....	Do.....	1.0	1.3	0.8
Baltimore.....	Do.....	1.3	1.5	0.9
James River.....	Virginia.....	2.6	..	..
Richmond.....	Do.....	2.9	..	..
<i>Coast of North Carolina, South Carolina, Georgia, and Florida.</i>				
Hatteras Inlet.....	North Carolina.....	2.0	2.2	1.8
Beaufort.....	Do.....	2.8	3.3	2.2
Smithville.....	Do.....	4.5	5.5	3.8
Charleston.....	South Carolina.....	5.3	6.3	4.6
Savannah River.....	Georgia.....	7.0	8.0	5.9
Savannah city.....	Do.....	6.5	7.6	5.5
St. Augustine.....	Florida.....	4.2	4.7	3.5
Cape Florida.....	Do.....	1.5	1.7	1.2
Sand Key.....	Do.....	1.2	2.0	0.6
Key West.....	Do.....	1.4	2.3	0.7
Tampa Bay.....	Do.....	1.4	1.7	1.0
Cedar Keys.....	Do.....	2.5	2.8	1.8
<i>Western Coast.</i>				
San Diego.....	California.....	3.7	5.0	2.3
San Pedro.....	Do.....	3.9	4.7	2.2
San Luis Obispo.....	Do.....	3.7	5.2	2.4
Monterey.....	Do.....	3.4	4.3	2.5
San Francisco.....	Do.....	3.6	4.3	2.8
Astoria.....	Oreg. Territory.....	6.1	7.3	4.5

REPORT MADE TO THE SUPERINTENDENT, SHOWING THE LEAST WATER IN CHANNEL ENTRANCES TO CERTAIN HARBORS, RIVERS, AND ANCHORAGES, ON THE COASTS OF THE UNITED STATES: PREPARED BY LIEUTENANT W. D. WHITING, AND REVISED BY LIEUTENANTS COMMANDING J. J. ALMY AND T. A. CRAVEN, U. S. N., ASSISTANTS IN THE COAST SURVEY. TIDAL DATA BY ASSISTANT L. F. FOURETALES, IN CHARGE OF TIDAL DIVISION.

Places.	Limits between which Depths are given.	LEAST WATER IN CHANNEL WAY				Authorities—(From Coast Survey Data when not otherwise stated.)
		Mean.		Spring Tides.		
		Low Water.	High Water.	Low Water.	High Water.	
Portland, Maine	From Cape Elizabeth to Portland Light	Feet. 45	Feet. 53-8	Feet. 44-5	Feet. 54-4	1850, '53, and '54.
	*From Portland Light to breakwater...	36	44-8	35-5	45-4	
	From breakwat. to end of Munjoy Point	30	38-8	29-5	39-4	
	From breakwater to anchorage	16	24-8	15-5	25-4	
	Channel way off town and wharves	27	35-8	26-5	36-4	
Portsmouth, N. H.	From Munjoy to railroad bridge	19-5	28-3	19	28-0	1851.
	From Whale's Back to Fort Constitution	42	50-6	41-4	51-3	
	From Fort Constitution to the Narrows.	51	59-6	50-4	60-3	
	From the Narrows to the city	45	53-6	44-4	54-3	
	Off the wharves	63	71-6	62-4	72-3	
Salem, Massachusetts.	Northern ship channel, between Baker's and Misery Islands	52	61-2	51-3	61-9	1850 and '51.
	Southern ship channel, passing Halfway Rock, Gooseberry and Eagle Islands, to the northward, Cat Island and Cooney Island to the southward	28	37-2	27-3	37-0	
	Inside of Salem Neck	19	28-2	18-3	28-9	
Boston, "	Main ship channel, between Lovell's and Gallop's Island	28-5	38-5	27-8	37-1	1846, '47, '48, and '53.
	Broad sound, south channel	19-5	27-5	18-8	30-1	
	President's Roads, anchorage	31-5	41-5	30-8	42-1	
	Main ship channel, between Governor's Island and Castle Island	18	28	17-3	28-6	
	Entering with Boston Neck on port hand, Beavertail and Dutch Island Lights on starboard hand, passing between Canonicut Point and Hope Island	25	28-9	24-6	29-2	
Narraganset Bay to Prudence Island.	Entering with Beavertail light on the port, and Castle Hill on starboard hand, up to Goat Island	60	63-9	53-6	64-2	Com. Wadsworth, 1392.
	Anchorage, southward and westward of Goat Island	33	36-9	32-6	37-2	
	Abreast of wharves, inside of Goat Isl'd	21	24-9	20-6	25-2	
	From Newport harbor, inside of Gulf Rocks, to Prudence Island	31	34-9	30-6	35-2	
	To Mount Hope Bay	42	45-9	41-6	46-2	
	To Mount Hope Bay, with Cormorant Rock, Sachuset Point on port, and Saughkonnet Point on starboard hand	20	23-9	19-6	24-2	
	Gedney's channel	24	28-8	23-6	29-1	
	North channel	22	26-8	21-6	27-1	
	South channel	22-5	27-3	22-1	27-6	
	Main ship channel, passing Sandy Hook to Southwest Spit buoy	31	35-8	30-6	36-1	
New York	Main ship channel, after passing S.W. Spit buoy on N.E. course, one mile up the Bay for New York	22	26-8	21-6	27-1	From 1835 to 1853, inclusive.
	†Main ship channel, passing Delaware breakwater	61	64-5	60-4	64-9	
	Off Brandywine light-house	43	46-5	42-4	46-9	
	Main ship channel, passing False Liston's tree, to abreast of Bombay Hook light	27-5	33-4	27-3	34-2	
	Blake's channel, along Flogger Shoal ..	13-5	19-4	13-3	20-2	
Delaware Bay	Blake's channel, passing Mahon River light	13-5	19-4	13-3	20-2	From 1840 to 1844, inclusive.
	Main ship channel, approaching Liston's Point	20	25-9	19-8	26-7	
	Main ship channel, up to Reedy Island.	20	26	19-6	26-3	
	Main ship channel, opposite Reedy Island light-house	24-5	30-5	24-1	30-8	
	Opposite Delaware city	30	36	29-6	36-3	
	Up to Christiana Creek light	20-5	27	20-3	27-2	
	Up to Marcus Hook	20-5	27	20-3	27-2	
	Opposite Chester	24-5	30-7	24-4	31-2	
	Bar off Hog Island	18-5	24-7	18-4	25-2	
	Between Greenwich Point and Gloucester Point	31-5	37-5	31-4	38-2	
Delaware River	From Greenwich Point up to Philadelphia	21-5	27-5	21-4	28-2	1852, '53, and '54.
	From capes at entrance to Hampton Roads	30	32-5	29-8	32-8	
	Anchorage in Hampton Roads	50	61-5	58-8	61-8	
	From Hampton Roads to Sewall's Point	25	27-5	24-8	27-8	
	South of Sewall's Point (one mile and a half)	21	23-5	20-8	23-8	
Chesapeake Bay	Up to Norfolk	23	25-5	22-8	25-8	1850.
	Between Norfolk and navy yard	25-5	28	25-3	28-3	
	Over northern bar	12-5	14-5	12-4	14-6	
	Over southern bar	12-5	14-5	12-4	14-6	
	Over northern bar	12	14	11-9	14-1	
Elizabeth River, Va.	Over southern bar	14	16	13-9	16-1	1852.
	Over bar	10-7	13-1	10-5	13-3	
	Entrance to channel	15-5	18-3	15-3	18-6	
	New Inlet bar	7	11-5	6-5	12	
	Main ship channel, Cape Fear River ..	8	12-5	7-5	13	
Beaufort, N. C.					1851, '52, and '53.	
Cape Fear						

* The depth in channel way varies between 6 and 8½ fathoms.
† Subject to frequent changes.

† Soundings varying between 10 and 15 fathoms.

REPORT TO THE SUPERINTENDENT OF THE UNITED STATES' COAST SURVEY.—Continued.

Places	Limits between which Depths are given.	LEAST WATER IN CHANNEL WAY.				Authorities.—(From Coast Survey Data when not otherwise stated.)
		Mean.		Spring Tides.		
		Low Water.	High Water.	Low Water.	High Water.	
		Feet.	Feet.	Feet.	Feet.	
Cape Fear.....	Western rip.....	8	12.5	7.5	13	1856.
	Western bar.....	10	14.5	9.5	15	
Georgetown, S. C.....	Entrance to Winyah Bay, East and Southeast Pass.....	7	10.8	6.7	11.3	1851, '52, and '53.
	Anchorage inside of North Island.....	27	30.8	26.7	31.3	
	Up to Georgetown.....	9	12.6	8.7	13.1	
Charleston, S. C.....	Main bar.....	11	16.3	10.8	17.1	1850.
	North channel.....	10	15.3	9.8	16.1	
	Maffitt's channel.....	7	12.3	6.8	13.1	1855.
	Maffitt's channel.....	11.5	16.8	11.3	17.6	
North Edisto.....	Over bar at entrance.....	13	18.8	12.5	19.4	1856.
Port Royal.....	Channel up to Northeast branch.....	19	26	18.5	26.5	Des Barres, 1777.
	South channel.....	19	26	18.5	26.5	1855.
	Southeast channel.....	20	27	19.5	27.5	1856.
	East channel.....	17	24	16.5	24.5	1855.
Tybee Entrance.....	Bar near Tybee Island.....	19	26	18.4	26.5	1851 and '52.
	Tybee Roads.....	31	38	30.4	38.5	
Savannah.....	Channel up to city (Wrecks and Garden Bank).....	11	17.5	10.6	18.2	Captain Gilmer, U. S. Engineers.—1856.
	Over bar at entrance.....	17	23.1	16.5	23.8	
St. Simon's.....	Entrance to Sound.....	38	44.1	37.5	44.8	1855 and '56.
	Turtle River, up to Blythe Island.....	21	27.1	20.5	27.8	
Doboy Bar and Inlet.....	Entrance over bar.....	15.5	22.1	14.7	22.5	1855.
	Anchorage in Sound.....	24	30.6	23.2	31	
St. Mary's River.....	On bar.....	14	19.9	13.5	20.2	Captain Mackay, U. S. Top. En. and Coast Sur.—1856.
	Channel up to St. Mary's.....	19	24.9	18.5	25.2	
St. John's River, Fla.....	Over bar at entrance.....	7	11.6	6.5	12	1855.
	Channel passing up toward Jacksonville.....	23	25.1	22.5	25.5	
Key West.....	Main ship channel to middle buoy on shoals.....	27	28.4	26.7	29	1850 and '51.
	From shoals to anchorage.....	30	31.4	29.7	32	
	East channel, entering.....	30	31.4	29.7	32	
	On course N.N.W. half W. (light on O'Hara's Observatory), and passing between shoals.....	28	29.4	27.7	30	
	From fourteen feet shoals to anchorage.....	30	31.4	29.7	32	
	At anchorage.....	27	28.4	26.7	29	
	Rock Key channel.....	20	21.4	19.7	22	
	Sand Key channel.....	27	28.4	26.7	29	
	West channel.....	30	31.4	29.7	32	
	Northwest channel, up to abreast N.W. light.....	15	16.4	14.7	17	
Tortugas.....	Over northwest channel bar.....	11	12.4	10.7	13	1850 and '51.
	Northwest channel.....	45	46.2	44.8	46.4	
	Southwest channel.....	54	55.2	53.8	55.4	1854.
	East channel.....	45	46.2	44.8	46.4	
	Anchorage at Garden Key.....	30	31.2	29.8	31.4	1854.
Cedar Keys.....	Channel.....	10	12.5	9.7	12.6	1854.
St. Mark's.....	Over bar.....	11	13.2	10.6	13.5	1852.
	Channel at middle buoy.....	12	14.2	11.6	14.5	
	Up to Fort St. Mark's.....	7	9.2	6.6	9.5	Colonel Kearney, U. States Topographical Engineers.—1822.
Apalachicola.....	Channel.....	12.5	13.6	12.2	14	
Pensacola.....	Over bar, channel.....	21.5	22.5	22.2	22.7	From 1847 to '52, inclusive.
	From bar to navy yard.....	28	29	27.7	29.2	
	From navy yard to city.....	31	32	30.7	32.2	1848.
	*Off wharf at Pensacola.....	20	21	19.7	21.2	
Mobile Bay and River.....	Over outer bar.....	21	22	20.7	22.2	1848.
	Main ship channel to Fort Morgan.....	36	37	35.7	37.2	
	To the upper fleet.....	12	13	11.7	13.2	1848.
Ship Island harbor.....	Channel.....	19	20.3	18.7	20.6	
	Northwest channel.....	19.5	20.8	19.2	21.1	1848.
	Anchorage, Man-of-war harbor.....	18	19.3	17.7	19.6	
Cat Island harbor.....	Ship channel.....	16	17.3	15.7	17.6	1851.
	South Pass.....	14	15.3	13.7	15.6	
	Shell-bank channel.....	15.2	16.5	14.9	16.8	1851.
Mississippi Delta.....	Pass à Loure, north channel.....	9.5	10.6	9.3	10.7	
	South channel.....	12	13.1	11.8	13.2	1851.
Northeast Pass.....	Over bar, north entrance.....	9.5	10.6	9.3	10.7	
	Over bar, south entrance.....	9	10.1	8.8	10.2	1851.
Southeast Pass.....	Entering.....	10	11.1	9.8	11.2	1851.
South Pass.....	Channel.....	8	9.1	7.8	9.2	1852.
Southwest Pass.....	Channel.....	13	14.1	12.8	14.2	1852.
Barataria Bay.....	Over bar, outside of Grand Pass.....	7.5	8.7	7.2	8.9	1852.
	Grand passage to Independence Island.....	15	16.2	14.7	16.4	
Dernière or Last Isl'd.....	Channel inside and north of Ship Island.....	27	28.4	26.7	28.8	1853.
	Shoal light-ship.....	27	28.4	26.7	28.8	
	Channel north of Ship Shoal, one mile from beach of Dernière Island.....	14	15.4	13.7	15.8	1853.
Sabine Pass.....	Across the bar.....	7.5	9	7.2	9.3	
Galveston Bay.....	Galveston Bay.....	12	13.1	11.7	13.3	1853.
Aransas Pass.....	Aransas Pass.....	9	10.1	8.7	10.5	1853.
Rio Grande.....	Rio Grande.....	4	4.9	3.8	5	1853.

* Varying between 20 and 24 feet of water.

† The highest tides occur at the moon's greatest declination, and are applied in the column headed "Spring Tides."

Range of the Tide.—The difference of level between high and low water is affected by various causes, but chiefly by the configuration of the land, and is very different at different places. In deep inbends of the shore, open in the direction of the tide wave, and gradually contracting like a funnel, the convergence of

the water causes a very great increase of the range. Hence the very high tides in the Bristol Channel, the Bay of St. Malo, and the Bay of Fundy, where the tide is said to rise sometimes to the height of 100 feet. Promontories, under certain circumstances, exert an opposite influence, and diminish the tide.

REPORT TO THE SUPERINTENDENT, ETC.—Continued.

Places.	Limits between which Depths are given.	LEAST WATER IN CHANNEL WAY.						Date.
		Mean, lowest of Day.		Spring Tides, lowest of Day.—Mean.		Spring Tides, lowest of Day.—Moon's greatest Declination.		
		Low Water.	High Water.	Low Water.	High Water.	Low Water.	High Water.	
		Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	
San Diego Bay	Entrance	27.4	31.5	26.8	32.1	26.3	31.4	1851.
Monterey harbor	Near shore	30	33.9	29.5	34.2	29.9	33.8	1852.
San Francisco harbor ..	On the bar	33	37	32.6	37.4	31.9	36.7	} 1855.
	At best wharves	20	24	19.6	24.4	19.9	23.7	
Humboldt Bay	Main channel	20	24.7	19.3	25.3	18.7	25.1	} 1851.
Columbia River	North channel to Baker's Bay...	24	30.5	23.4	30.9	22.7	30.6	
	* Entrance into south channel ..	19	25.5	18.4	20.9	17.7	25.6	} 1852.
Shoalwater Bay	North channel	22.5	29	21.6	23.5	20.9	29	
	South channel	25	31.5	24.1	32	23.4	31.5	} 1853.
False Dungeness	Harbor anchorage	54	60	.....	.....	.....	.....
Bellingham Bay		60	67	.....	.....	.....	.....	1855.

* Twenty-one feet may be carried in at mean low water by keeping a little northward and westward, nearer the breakers of the middle sands, and, at the turn, hauling up for Cape Disappointment.

RANGE OR MEAN RISE AND FALL OF TIDES IN LONG ISLAND SOUND AND APPROACHES.—(DATA TO APRIL, 1853.)

EASTERN SERIES.

Stations.	Feet.	Stations.	Feet.
Montauk Point	2.0	Sheffield Island	7.4
Point Judith	5.1	Huntington Bay	7.6
Beaverfall Light	4.0	Great Captain's Island ..	7.5
Stonington	2.7	Oyster Bay	7.2
New London	2.6	Sand's Point	7.7
Sachem's Head	5.3	New Rochelle	7.6
New Haven	5.8	Throg's Neck	7.2
Bridgeport	6.6		

WESTERN SERIES.

Stations.	Feet.	Stations.	Feet.
Sandy Hook	4.3	Spitfire Pot Cove	6.3
Governor's Island	4.9	North Brother	7.2

Tide-rips.—Near the equator, and especially on this side of it in the Atlantic, mention is made, in the "abstract log," by almost every observer that passes that way, of "tide-rips," which are a commotion in the water, not unlike that produced by a conflict of tides or of other powerful currents. These "tide-rips" sometimes move along with a roaring noise, and the inexperienced navigator always expects to find his vessel drifted by them a long way out of her course; but when he comes to cast up his reckoning the next day at noon, he remarks with surprise that no current has been felt. Tide-rips are usually found in the neighborhood of the equatorial calms—that region of constant precipitation. And hence, if currents at all—if so, they are very superficial—I have thought they might be streams of rain-water, which old seamen tell us they have dipped up there fresh from the sea, running off. This conjecture, however, does not satisfy the phenomenon in all of its aspects. It is sometimes described as starting up in a calm, and then approaching the vessel with great waves and a great noise; it seems threatening enough to excite a feeling of apprehension in the minds of seamen, for it looks as if it would dash over their frail bark as it lies wallowing in the sea, and helplessly flapping its sails against the masts. Captain Higgins, of the *Maria*, when bound from New York to Brazil, thus describes, in his abstract log, one of these "tide-rips," as seen by him, 10th October, 1855, in lat. 14° N., long. 34° W.: "At three P.M. saw a tide-rip, in the centre, temperature of air 80°, water 81°. From the time it was seen to windward, about three to five miles, until it had passed to leeward out of sight, it was not five minutes. I should judge it traveled at not less than sixty miles per hour, or as fast as the bores of India. Although we have passed through several during the night, we do not find they have set the ship to the westward any; it may be that they are so soon passed that they have no influence on the ship, but they certainly beat very hard against the ship's sides, and jarred her all over. They are felt even when below, and will wake one out of sleep."—*MAURY'S Physical Geography*. For further information as to TIDES, refer to *Amer. Jour. of Sci.*, xxxiv. 81, xvi. 78, xx. 205, xlv. 118, xii. (2d series) 341 (A. D. BACHE); *South. Lit. Mess.*, iv. 747; *Mass. Quart. Rev.*, ii. 77; *Quart. Rev.*, vi. 74; *Anal. Mag.*, ix. 231.

Tiles (Ger. *Dachziegel*; Fr. *Tuiles*; It. *Tegole*, *Embrici*; Sp. *Tejas*; Russ. *Tscherepiza*), a sort of thin bricks, dried in kilns, and used in covering and paving different kinds of buildings. The best brick earth only should be made into tiles.

Timber (Ger. *Bauholz*, *Zimmer*; Du. *Timmerhout*; Fr. *Bois de charpente*, *Bois à bâtir*; It. *Legname da fabbricare*; Sp. *Madera de construccion*; Russ. *Строительный лес*; Pol. *Cembrowina*), the term used to express every large tree squared, or capable of being squared, and fit for being employed in house or ship-building. In the language of the English customs, when a tree is sawn into thin pieces, not above seven inches broad, it is called batten; when above that breadth, such thin pieces are called deal. Wood is the general term, comprehending under it timber, dye-woods, fire-wood, etc.

The following are the contents of the loads of different species of timber, hewn and unhewn:

A load of timber, unhewn	40 cubic feet.
" square timber	50 "
" 1 inch plank	600 square feet.
" 1½ inch plank	400 "
" 2 inch plank	300 "
" 2½ inch plank	240 "
" 3 inch plank	200 "
" 3½ inch plank	170 "
" 4 inch plank	150 "

36½ Russian standard deals, 12 feet long, 1½ inch thick, 11 inches broad, make 1 load of timber.

58½ Christiana standard deals, 11 feet long, 1½ inch thick, 9 inches broad, make 1 load of timber.

53½ Dram standard deals, 10 feet long, 1½ inch thick, 9 inches broad, make 1 load of timber.

3 Riga logs make 1 load of timber.

—See LUMBER TRADE.

The annual demand of timber for the British navy, in war, is 60,000 loads, or 40,000 full-grown trees, a ton each, of which thirty-five will stand on an acre; in peace, 32,000 tons, or 48,000 loads. A seventy-four gun ship consumes 8000 loads, or 2000 tons of trees, the produce of fifty-seven acres in a century. Hence the whole navy consumes 102,600 acres, and 1026 per annum.—**ALLNUT.** England imports about 800,000 loads of timber annually, exclusively of masts, yards, staves, lathwood, etc., together with about 8,000,000 of deals and deal-ends.—*Parl. Ret.*

To overcome the difficulty of bending timber, a method has been discovered which, to judge from the accounts given by the most eminent engineers, both of America and England, will be of the greatest service in ship-building and domestic architecture, and in the construction of all pieces of furniture in which it is necessary to employ curved timber. It has been already so employed in the United States.

By this invention, which has been patented in America, the strength of the wood is increased at least 75 per cent. at the point where strength is most required. The curve, moreover, never relaxes. The timber, as in the old process, is first subjected to the influence of steam, which softens the whole mass, and puts it in a fit state for the action of a machine. The principle of

bending, as employed in this new application, is based on end-pressure, which, in condensing and turning at the same time, destroys the capillary tubes by forcing them into each other. These tubes are only of use when the tree is growing; and their amalgamation increases the density of the timber, the pressure being so nicely adjusted that the wood is neither flattened nor spread, nor is the outer circumference of the wood expanded, though the inner is contracted. Now the error of the former process, as expounded by competent judges, has arisen from the disintegrating of the fibre of the wood by expanding the whole mass over a rigid mould. Wood can be more easily compressed than expanded; therefore, it is plain that a process which induces a greater closeness in the component parts of the piece under operation—which, as it were, locks up the whole mass by knitting the fibres together—must augment the degree of hardness and power of resistance. The wood thus becomes almost impervious to damp and to the depredations of insects, while its increased density renders it less liable to take fire; and the present method of cutting and shaping timber being superseded, a saving of from two to three-fourths of the material is brought about. The action of the machine throws the cross-grains into right angles; the knots are compelled to follow the impulse of the bending; the juices are forced out of the cells of the wood, and the cavities are filled up by the interlacing fibres. In the same way, you may sometimes see in the iron of which the barrels of muskets are made a kind of dark grain which indicates that the particles of the metal, either in the natural formation or in the welding, have been strongly clinched in one another. The specimens are always greatly valued for their extraordinary toughness, as well as for a certain fantastical and mottled beauty.

Another of the good results of this new method is that the wood is seasoned by the same process as that which effects the bending. The seasoning of the wood is simply the drying of the juices, and the reduction of the mass to its minimum size before it is employed, so that there shall be no future warping. But, as we have already shown, the compression resorted to in the American system at once expels the sap; and a few hours are sufficient to convert green timber into thoroughly seasoned wood. Here is an obvious saving of time, and also of money; for the ordinary mode of seasoning, by causing the wood to lie waste for a considerable period, locks up the capital of the trader, and of course enhances the price to the purchaser. Time also will be saved in another way, in searching for pieces of wood of the proper curve for carrying out certain designs. "How delighted," says Mr. Jervis, the United States inspector of timber, "will the shipwright be to get clear of the necessity of searching for crooked pieces of timber! There need no longer be any breaking of bats in the frame, as we have been wont to break them. We shall see numbers one, two, and three futtocks, at least, all in one piece." An English engineer (Mr. Charles Mayhew) remarks, that one of the advantages of the American method is that, "in its application to all circular, wreathed, or twisted work, it not only preserves the continuous grain of the wood, which is now usually and laboriously done by narrow slips of veneer glued on cores cut across the grain, with many unsightly joints, ill concealed at best; but it will materially reduce the cost of all curved work, which now varies according to the quickness of the sweep, and will give the artist greater freedom in his design, by allowing him to introduce lines which are now cautiously avoided in order to prevent the cost of their execution." Dr. Hooker, Mr. Fairbairn, Mr. Rennie, Mr. Gallway, civil engineer, and other eminent scientific men, confirm these judgments. A specimen of bent oak now lies before us, and exhibits a beautiful continuity in the sweep of the fibres. Timber-bending has reached a new stage of develop-

ment; and it is not too much to anticipate that it will have considerable influence on the industrial arts.

Tin (Ger. *Blech*, *Weissblech*; Fr. *Fer blanc*; It. *Latta*, *Banda stagnata*; Sp. *Hoja de lata*; Russ. *Blächa*, *Shest*; Arab. *Reas*; Sans. *Trapu* and *Ranga*), a metal which has a fine white color like silver; and when fresh, its brilliancy is very great. It has a slightly disagreeable taste, and emits a peculiar smell when rubbed. Its hardness is between that of gold and lead. Its specific gravity is 7.29. It is very malleable; *tin-foil*, or tin leaf, is about $\frac{1}{1000}$ th part of an inch thick; and it might be beat out into leaves as thin again, if such were required for the purposes of art. In ductility and tenacity it is very inferior. A tin wire 0.078 inch in diameter is capable of supporting a weight of 34.7 pounds only without breaking. Tin is very flexible, and produces a crackling noise when bent. It may be readily alloyed with copper, zinc, etc., forming very valuable compounds.—*THOMSON'S Chemistry*.

The Phenicians traded with England for this article for more than 1100 years before the Christian era. It is said that this trade first gave them commercial importance in the ancient world. Under the Saxons, our tin mines appear to have been neglected; but after the coming in of the Normans, they produced considerable revenues to the earls of Cornwall, particularly to Richard, brother of Henry III.; a charter and various immunities were granted by Edmund, Earl Richard's brother, who also framed the stannary laws, laying a duty on the tin, payable to the earls of Cornwall. Edward III. confirmed the tinners in their privileges, and erected Cornwall into a dukedom, with which he invested his son, Edward the Black Prince, 1387. Since that time, the heirs apparent to the crown of England, if eldest sons, have enjoyed it successively. Tin mines were discovered in Germany, which lessened the value of those in England, till then the only tin mines in Europe, A.D. 1240.—*ANDERSON*. Discovered in Barbary, 1640; in India, 1740; in New Spain, 1782. England exports at present, on an average, 1500 tons of unwrought tin, besides manufactured tin and tin-plates, of the value of about £400,000.

The ores of this metal are found in comparatively few places; the principal, and perhaps the only, ones are Cornwall, Galicia, Erzgebirge in Saxony, Bohemia, the Malay countries, China, and Banca in Asia. They are peculiar to primitive rocks, generally in granite, either in veins or beds, and are often associated with copper and iron pyrites. Tin is much used as a covering to several other metals: iron is tinned, to prevent its rapid oxidation when exposed to air and moisture; and the same process is applied to copper, to avoid the injurious effects to which those who are in the habit of employing cooking utensils made of this metal are always liable. The solutions of tin in the nitric, muriatic, nitro-sulphuric, and tartaric acids, are much used in dyeing, as giving a degree of permanency and brilliancy to several colors, to be obtained by the use of no other mordants with which we are at present acquainted: tin forms the basis of pewter, in the composition of which it is alloyed with lead; when rolled into thin sheets, it is called tin-foil, and is applied, with the addition of mercury, to cover the surface of glass, thus forming looking-glasses, mirrors, etc.; and in combination with sulphur, it constitutes what is called mosaic gold.—*JOYCE'S Chem. Min.* Tin plates, known in Scotland by the name of *white iron*, are applicable to a great variety of purposes. They are formed of thin plates of iron dipped into molten tin. The tin not only covers the surface of the iron, but penetrates it completely, and gives the whole a white color. It is usual to add about one-tenth of copper to the tin, to prevent it from forming too thick a coat upon the iron.—*THOMSON'S Chemistry*.

British Tin Trade.—The tin mines of Cornwall have been worked from a very remote era. The voyages

of the Phœnicians to the Cassiterides, or tin islands, are mentioned by Herodotus (Hb. iii. c. 115), Diodorus Siculus (lib. iv. p. 301, ed. 1604), and Strabo (*Geog.*, lib. iii.). Some difference of opinion has, indeed, been entertained as to the particular islands to which the Phœnicians applied the term Cassiterides; but Borlase (*Account of the Scilly Islands*, p. 72), Larcher (*Herodote*, tome iii. p. 384, ed. 1802), and the ablest critics, agree that they are the Scilly Islands, and the western extremity of Cornwall. After the destruction of Carthage, the British tin trade, which was always reckoned of peculiar importance, was carried on by the merchants of Marseilles, and subsequently by the Romans. Besides Britain, Spain furnished the ancients with considerable quantities of tin. We have no very precise information as to the purposes to which they applied this metal. It has been supposed that the Phœnicians, so famous for their purple dyes, were acquainted with the use of the solution of tin in nitro-muriatic acid in fixing that color. The best of the ancient mirrors, or *specula*, were also made of a mixture of copper and tin; and tin was used in the coating of copper vessels. —WATSON'S *Chemical Essays*.

In modern times, the tin mines of Cornwall and Devon have been wrought with various degrees of energy and success. Queen Elizabeth brought over some German miners, by whom some of the processes were improved. During the civil wars the mines were much neglected. At the commencement of last century, however, the business of mining was carried on with renewed vigor; and from 1720 to 1740 the annual produce was about 2100 tons. The produce went on gradually increasing, till it amounted, in the ten years from 1790 to 1800, to 3254 tons a year. During the next fifteen years the produce fell off; and for the five years ending with 1815 it was always considerably under 3000 tons a year. But in the last-mentioned year a considerable increase took place; and since 1816 the produce has been, with the exception of 1820, always above 3000 tons a year. The average produce of the mines in the year 1843 was estimated at above 5000 tons a year.

Tin, *Oriental Malay*, *Tima*; *Hind. Kalai*; *Siamese, Dibuk*; *Burmese, Kye-p'kyu*, white copper), in *Commercial language* usually called Banca tin. It is found in several provinces of China; but the most extensive, and probably richest tin district in the world, exists in the Malay countries. This comprehends the whole of the peninsula, from the extreme cape to the latitude of 14° on its western side, and to 11° on its eastern, and comprehends several of the small islands lying in the route between the peninsula and Java, as far as the latitude of 3° south; so that the whole of this tin district has an extreme length of near 1200 miles. By far the greater number of the mines within these limits are as yet unwrought and unexplored. It was only in the beginning of last century that the mines of Banca, the most productive at present worked, were accidentally discovered. The whole tin of the Malay countries is the produce of alluvial ores, or what is called in Cornwall "Stream-work;" and from the abundance in which the mineral has been found by the mere washing of the soil, no attempt has hitherto been made at regular mining, or obtaining the ore from its rocky matrix. Malay tin, consequently, is grain tin, or tin in a very pure state; that being the species which alluvial ore uniformly produces. The mines, or rather excavations, are perpendicular pits of from 15 to 25 feet deep; and when the soil and a superstratum of common clay are removed, the bed containing the ore, consisting of quartz and granitic gravel, is reached. The sand and gravel are separated from the ore by passing a stream of water through the whole materials. The ore so obtained is preserved in heaps, and smelted periodically with charcoal in a blast furnace. The mine or pit is kept clear of water by the Chinese wheel. No cattle are used in any part of the

process, human labor being had recourse to throughout the whole of its stages. The most imperfect part of the process is the smelting. The stream ores of Cornwall, which are generally poor, afford from 65 to 75 per cent. of grain tin; whereas, owing to the imperfection of the process, from those of Banca not more than 55 or 60 are usually obtained. The difference in the produce suggested, a few years ago, the practicability of sending the ore to England for the purpose of being smelted; and the experiment was tried; but our customs regulations not allowing the produce to be bonded and re-exported without duty, rendered the scheme abortive.

With very trifling exceptions, the whole tin of the Malay islands is mined and smelted by Chinese settlers; and before their skill and enterprise were applied to its production, the metal seems to have been obtained by the inhabitants of the countries which produced it, by processes hardly more skillful than those by which the precious metals were procured by the native inhabitants of America prior to the introduction of European skill and machinery. The following estimate has been given of the annual produce of the principal states and places producing tin:

EAST COAST OF THE MALAY PENINSULA.

	Piculs.
Junk Ceylon	5,000
Queda	2,000
Pera	3,000
Salangore	3,000
Malacca	4,000
Total piculs	17,000

WEST COAST OF THE MALAY PENINSULA AND ISLANDS.

	Piculs.
Sungora and Patani	3,000
Tringanu	7,000
Pahang	3,000
Singkep	5,000
Banca	25,000
Total piculs	53,000

This can be considered only as a rough estimate; but we believe it is not far wide of the truth. The most considerable port of exportation is Batavia; from which there is sent annually, either directly or through orders from the Dutch government or the authorities at Banca, 2000 tons. From Prince of Wales Island there is also a considerable quantity exported; and a smaller one direct to China in junks, from several of the native ports on the eastern shore of the Malay peninsula. The great marts for the consumption of tin are China, Hindostan, and the continent of Europe. The quality of the different descriptions of Malay tin, although there may be some inconsiderable difference in the quality of the original ores, seems to be derived chiefly from the greater or less skill with which the process of smelting is conducted; and this, again, necessarily depends upon the extent of capital and goodness of the machinery employed. The mining operations of Banca have long been conducted upon a larger scale, and with more skill, than in any other of the Malay countries; and, consequently, the metal produced in this island is superior by from 10 to 12 per cent. in the market of Canton it is called "old tin," in contradistinction to "new tin," the produce of the other Malay countries. Next, in point of quality, to the produce of Banca, are those of Tringanu and Singkep, which are not more than 5 per cent. inferior to it. The tin of the state of Pera, a considerable part of which is produced by the natives themselves, without Chinese assistance, is the worst, and usually about 15 per cent. below that of Banca. The native tin of China is 10 per cent. inferior to that of Banca, and is probably block-tin, like the greater part of that of Cornwall; and, like it, the produce of regular mining operations, and not alluvial. The produce of the Chinese mines is said of late years to have greatly decreased; probably owing to the great increase which has recently taken place in the produce of the Malay countries, and the cheapness and abundance with which

it finds its way to China. It should be added, that of late years, and chiefly owing to the very low price and abundance of German spelter (zinc) in the Indian market, this commodity has occasionally been fraudulently mixed with tin. The Chinese brokers of Canton, however, are sufficiently expert to detect the adulteration; and it is believed that this discreditable practice has lately ceased. The price of tin, taking the market of Singapore as the standard, has fluctuated of late years from 14 to 20 Spanish dollars per picul; equal, at the exchange of 4s. per dollar, to 47s. and 67s. per cwt. At an average of these prices, the annual value of the whole Malay tin will be about £240,000 per annum.—CRAWFORD's *History of the Indian Archipelago*; Dr. HORSFIELD's *MS. Statistical View of the Island of Banca*; *Singapore Chronicle*; *Canton Register*, etc.

EXPORTS OF DOMESTIC TIN FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Value.
Canada	\$4174
Other British North American Possessions....	518
British West Indies	83
Porto Rico	250
Ports in Africa	66
Mexico	128
Sandwich Islands	50
Whale-fisheries	354
Total	\$5622

EXPORTS OF FOREIGN TIN FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	In Pigs and Bars.	In Plates and Sheets.	Manufactures of, not specified.
Canada	\$8888	\$22,946	\$14,420
Other British N. A. Poss. ..	57	2,325	...
British West Indies .....	...	330	...
Haiti	690	3,581	130
Mexico	1474	3,010	...
New Granada .....	...	274	...
Sandwich Islands	50	2,441	...
Total	\$6148	\$34,907	\$14,550
From warehouse	1863	24,433	285
Not from warehouse	4285	10,474	14,265

IMPORTS OF TIN AND MANUFACTURES OF TIN INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	In Pigs and Bars.	In Plates and Sheets.	Foil.	Other Manufactures.
Hamburg	\$ 2,246	2,493	18	467
Bremen .....	...	...	1,116	3,503
Holland	277,347	...	...	...
Dutch East Indies	65,584	...	...	...
Belgium	27,71	2,501	4,637	6,379
England	87,788	4,792,763	2,753	16,480
Scotland	83	...	...	...
Canada .....	...	...	...	43
Other British N. A. Poss. ....	...	1,527	...	...
British West Indies .....	...	236	21	...
British Guiana	641	...	...	...
British East Indies	491,171	18	...	...
France on the Atlantic	39,488	...	12,830	4,840
France on the Medit'ean .....	...	...	5	...
Philippine Islands	2,007	...	...	...
Cuba .....	...	...	...	196
New Granada	61	...	56	...
Buenos Ayres	53	...	...	...
Chili	24,602	...	...	...
Peru	318	...	...	9
Total	1,023,210	4,799,538	21,426	31,922

Tithes are the tenth part of the increase yearly arising and renewing from the profits of lands, the stock upon lands, and the personal industry of the inhabitants, and are offerings payable to the Church by law. Under the Jewish system, the tenth part of the yearly increase of their goods was due to the priests.—*Numbers*, xviii. 21; *Deut.*, xiv. 22; *Levit.*, xxvii. 30, 32.

In the earliest ages of the Christian Church, offerings were made by its members at the altar, at collections, and in other ways; and such payments were enjoined by decrees of the Church, and sanctioned by general usage. For many centuries, however, they were voluntary. But when the Church had increased

in power, and began to number among its members many who adhered to it because it was the prevailing religion, it was found necessary to enforce certain fixed contributions for the support of the ministers of religion. The Church relied upon the example of the Jews, and claimed a tenth. Meanwhile, the conversion of temporal princes to Christianity, and their zeal in favor of their new faith, enabled the Church to obtain the enactment of laws to compel the payment of tithes. In England, the first instance of a law for the offering of tithes was that of Offa, King of Mercia, toward the end of the 8th century. He first gave the Church a civil right in tithes, and enabled the clergy to recover them as their legal due. The law of Offa was at a later period extended to the whole of England by King Ethelwulph.—PRIDEAUX on *Tithes*; BOHN's *Cyclopaedia*.

Tobacco (Da. *Tobak*; Du. *Tabak*; Fr. *Tabac*; Ger. *Taback*; It. *Tabacco*; Pol. *Tobaka*; Russ. *Tabak*; Sp. *Tabaco*; Arab. *Bujjerbbang*; Hind. *Tumbákú*; Malay, *Tambráco*), the dried leaves of the *Nicotiana tabacum*, a plant indigenous to America, but which succeeds very well, and is extensively cultivated in most parts of the Old World. The recent leaves possess very little odor or taste; but when dried, their odor is strong, narcotic, and somewhat fetid; their taste bitter and extremely acrid. When well cured, they are of a yellowish green color. When distilled, they yield an essential oil, on which their virtue depends, and which is said to be a virulent poison. The leaves are used in various ways; being chewed, smoked, and ground and manufactured into snuff. It is in the last mentioned form that tobacco is principally used in Great Britain; and though the contrary has been often asserted, its use does not seem to be productive of any perceptible bad consequence.

Historical Sketch.—The taste for tobacco, though apparently administering only to a frivolous gratification, has given birth to a most extensive commerce, and been a powerful spur to industry. Being a native of the New World, its introduction into Europe dates only from the early part of the 16th century. Seeds of the plant were sent, in 1560, from Portugal to Catherine de' Medici, by Jean Nicot, the French ambassador in that country, from whom it has received its botanical name. The notion, at one time so general, that the specific appellation tobacco was derived from its having been imported from Tobago, is now universally admitted to be without foundation. Humboldt has shown that tobacco was the term used in the Haytian language to designate the pipe, or instrument made use of by the natives in smoking the herb; and the term, having been transferred by the Spaniards from the pipe to the herb itself, has been adopted by the other nations of the ancient world.—*Essai Politique sur la Nouvelle Espagne*, vol. iii. p. 50, 2d. ed. Tobacco is believed to have been first introduced into England by the settlers who returned, in 1586, from the colony which it had been attempted to found in Virginia, under the auspices of Sir Walter Raleigh, in the preceding year. Harriott, who accompanied this expedition, gives, in his description of Virginia, an account of the tobacco plant, and of the manner in which it was used by the natives; adding, that the English, during the time they were in Virginia, and since their return home, were accustomed to smoke it after the fashion of the Indians, "and found many rare and wonderful experiments of the virtue thereof."—HAKLUIT, vol. i. p. 75. Raleigh, and other young men of fashion, having adopted the practice of smoking, it spread among the English; as it had previously spread among the Spaniards, Portuguese, French, and other continental nations. But it made its greatest progress in England after the foundation of the colony at Jamestown, in Virginia, in 1607. The soil of the colony being found particularly well fitted for the culture of tobacco, considerable quantities were raised and sent

home; and the numerous individuals interested in the colony contributed to introduce that taste for it which was diffused among all classes with astonishing rapidity. James I. attempted, by repeated proclamations and publications, some of them couched in very strong terms, to restrain the use of tobacco. But his efforts had very little effect; and the settlers in Virginia continued to experience a more rapidly increasing and better demand for tobacco than for any other product of the colony. During the earlier part of the reign of Charles I., the trade in tobacco was monopolized by the crown. This monopoly was not, however, of long continuance, and totally ceased at the breaking out of the civil war.

Tobacco plants had been early introduced into England, and were found to answer remarkably well. Their cultivation was, indeed, prohibited by James, and afterward by Charles, but apparently without effect. At length, however, the growing consumption of tobacco having excited the attention of the government financiers, it was seen that, by imposing a duty on its importation, a considerable revenue might be raised; but that, were it allowed to be freely cultivated at home, it would be very difficult to collect a duty upon it. In 1643 the Lords and Commons imposed a moderate duty, for the sake of revenue, on plantation tobacco; but instead of directly prohibiting the use of native tobacco, they burdened it with such a duty as, it was supposed, would occasion its culture to be abandoned. The facility, however, with which the duty was evaded soon satisfied the republican leaders that more vigorous measures were required to stop its cultivation, and consequently to render its importation a source of revenue. Hence, in 1652, an act was passed prohibiting the growth of tobacco in England, and appointing commissioners to see its provisions carried into effect. This act was confirmed at the Restoration, by the act Charles II., c. 34, which ordered that all tobacco plantations should be destroyed. These measures were believed at the time to have been principally brought about by the solicitations of the planters; but their real intention was not so much to conciliate or benefit the latter, as to facilitate the collection of a revenue from tobacco; and, considered in this point of view, their policy seems quite unexceptionable.

Nicotiana Tabacum.—It is thought by some that this plant received its name from Tabasco, a province of Yucatan, New Spain; others say from the island of Tobago, one of the Caribbees; and others that it is derived from Tobasco, in the Gulf of Florida. It was first observed at San Domingo, A.D. 1496; and was used freely by the Spaniards in Yucatan in 1520. Tobacco was first carried to England in the seventh year of Elizabeth, 1565, by Sir John Hawkins; but Sir Walter Raleigh and Sir Francis Drake are also mentioned as having first introduced it in England. According to *Stowe's Chronicle*, it was manufactured only for exportation for some years. The Pied Bull Inn, at Islington, was the first house in England where tobacco was smoked. In 1584 a proclamation of the English government was issued against it. The Star Chamber ordered the duties to be 6s. 10d. per lb., in the year 1614. Its cultivation was prohibited in England by Charles II. The act laying a specific duty on the importation into England was passed 1684. The cultivation was allowed in Ireland about the year 1779. In *Anderson's History of Commerce* we find that the tax was increased, and put under the excise in 1789. Various statutes have been passed by the English government relative to tobacco. The act to revive the act prohibiting the culture of tobacco in Ireland passed 2 William IV. (August, 1831). The act directing that tobacco grown in Ireland be purchased in order to its being destroyed, March 24, 1832. The quantity consumed in England in 1791 was 9,500,000 lbs., and in 1829 about 15,000,000 lbs. In 1840 the

quantity had reached to 40,000,000 lbs. In 1854 the quantity imported into Great Britain was about 35,000,000 lbs., of which 2,710,000 lbs. were manufactured as cigars or snuff, and the rest unmanufactured. —HAYDN.

In some countries tobacco is principally, perhaps, used in the form of snuff; in others it is principally chewed, or again smoked; but, in one form or another, it is every where made use of. So early as 1624, Pope Urban VIII. issued a bull excommunicating those who smoked in churches! The practice of smoking was at one time exceedingly prevalent in England; but during the reign of George III. it was well-nigh superseded, at least among the higher and middle classes, by the practice of snuff-taking. Latterly, however, smoking has been extensively revived among both the rich and the poor.

We quote the following statement as to the universality of the use of tobacco from a learned paper on its "Introduction and Use," in the 22d volume (p. 142) of the *Asiatic Journal*: "In Spain, France, and Germany, in Holland, Sweden, Denmark, and Russia, the practice of smoking tobacco prevails among the rich and poor, the learned and the gay. In the United States smoking is often carried to excess. If we pass to the East, we shall find the practice almost universal. In Turkey the pipe is perpetually in the mouth; and the most solemn conferences are generally concluded with a friendly pipe, employed like the *calumet of peace* among the Indians. In the East Indies not merely all classes, but both sexes, inhale the fragrant steam; the only distinction among them consisting in the shape of the instrument employed, and the species of the herb smoked. In China the habit equally prevails; and a modern traveler in that country (Barrow) states, that every Chinese female, from the age of eight or nine years, wears, as an appendage to her dress, a small silken purse or pocket to hold tobacco and a pipe, with the use of which many of them are not unacquainted at this tender age. This prevalence of the practice at an early period among the Chinese is appealed to by M. Pallas as an evidence that 'in Asia, and especially in China, the use of tobacco for smoking is more ancient than the discovery of the New World.' He adds: 'Among the Chinese, and among the Mongol tribes who had the most intercourse with them, the custom of smoking is so general, so frequent, and has become so indispensable a luxury; the tobacco purse affixed to their belt so necessary an article of dress; the form of the pipes, from which the Dutch seem to have taken the model of theirs, so original; and, lastly, the preparation of the yellow leaves, which are merely rubbed to pieces and then put into the pipe, so peculiar, that they could not possibly derive all this from America by way of Europe; especially as India, where the practice of smoking is not so general, intervenes between Persia and China.' This, however, is a very doubtful proposition. It seems sufficiently established that the tobacco plant was first brought from Central America (see date of introduction of tobacco), and it is most probable that it was thence carried to Siam, China, and other Eastern countries. The names given to it in all the languages of the East are obviously of European, or rather American, origin; a fact which seems completely to negative the idea of its being indigenous to the East.

Tobacco is extensively cultivated in Mexico, but only for home consumption. It might probably, however, were it not for the restrictions under which it is placed, form a considerable article of export from that country. Under the Spanish government, the tobacco monopoly was one of the principal sources of revenue; yielding from 4,000,000 to 4,500,000 dollars, exclusive of the expenses of administration, amounting to about 800,000 dollars. No tobacco was allowed to be cultivated, except in a few specified places. Commissioners, or *guardas de tabaco*, were appointed, whose duty

it was to take care that all tobacco plantations without the privileged districts should be destroyed. The government fixed the price at which the cultivators of tobacco were obliged to sell it to its agents. The sale of the manufactured tobacco was farmed out; and cigars were not allowed to be sold, except at the royal *estancos*. No one was allowed to use cigars of his own manufacture. This oppressive monopoly was established in 1764. It has been continued, from the difficulty of supplying the revenue which it produces, by the revolutionary governments.—HUMBOLDT, *Nouvelle Espagne*, iii. 49; POINSETT'S *Notes on Mexico*, note 116, London ed.

Cuba is celebrated for its tobacco, particularly its cigars. These consist of the leaves, formed into small rolls, for the purpose of smoking. Formerly their importation into England was prohibited; but they may now be imported on paying an exorbitant duty. Havana cigars are usually reckoned the best. Previously to 1820, the cultivation and sale of tobacco were subjected to the same sort of monopoly in Cuba as in Mexico; but at the period referred to the trade was thrown open. In consequence of the freedom thus given to the business, the production and exportation of tobacco are both rapidly increasing, though hardly, perhaps, so much as might have been expected, the culture of sugar and coffee being for a while reckoned more profitable; that, however, is no longer the case.—See CUBA for Exports.

United States.—Previous to the war of Independence, its culture had spread into Maryland, Carolina, Georgia, and Louisiana, from which nearly all Europe was supplied; but at present most of the sovereigns of the Old World derive a considerable part of their revenue from the cultivation of this plant. Independent of its production in the Middle and Southern States of the Union, tobacco is extensively cultivated in Mexico, the Spanish Main, Cuba, Brazil, Trinidad, San Domingo, Turkey, Persia, India, China, Australia, the Philippines, and Japan. It has also been raised with success in nearly every country in Europe, Egypt, Algeria, the Cape of Good Hope, the Canaries, and numerous other islands in the ocean, Canada, New Brunswick, and on the western coast of America. The principal varieties cultivated in the United States are the Virginian, the large-leaved, the dwarf, the Cuba, and the common green tobacco.

In 1622 there were raised in Virginia 60,000 lbs. The amount exported from that colony in 1639 was 120,000 lbs.; annually for ten years preceding 1709, 28,868,666 lbs.; annually for several years preceding the Revolution, 55,000 hogsheads; in 1758, 70,000 hogsheads; from North Carolina, in 1756, 100 hogsheads; from Georgia, in 1772, 176,732 lbs. The amount exported from the United Colonies in 1772 was 97,799,263 lbs.; in 1780, 17,424,267 lbs.; from the United States, in 1787, 99,041,000 lbs.; in 1791, 101,272 hogsheads, 81,122 lbs. manufactured, and 15,689 lbs. of snuff; in 1800, 78,680 hogsheads, 457,719 lbs. manufactured, and 41,453 lbs. of snuff; in 1810, 84,134 hogsheads, 495,427 lbs. manufactured, and 46,640 lbs. of snuff; in 1820-'21, 66,858 hogsheads, 1,332,949 lbs. manufactured, and 44,552 lbs. of snuff; in 1830-'31, 86,718 hogsheads, 3,639,866 lbs. manufactured, and 27,967 lbs. of snuff; in 1840-'41, 147,828 hogsheads, 7,503,644 lbs. manufactured, and 68,553 lbs. of snuff; in 1850-'51, 95,945 hogsheads, 7,235,358 lbs. manufactured, and 37,422 lbs. of snuff.

According to the census returns of 1840, the amount of tobacco raised in the United States was 219,163,319 lbs.; of 1850, 199,752,646 lbs.; showing a decrease in its culture of 19,410,673 lbs.

Great Britain.—It is assumed by British statisticians that the yearly consumption of tobacco in Great Britain and Ireland amounts to 26,000 tons; about one half of which, it is supposed, is smuggled, owing to the excessive duties (upward of 1000 per cent.) levied on

the article under the tariff system of that kingdom. The quantity of cigars and snuff imported does not exceed two or three hundred weight per annum. The following table, compiled from parliamentary returns, shows the imports of tobacco into the United Kingdom, and the quantities entered at each port, during the year 1850:

Ports.	Leaf.	Manufactured and Cigars.	Total.
	Tons.	Tons.	Tons.
London	7,638	482	8,120
Liverpool	6,870	146	7,016
Bristol	435	...	435
Glasgow	414	7	421
Leith	200	...	200
Southampton	140	55	195
Other places	3	4	7
Total	15,700	694	16,394

The following return, transmitted to the House of Commons, for the year ending January 5, 1853, shows the annual consumption of tobacco in the United Kingdom, and duty levied on the same:

Ports.	Leaf.	Manufact'd and Cigars.	Total.	Duty.
	Tons.	Tons.	Tons.	Dollars.
London	4,762	69	4,831	8,764,940
Liverpool	2,765	8	2,763	4,903,160
Bristol	730	..	730	1,377,425
Glasgow	651	1	652	1,111,805
Dublin	604	..	607	1,077,835
Belfast	877	..	877	665,555
Newcastle	341	..	341	602,220
Cork	270	..	270	476,810
Limerick	258	..	258	455,020
Leith	238	1	239	422,570
Freston	17	..	179	316,560
Chester	158	..	158	279,540
Shields	147	..	147	260,125
Waterford	132	..	132	233,350
Londonderry	116	..	116	204,960
Southampton .....	..	5	13	40,775
Other places	904	3	907	1,603,855
Total	12,660	90	12,750	22,803,705

The following table, exhibiting the exports of tobacco from Great Britain for 1852, will show the quantities and destination of that article supplied by England to foreign countries, relatively to the quantities imported. Total quantity imported 15,700 tons, or 35,168,000 lbs.

EXPORTS FROM GREAT BRITAIN, 1852.			
Places.	Hhds.	Places.	Hhds.
West coast of Africa	1725	Draaman	81
Holland	227	Christiana	20
Malta	134	Irontheim	17
San Sebastian	110	Senegal	15
Alexandria	53	Guernsey	14
Bahia	51	Liberia	10
Antwerp	44	Isle of Man	54
Rio de Janeiro	39	Sundry places	32
Gibraltar	36	Total	2602

The foregoing table shows that in 1852 there were exported from Great Britain about 2,602,000 lbs. (allowing 1000 lbs. to the hogshead) out of the 35,168,000 lbs. imported, showing the amount retained for consumption to be 32,566,000 lbs.

QUANTITIES AND VALUE OF TOBACCO (RAW) EXPORTED FROM THE UNITED STATES TO GREAT BRITAIN AND IRELAND FROM 1830 TO 1855.

Years.	Quantity.	Value.	Years.	Quantity.	Value.
		Dollars.			Dollars.
1830...	20,211	1,533,971	1843...	21,050	1,282,616
1831...	26,785	1,392,336	1844...	39,132	2,900,122
1832...	36,898	2,945,450	1845...	26,169	1,985,037
1833...	23,884	2,250,197	1846...	27,943	2,428,222
1834...	30,653	2,937,020	1847...	21,745	2,593,775
1835...	27,593	3,400,639	1848...	23,801	2,260,137
1836...	38,855	4,593,443	1849...	21,857	1,771,123
1837...	21,733	1,879,868	1850...	30,926	3,025,585
1838...	25,732	2,857,203	1851...	23,678	3,458,585
1839...	30,330	3,404,067	1852...	17,616	2,512,225
1840...	27,136	3,227,984	1853...	52,236	3,433,423
1841...	43,131	6,114,836	1854...	17,664	2,146,442
1842...	36,999	3,212,207	1855...	24,208*	3,547,700

* There were also exported cases and bales, included in the column of value.

The duties on imported tobacco yield to the British government over four and a half millions sterling an-

nually. For the fifty years, from 1801 to 1850, the aggregate duties collected amounted to the enormous sum of one hundred and fifty million pounds sterling! We annex the quantities imported, and the duties, at intervals of five years:

Years.	Pounds consumed.	Duty paid.
1801.....	16,904,000	£1,209,000
1805.....	16,815,000	1,391,000
1810.....	20,328,000	2,043,000
1815.....	17,965,000	2,604,000
1820.....	15,716,000	3,117,000
1825.....	13,761,000	3,258,000
1830.....	19,293,000	2,924,000
1835.....	21,116,000	3,354,000
1840.....	23,006,000	3,616,000
1845.....	26,161,000	4,245,000
1850.....	27,734,000	4,660,000

The changes in the import duties were as follows:

Years.	American.	Spanish or Portuguese.
1801-'2.....	1 7	4 6
1803.....	1 7	4 8½
1804.....	1 8½	4 10½
1805.....	1 9½	4 11
1806.....	2 2½	5 5
1809.....	.....	4 1½
1812.....	2 5	4 6
1813.....	2 8	4 11½
1815.....	3 2	5 5½
1819.....	4 0	6 0
1825.....	3 0	5 0
1826.....	.....	5 0
1833.....	2 9	3 0
1842.....	3 0	3 0

We have no means of ascertaining the value of cigars smoked away in the United States annually.

Baden.—The cultivation of tobacco in the Grand Duchy of Baden was commenced in the early part of the present century. It has greatly increased within the last twenty years; and particularly so since the commencement of the exportation of *palatinate cigars* to the United States, and which export trade during the last twelve years has shown a constantly augmenting importance. In the Grand Duchy there are now from 18,000 to 20,000 acres of land devoted to the cultivation of tobacco. It is particularly the Baden palatinate which yields the most and best; but the cultivation extends to other parts, and even as far as Offenbourg, in Breisgau. The crops of five years differed very much from each other in regard to quantity, and still more in quality. The last two crops were superior to all others.

The crops of 1851 were.....	100,000 cwt.
" 1852.....	200,000 "
" 1853.....	160,000 "
" 1854.....	150,000 "
" 1855.....	170,000 "
" 1856.....	180,000 "

The cultivation and produce of the Pfalz (Rhenish Bavaria) amounts to about half of that of Baden. As compared with other crops, the cultivation of tobacco would appear to the traveler to be on very large plantations, but the vast extent of tobacco ground in some parts of the Badish palatinate (as near Seckenheim, where they reach for miles) belong to hundreds of different persons, generally speaking, in the Baden and Bavarian palatinates; tobacco is cultivated only in detached and small pieces of ground; some few of the principal land-owners raise from 150 to 200 cwt. per annum; some not more than 5 cwt.; and others, again, not more than 3, and even down to 2 cwt. The tobacco is not put up in hogsheds, as in America; it is put up in strong bales. The finer sorts and *leaf* are put up in boxes, and exported to Spain, England, etc. Common tobacco for inland consumption is mostly sold and dispatched in a loose state.

From 1844 to 1852 the prices of tobacco, with a few exceptions, remained about the same; the lowest at 7½ florins, and the highest 15 florins, per 50 kilograms. During the years 1852-'53 the export of cigars, principally to the United States, had become so great as to make the cigar manufacturers early and important purchasers. Large purchases were also made for the

régies of France and Austria. The latter alone bought 100,000 cwt., which, of course, produced a great rise in the market; prices went up from 12 florins to 25 florins per 50 kilograms; and since that period tobacco, like cotton and public funds, has become an article of "speculation."

The average prices for the last five years may be quoted as follows:

Say for 1851.....	12 to 22 florins per 50 kilograms.
" 1852.....	7 to 18 " " "
" 1853.....	10 to 14 " " "
" 1854.....	12 to 25 " " "
" 1855.....	10 to 30 " " "
" 1856.....	13 to 42 " " "

The whole of the last crop was disposed of before the close of the year. Between Carlsruhe and Bruchsal the prices were from 16 to 23 florins. The first-rate tobacco of the palatinate was sold from 33 to 42 florins per 50 kilograms. According to estimate, about one half of the produce is manufactured, and the other half exported to England, Spain, and Switzerland, and to Austria and France. It is quite clear that the growing of tobacco is profitable; for it is known that on an average it costs the planter not over 12 florins per 50 kilograms; and in further evidence of the fact is the constantly increasing breadth of land devoted to the cultivation of that crop. The consumption of foreign tobacco in the Grand Duchy can not be correctly ascertained, there being no statistical account of it, but I have heard the quantity estimated at 25,000 cwt. per annum.

The present high prices of tobacco, in the face of good crops, are caused in a great measure by the active export demand. The shippers of cigars to America, and who have now mostly their own manufactories, are large and ready purchasers, and for the best kinds pay high prices. The Austrian *régie* is a very important customer, and the French *régie* early last fall contracted with some of the Baden cigar manufactories for 100,000,000 of cigars. The improved export trade has increased the demand for tobacco of foreign growth. In Baden and Rhenish Bavaria there are no other taxes on the cultivation of tobacco except land and ground taxes, while the duty on foreign tobacco is,

On raw tobacco.....	7 florins per 50 kilograms.
On manufactured tobacco.....	19½ " " "
On cigars.....	85 " " "

—United States Com. Relat.

France.—The revenue derived from the tobacco monopoly in France, during the first nine months of 1857, reaches the enormous sum of 127,223,000 francs, or about \$25,444,600—showing an increase over the revenue derived from the same source the corresponding period of 1856 of 7,488,000 francs, or \$1,497,600. The increase is owing to the larger consumption of tobacco in France, and would seem to indicate a steady market for the article in the leading countries of Europe. The tobacco monopoly, under the *régie* system, commenced in France in the year 1811. The following statement will show the amount of revenue derived from this article in quinquennial periods from that date:

1811.....	\$1,200,000	1841.....	\$14,397,819
1816.....	6,671,064	1846.....	17,112,216
1821.....	8,455,801	1851.....	18,446,746
1826.....	9,993,611	1856.....	19,068,816
1831.....	9,184,156	9 months 1856.....	23,947,000
1836.....	11,125,908	9 months 1857.....	25,444,600

The United States supplies about two-fifths of all the tobacco consumed in Europe, and usually from three-fourths to four-fifths of all the tobacco consumed in France. Were the monopoly abolished, and our tobacco admitted at a moderate duty, our exports of the article to France would increase at least ten-fold. The average price of American tobacco delivered at the factories of the *régie*, all expenses included, is estimated as follows:

Maryland tobacco.....	9-5 cents per lb.
Virginia.....	8-2 " "
Kentucky.....	7-7 " "
Missouri.....	7-5 " "

The profits realized by the *régie*, one year with another, average nearly 450 per cent.

Netherlands.—The cultivation of tobacco in the Netherlands is subject to no restrictions, with the exception of the excise duty, to which, like all other products, it is liable. From 1800 to 1900 morgens (equal to 3600 to 3800 acres) are annually devoted to tobacco. The tobacco land is situated in the provinces of Guiderland, Overysseel, Utrecht, and Zealand. The average quantity of tobacco produced on each morgen is about 4500 lbs. The total crop is estimated at from 8,000,000 to 9,000,000 lbs. per annum.—*Annales du Commerce Extérieur*, No. 540. The quantity reserved for home consumption is about 2,000,000 lbs., of which,

Smoking tobacco, about	900,000 lbs.
Snuff	700,000 "
Covers for cigars	400,000 "

Besides the above, the Netherlands export to foreign countries about 6,000,000 lbs. of tobacco:

In the leaf	5,000,000 lbs.
Manufactured	1,000,000 "

The following table shows the annual tobacco export of Holland:

The Rhenish provinces	580,000 kilograms.
Russia and Great Britain	400,000 "
Sardinia	250,000 "
Norway and Denmark	80,000 "
Naples	50,000 "
Roman states	50,000 "
Spain and Portugal	80,000 "

The total quantity of tobacco grown in the Netherlands is distributed as follows:

	Kilograms.
For the manufacture of snuff and chewing tobacco	1,875,000
For cigars and cigar covers	1,775,000

Average price of the former, from 14 to 32 florins for common; 80 to 90 florins for the best, per 100 kilograms. Average price of the latter, from 14 to 32 florins for common; 60 to 90 florins for the best, per 100 kilograms. The planters of Arnhem, and some other districts, have during the past few years applied themselves to the raising of a very light, clear, yellow tobacco, for cigar covering, for which they obtain a very high price. For this purpose they employ a very active fertilizer, with a view to the large and rapid growth of the plant, which they dry by the sun with great skill and management. The average quantity of foreign tobacco annually imported is from 22,000,000 to 25,000,000 lbs., chiefly from the following places:

Maryland.....	5,600,000 kilo.	Varinas.....	120,000 kilo.
Kentucky.....	1,750,000 "	Manilla.....	75,000 "
Virginia.....	1,400,000 "	Colombia.....	30,000 "
Java.....	800,000 "	Brazil.....	30,000 "
Porto Rico.....	360,000 "	Havana.....	60,000 "
Cuba.....	180,000 "	Tobacco stems	145,000 "
San Domingo.....	120,000 "		

A third part of the tobacco imported from foreign countries is consumed in the Netherlands, the other two-thirds are exported. Germany and Belgium receive the larger portion, which consists altogether of Virginia, Maryland, Kentucky, and some Java tobacco. Besides the imports above designated, Hamburg supplies Holland annually with large quantities of tobacco of American growth. The tobacco manufactories in Holland, of the first class, are numerous. They are chiefly located at Rotterdam and Amsterdam, though many similar factories are scattered throughout the provinces. The first-class factories employ upward of a million of operatives. The average consumption of tobacco in Holland is about two kilograms (4·408 lbs.) for each individual, or 6,000,000 kilograms, or upward of 13,000,000 lbs. for the whole population. Germany offers the principal market for the Dutch tobacco trade, though considerable quantities are exported to the Levant, Italy, Austria, Belgium, Denmark, Surinam, etc.—C. D.

Tobacco is, next to salt, probably the article most universally consumed by men. In one form or an-

other, but most generally in the form of fume or smoke, there is no climate in which it is not consumed, and no nationality that has not adopted it. To put down its use has equally baffled legislators and moralists; and, in the words of Pope on a higher subject, it may be said to be partaken of "by saint, by savage, and by sage." The civilized European and American nations are the smallest consumers of tobacco of any people, in consequence of its being every where with them an object of heavy taxation, of its being very generally a foreign commodity or high-priced, because raised in uncongenial climates, and, finally, its being for the most part confined in use to the male sex.

The duty on the importation of *raw tobacco* amounts,

In the United States to...	30 per cent. ad valorem.
In Belgium to.....	15-0 "
In Great Britain to.....	93-3 "
In Hanover to.....	9-6 "
In Holstein to.....	10 "
In Holland to.....	3-5 "
In Russia to.....	161 "
In Switzerland to.....	8 "
In Zoll-Verein to.....	45 "

—German Custom Union.

Statement "respecting the Tariff Duties, Restrictions, Prohibitions, and Custom-house Regulations applicable to American Tobacco, in the principal commercial Countries of Europe."

BREMEN levies a Tariff Duty of $\frac{3}{4}$ of 1 per Cent.—Import duty is levied at the rate given on the invoice value, with the addition of freight and insurance charges. All foreign vessels (American excepted) must be entered at this port by a licensed ship-broker, the exemption in favor of American vessels having been conceded by the Bremen Senate in 1852.

GREAT BRITAIN levies a Duty of 72 Cents per lb., and 5 per Cent. additional.—Tobacco, snuff, and cigars are prohibited to be imported into Great Britain, unless in vessels of not less than 120 tons burden, and into ports approved by the commissioners of customs. These ports are London, Liverpool, Bristol, Hull, Lancaster, Cowes, Falmouth, Whitehaven, Plymouth, Newcastle, Southampton, Preston, and Swansea, in England; Aberdeen, Leith, and Greenock, in Scotland; and Dublin, Belfast, Galway, Limerick, Londonderry, Newry, Sligo, Waterford, Wexford, and Drogheda, in Ireland. Duties alike from all countries and in all bottoms. The consumption of tobacco in the United Kingdom was:

Years.	Consumption.	Revenue.	Population.	Consumption per head.
	Pounds.	£		Ounces.
1821	15,838,152	3,192,583	21,282,960	11·71
1831	19,533,841	2,964,592	24,410,439	12·80
1841	22,300,360	3,580,163	27,019,672	13·21
1851	28,062,978	4,485,768	27,452,262	16·86

In 1853 the duty amounted to £4,751,780, or \$23,000,000.

FRANCE.—*Tobacco a Government Monopoly.*—In 1629 the first duties on the tobacco trade were levied. In 1674 Louis XIV. established the first monopoly in Europe. The cultivation of tobacco is prohibited except in six departments. From 1811 to 1852 there were sold by the government 1,308,838,075 lbs., which brought a clear revenue of \$432,233,434. The expenses of the administration were 24 per cent. *ad valorem*. By the terms of the treaty of June 24, 1822, American produce, if imported direct to France in United States bottoms, is admitted on the payment of the same duties as apply to similar importations from countries out of Europe in French vessels. The origin of the merchandise must, however, be duly authenticated and certified by the collector at the port of exportation, and by the French consul. American tobacco is purchased by the commissioners of the *régie* for the government factories, and is admitted either in French or American vessels free of duty. In foreign vessels the duty is \$1·86 per 100 kilograms (221 lbs.).

The monopoly was established in 1810 by imperial decree.

HOLLAND levies a Duty of 28 Cents per 221 lbs.—If imported direct from the United States, admitted on the same terms, whether in American or national vessels.

SPAIN.—*Tobacco is a Government Monopoly.*—The gross receipts from the tobacco monopoly in the years 1830-'34 were \$4,950,121, and the net receipts \$3,097,147. The sold tobacco amounted to 2-4 lbs. per head of the population. The net receipts of 1851 were \$3,100,000. The expenses of the administration amounted to 40 per cent. of the total value. Admitted at the port of Malaga in American vessels at a duty of 20 cents, and in Spanish at a duty of 15 cents per lb. The privilege of the tobacco monopoly in Spain is rented to individuals, and yields a revenue of about \$4,000,000 to \$6,000,000 per annum.

BELGIUM levies a Duty of \$1 86 per 221 lbs.—In the direct trade between the United States and Belgium the vessels of both nations are equalized by treaty. In the indirect or triangular trade there are discriminations, though frequently suspended by Belgium.

SARDINIA.—*A Government Monopoly.*—The annual revenue can not be calculated, as the Italian states are grouped in official returns of commerce.

AUSTRIA.—*A Government Monopoly.*—The monopoly exists since 1784. The gain of the government amounts to 76 per cent. *ad valorem*. The net receipts amounted in 1851 to \$8,739,421, and in 1853 to \$10,619,106. The consumption in the whole empire was, in 1850, 84,457,513 lbs.; in 1851, 54,217,578 lbs.; in 1852, 61,805,697 lbs.; in 1853, 57,926,925 lbs.; in 1854, 62,020,333 lbs. When imported by permission of the government, the duty is \$4 85 per 110 lbs., besides 97 cents per lb. for a license to import.

SWEDEN levies a Duty of 5 5-6 per lb.—The duty is over 100 per cent., and importations from the United States are diminishing annually.

NORWAY levies a Duty of 4½ cents per lb.—Owing to a difference in the weights and measures in use in Norway, the duty is about 33-3 per cent. less than in Sweden.

PORTUGAL.—*A Government Monopoly.*—The raw article for the factories of the government is derived chiefly from Brazil, about half a million lbs. per annum being received from the United States.

STATEMENT EXHIBITING THE QUANTITIES OF AMERICAN TOBACCO EXPORTED FROM THE UNITED STATES INTO THE COUNTRIES DESIGNATED, WITH THE AMOUNTS OF DUTIES PAID THEREON, DURING THE COMMERCIAL YEAR 1855.

Countries.	Quantities.	Duties paid.
Bremen	38,068,000 lbs.	\$16,652.
Great Britain	24,203,000 "	\$18,297,468.
France	40,866,000 "	Average annual revenue from monopoly, \$16,000,000.
Holland	17,124,000 "	\$21,695,000.
Spain	7,524,000 "	Average annual revenue from monopoly, \$4,600,000.
Belgium	4,010,000 "	\$33,749.
Sardinia	3,311,000 "	No data from which to ascertain amt. of revenue derived from monopoly.
Austria	2,945,000 "	\$129,805, besides an annual profit to the <i>régie</i> of about \$7,500,000.
Sweden and Norway	1,713,000 "	\$88,505.
Portugal	336,000 "	No data from which to ascertain the share of the monopoly revenue which this quantity bears; the whole amount is about \$2,250,000 yearly.

The total receipts from custom duties in France for one year (1848), according to official returns, were 146,000,000 francs, of which 86,000,000 were derived from tobacco, nearly all grown in the United States.

The Austrian empire contains 36,514,397 inhabitants. The annual yield (average) of tobacco in Austria is estimated at 79,000,000 lbs. The only places where the plant is permitted to be grown are Hungary, Galicia, the Tyrol, and Venice. In Hungary it is the leading staple, the annual crop reaching as high as 68,000,000 lbs. Of this one-third is sold to the Austrian *régie*, one-third to foreign countries, and the remaining third is consumed at home. The average annual importation from the United States is from two and a half to three millions of lbs. The *régie* clears a profit of 10 cents on each lb. of raw tobacco, and the annual revenue to the government is \$7,500,000.

In the states composing the Zoll-Verein the annual crop of tobacco is estimated at 55,000,000 lbs. The revenue derived from American tobacco is about \$1,800,000 per annum. The duty on raw tobacco is \$2 76 per 110 lbs., which, if re-exported, enjoys a drawback of \$2 20 per 110 lbs. Tobacco grown within the limits of the Customs Union pays only 46 cents for the same quantity. The revenues which the government herefrom derives amount to 38 per cent. on the value.

Belgium produces annually about 1,300,000 lbs. of tobacco, and imports from 9,000,000 to 11,000,000 lbs.

Holland produces from 4,000,000 to 5,000,000 lbs., and imports annually from 30,000,000 to 35,000,000 lbs. The tobacco factories in this country are stated to give employment to "one million operatives."

Bremen imports yearly from 35,000,000 to 50,000,000 lbs. of tobacco, most of which is manufactured in that city and re-exported to foreign markets.

Hamburg imports only from 1,000,000 to 2,000,000 lbs. annually, most of which, after being manufactured, is re-exported.

The annual tobacco crop of Russia is about 25,000,000 lbs.

The annual consumption of tobacco in Spain is about 9,000,000 lbs., one-third of which is imported for the government factories from the United States.

In Portugal the culture of tobacco is prohibited by law.

The quantity of American unmanufactured tobacco annually imported into the principal commercial countries of Europe may be thus stated: For each inhabitant of Great Britain, 14 ounces; for each inhabitant of France, 10 ounces; for each inhabitant of Belgium, 2½ lbs.; for each inhabitant of Holland, 2½ lbs.; for each inhabitant of the Hanse Towns, 5 lbs.; for each inhabitant of Hanover, 8½ lbs.; for each inhabitant of Mecklenburg Schwerin and Mecklenburg Strelitz, 2 lbs.; for each inhabitant of the states of the Zoll-Verein, 1 lb.; for each inhabitant of Russia, ½ ounce; for each inhabitant of Austria, 1 ounce; for each inhabitant of Spain, 3 ounces; and for each inhabitant of Portugal, 1½ ounce. The aggregate quantity of tobacco annually raised in these countries (exclusive of their colonies) is about 210,000,000 lbs. The aggregate quantity of tobacco raised in the United States in 1850 was 199,752,515 lbs.—*Census of 1850.*

The average annual quantity of American tobacco imported into Great Britain during a period of three years (1851, '52, '53) was 24,543,334 lbs., on which there was levied an average annual duty of \$13,554,760. The average annual quantity imported into France during the same period was 14,690,000 lbs.; into Holland, 18,660,000 lbs., on which the average annual amount of duty was \$24,915; into Belgium, 4,824,000 lbs., on which the average annual amount of duty was \$40,600; and into the Hanse Towns, 38,687,667 lbs., on which was paid an average annual amount of \$12,643 91.

The following table shows the average consumption per head of male population over 18 years of age; also net revenue from tobacco, and tax per head of population. It will be seen that the countries Steuer-Verein, Zoll-Verein, and Belgium, in their respective order, are the largest consumers per head of tobacco; and

that England, the Papal States, and Spain, in their order, produce the greatest net revenue per head:

Countries.	Average Consumption.	Net Revenue.		Per Head.
	Pounds.	Dollars.	Cents.	
Austria	6-75	6,062,650	26 1-3	
Zoll-Verein	9-75	1,482,800	5 1-2	
Steuer-Verein (Han- over and Oldenburg, now added to former)	12-50	62,100	3 1-20	
France	5-50	15,291,780	45	
Russia	2-50	1,421,400	2 1-3	
Portugal	3-50	1,520,700	46 2-3	
Spain	4-75	6,340,410	43 2-5	
Sardinia	2-75	1,230,600	27 1-4	
Tuscany	2-50	424,350	24 9-10	
Papal States	2-00	1,486,260	50 2-5	
Two Sicilies		842,110	7 1-2	
England	4-10	21,785,000	78 4-5	
Holland	8-25	31,050	1	
Belgium	9-00	144,070	8 1-5	
Denmark	8-00	52,440	2 1-3	
Sweden	4-37	73,800	2 1-3	
Norway	6-40	116,610	4 1-8	
United States*	7-00			

—Cor. Nat. Intelligencer.

* Hypothetically.

According to the United States Census Report, the number of lbs. of tobacco in the year 1850, produced per acre, was as follows: Kentucky, 575 lbs.; Maryland, 650 lbs.; Missouri, 775 lbs.; Ohio, 730 lbs.; Tennessee, 760 lbs.; Virginia, 660 lbs. The whole number of acres for cultivation of tobacco at the same time was 400,000, which at an average of 600 lbs., five acres would produce 240,000,000 lbs. annually. The gross product for the same year was estimated to be worth \$13,982,686, being about one half the duty levied on Great Britain on 27,000,000 lbs. only. Every State in the Union produces tobacco more or less. Delaware, Maine, Rhode Island, and Vermont produce so little that it was not enumerated in the year 1850.

THE TOBACCO TRADE OF THE UNITED STATES.

IMPORTS OF TOBACCO INTO THE UNITED STATES FOR THE YEARS ENDING JUNE 30, 1853, '54, '55.

	Raw State.		Snuff, etc.		Cigars.	
	Lbs.	Dollars.	Lbs.	Dollars.	M.	Dollars.
1853.						
Cuba	4,253,530	764,529	1,650	288,777	4,4	2,896,620
Oth. places	713,342	91,274	40,432	7,215	104,443	415,315
Total	5,008,872	855,803	42,082	7,500	881,487	3,311,925
1854.						
Cuba	4,563,187	700,371	18,068	2,369	71,882	2,760,229
Oth. places	810,426	94,425	74,791	11,647	81,686	693,807
Total	5,362,613	794,806	92,851	14,016	158,519	3,384,036
1855.						
Cuba	3,713,786	523,112	600	55	157,309	2,531,453
Oth. places	641,111	90,664	21,753	4,674	218,710	907,544
Total	4,363,104	614,076	22,359	4,729	376,019	3,438,997

Raw tobacco, 1855	\$523,112	\$30,964
Snuff	53	4,674
Cigars	2,531,453	3,438,997
Total	\$3,054,618	\$3,534,635

From this we see that, except to a limited extent, all our foreign tobacco comes from Cuba, and of this four-fifths is in cigars.

EXPORTS OF MANUFACTURED TOBACCO FROM THE UNITED STATES FOR THE YEARS 1853, 1854, and 1855.

Domestic.	1853.			1854.			1855.		
	Snuff.	Manufact'd.	Value.	Snuff.	Manufact'd.	Value.	Snuff.	Manufact'd.	Value.
	Lbs.	Lbs.		Lbs.	Lbs.		Lbs.	Lbs.	
England	17,112	2,842,568	\$507,804	10	1,457,834	\$304,685			
British West Indies	7,049	483,917	52,788	7,773	428,355	58,340	14,918	378,011	42,278
Canada	1,485	1,184,954	185,299	18,984	2,530,323	375,155	18,800	1,805,806	341,375
British American Colonies	2,068	1,000,707	166,099	2,571	1,353,382	181,009	822	852,769	121,591
Australia	11,927	1,160,858	272,475	3,718	652,418	126,014	30,180	1,189,264	235,398
Other places	39,641	3,798,688	487,085	2,336	3,850,845	515,124	7,804	3,595,128	457,706
Total	10,561,692	\$1,670,000	\$6,287	10,278,152	\$1,580,327	72,534	9,625,282	\$1,500,068	
Foreign, all places	228,390	7,755	473,108	200,466					12,593
Total domestic and foreign exports			\$1,899,809	\$4,042	10,746,350	\$1,760,793			\$1,692,661

Agreeably to official statements received at the State Department at Washington, the annual average produce of the States of Maryland, Ohio, Virginia, Tennessee, Kentucky, and Missouri, is estimated at 200,000 hogsheds, of 1200 lbs. each, of which foreign countries annually take 162,000 hogsheds, leaving about 40,000 per annum for our home consumption, which are manufactured into fine cut, smoking, and

STATEMENT EXHIBITING THE QUANTITY AND VALUE OF TOBACCO EXPORTED ANNUALLY, FROM 1821 TO 1857, INCLUSIVE.

Years.	Hogsheds.	Value.	Average Cost per Hogshed.
1821	66,858	\$5,648,962	\$84 41
1822	83,169	6,222,538	74 82
1823	99,009	6,282,672	63 45
1824	77,883	4,855,566	62 34
1825	75,184	4,115,622	50 48
1826	64,098	5,347,208	83 42
1827	100,025	6,577,122	65 75
1828	96,276	6,269,960	54 73
1829	77,131	4,982,974	64 60
1830	83,810	5,585,305	66 60
1831	86,718	4,892,388	56 41
1832	106,806	5,999,769	56 17
1833	83,153	5,759,968	69 20
1834	87,979	6,595,365	74 96
1835	94,353	8,250,577	87 44
1836	100,042	10,063,640	92 24
1837	100,593	5,746,647	57 82
1838	100,593	7,392,029	73 48
1839	78,965	9,532,443	124 47
1840	119,484	9,585,957	82 72
1841	147,628	12,576,703	85 07
1842	158,710	9,649,755	60 11
1843	94,454	4,650,970	49 24
1844	163,042	8,397,285	51 50
1845	147,168	7,409,519	50 75
1846	147,496	8,478,270	57 28
1847	135,702	7,242,086	53 34
1848	130,665	5,501,122	57 78
1849	101,521	5,804,207	57 17
1850	145,729	9,951,028	68 28
1851	95,045	9,219,251	96 09
1852	137,097	10,081,283	73 17
1853	159,853	11,319,319	70 81
1854	126,107	10,016,046	79 42
1855	*150,213	14,712,468	97 94
1856	116,622	12,221,843	104 50
1857	156,843	20,662,772	132 40
Total	4,107,502	\$801,191,715	....

* In addition to this export of 150,213 hogsheds for the fiscal year ending June 30, 1855, there was an export of 12,913 bales and 13,306 cases, the value of which is included in the general sum of \$14,712,468.

EXPORTS OF TOBACCO FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30.

Domestic.	1853.			
	Hhds.	Cases.	Bales.	Dollars.
Hanse Towns	38,058	1,490	2,467	2,497,730
Holland	17,124	27	98	1,068,782
England	23,841	248	50	3,468,192
France	40,866	2,905	379	4,103,595
Other places	30,324	8,696	9,419	3,674,229
Total domestic	150,213	3,366	12,913	14,712,468
Foreign, all places .....	..	..	131,279	14,116
Total domestic and foreign exports, lbs. ....	..	..	..	14,726,584

Domestic.	1854.		1855.	
	Hhds.	Dollars.	Hhds.	Dollars.
Hanse Towns	35,358	2,182,549	53,451	2,822,348
Holland	25,070	1,350,336	23,351	1,119,806
England	17,435	2,116,722	31,226	3,285,922
France	15,162	1,352,719	15,796	1,070,538
Other places	32,082	3,018,720	36,091	3,020,653
Total domestic	126,107	10,016,046	151,853	11,319,319
Foreign, all places	677,009	95,938	501,447	84,364
Total domestic and foreign exports, lbs. ....	..	10,111,984	..	11,403,983

chewing, plug chewing tobacco, and snuff. But a very small quantity is now used of these crops for the making of cigars, as the manufacturing of common grades of cigars has almost entirely ceased in this country, for reasons which will be stated hereafter. The average crops of the last few years have been under the above estimate, the exportations smaller, the home consumption for the above uses somewhat larger; and foreign consumers of these kinds have been compelled to substitute other foreign tobaccos, not as desirable to them as our produce, to supply the deficiencies in our deliveries. Thus it will be perceived that of the largest product of tobacco of our own growth but one-fourth is required to supply the home demand, while, if the production could be doubled, foreign countries would be ready customers for the greatest part of it, as our tobacco leaf is of such peculiar style and quality, that, like cotton, or the leaf tobacco of the island of Cuba, it is indigenous to the soil and climate, no other soil producing the same; and therefore its culture is confined to certain sections of the country, and attempts in others have proved unsuccessful. Besides the above described sorts of leaf tobacco, five States of the Union produce a limited quantity of leaf, mostly used for the manufacture of cigars, namely, Connecticut, New York, Ohio, Pennsylvania, and Florida. The average yield in these States has been of late years as follows:

In Connecticut.....	5,000 cases of 350 lbs. each.
In New York.....	2,000 " " "
In Ohio.....	5,000 " " "
In Pennsylvania.....	2,000 " " "
In Florida.....	2,000 " " "
Total.....	16,000 " " "

Deduct from the above one quarter, or 4000 cases, of the most inferior grades, called fillers, and now used mostly for the cutting of smoking tobacco, and it leaves 12,000 cases, or about 4,000,000 lbs. for the use of the cigar-maker. In former years, about one-third of these crops were bought for exportation, chiefly by German buyers; but for the last few years the consumption for the manufacture of cigars has so considerably increased, that of the produce of the first four States very little is exported—our manufacturers paying higher prices than exporters are willing to give; and only of the crop of Florida, about one-half to two-thirds is annually exported, leaving from three to three and one half millions of lbs. of leaf of our own growth, called Spanish seed-leaf tobacco, for the home consumption of the cigar manufacturers.

The manufacturing of cigars, at prices to rival the foreign fabric, having become next to impossible, a great many operatives, who made fair wages for their own and their families' support, were forced, in consequence, to turn to other employments, particularly so in Pennsylvania and Connecticut. Other manufacturers gave their attention to better grades of cigars, for the purpose of furnishing a medium between the common German and finer and high-priced Havana cigar. The American cigar-makers, being noted for their excellent workmanship and tasty style of packing, succeeded in furnishing an article as handsomely made as the fine Havana, similar to it in appearance and flavor, although not of as fine a quality, at a more moderate price than the latter, as palatable to the great majority of smokers, who are disinclined to use the common German fabric, and, finding the genuine Havana too expensive, content themselves with the fair medium, and thus became the great patrons of this branch of trade. This class of cigars are made from our own seed leaf and Florida tobacco for wrappers, and from Havana, Sagua, Cuba or Yara (all the produce of the island of Cuba), for fillers, and now the consumption of this sort reaches 300 to 400 millions of cigars a year, varying in prices from \$12 to \$22 per thousand. From 1848 to 1851, five thousand cases of seed-leaf wrappers annually were sufficient to supply the wants of the cigar-makers for home use; the value

of seed-leaf wrappers ruling at 10 to 15 cents, and fillers 4 to 5½ cents; leaving a large surplus for export, principally to Germany, to be returned to us as a rival of our own offspring in the shape of low-priced German cigars. Since 1852, almost the entire crops of seed-leaf tobacco have been manufactured at home into Spanish cigars—prices for seed-leaf wrappers ranging at 20 to 35 cents, and fillers at 10 to 13 cents per lb., and a corresponding increase in the importation and consumption of its needful concomitant, the Spanish tobacco from the island of Cuba, for fillers, has taken place.

The importations of this sort of tobacco were—

In 1850, 25,000 lbs.; value, \$300,000, duty paid under \$90,000	
In 1851, 23,000 " " " " " " " "	275,000 " " " " " "
In 1852, 35,000 " " " " " " " "	420,000 " " " " " "
In 1853, 35,000 " " " " " " " "	520,000 " " " " " "
In 1854, 42,000 " " " " " " " "	520,000 " " " " " "
In 1855, 45,000 " " " " " " " "	550,000 " " " " " "
In 1856, 40,000 " " " " " " " "	600,000 " " " " " "

To show the extent of the export of leaf tobacco and cigars from Cuba, a large portion of which is imported into this country for cigar manufacture and consumption, we give the following statement:

QUANTITIES OF LEAF TOBACCO AND CIGARS EXPORTED FROM CUBA FROM 1848 TO 1854, BOTH INCLUSIVE.

Years.	Leaf Tobacco.	Cigars.	Years.	Leaf Tobacco.	Cigars.
Pounds.	M.		Pounds.	M.	
1848..	6,276,630	161,450	1852..	9,737,443	142,567
1849..	4,019,133	123,720	1853..	8,039,717	237,350
1850..	7,973,148	212,640	1854..	9,803,150	251,313
1851..	9,436,591	270,313			

From this we see that the exportation of leaf tobacco from Cuba has been steadily increasing, but not in the same proportion with the exports of cigars.

Added to this we give the production of tobacco in the island of Porto Rico, only a small portion of which is imported into and used in this country:

Years.	Pounds.	Years.	Pounds.
1848.....	2,457,449	1851.....	6,478,084
1849.....	2,439,540	1852.....	5,565,739
1850.....	2,973,308	1853.....	3,703,457

The fact has now become incontrovertible, that to sustain this branch of industry, the use of the finer grades of foreign material, to improve the quality of our own product, is indispensable. The census report of 1850 gives the number of tobaccoists and cigar-makers in the United States as 10,233.

TOBACCO.

States and Territories.	1840.	1850.
Pounds.	Pounds.	
Alabama.....	273,302	164,990
Arkansas.....	148,439	218,936
California.....		1,000
Columbia, District of.....	55,550	7,800
Connecticut.....	471,657	1,267,624
Delaware.....	272	
Florida.....	75,274	998,614
Georgia.....	162,894	423,924
Illinois.....	564,326	841,394
Indiana.....	1,820,306	1,044,620
Iowa.....	8,076	6,041
Kentucky.....	53,436,909	55,501,196
Louisiana.....	119,824	26,873
Maine.....	30	
Maryland.....	24,816,012	21,407,497
Massachusetts.....	64,555	138,246
Michigan.....	1,602	1,245
Mississippi.....	83,471	49,900
Missouri.....	9,067,913	17,113,734
New Hampshire.....	115	59
New Jersey.....	1,922	310
New York.....	744	83,159
North Carolina.....	16,772,359	11,924,786
Ohio.....	5,942,275	10,454,449
Pennsylvania.....	325,018	912,651
Rhode Island.....	317	
South Carolina.....	51,519	74,285
Tennessee.....	29,550,432	20,148,932
Texas.....		66,897
Vermont.....	585	
Virginia.....	75,847,166	56,803,227
Wisconsin.....	115	1,263
Territories.		
(New Mexico.....		8,467
(Oregon.....		325
(Utah.....		70
Total.....	221,165,419	201,350,668

A COMPARATIVE STATEMENT OF THE STOCKS, IMPORTS, AND DELIVERIES OF TOBACCO IN LIVERPOOL THE LAST TEN YEARS.

Stock 1st January.	Imports.					Deliveries.					Stock 31st December.
	Virginia.	New Orleans.	Baltimore.	Other Ports.	Total.	Home Use.	Ireland.	Export.	Coastwise.	Total.	
1848...	18,453	3260	6676	....	532	10,477	4911	3357	2355	2188	12,119
1849...	16,119	5785	5833	....	1587	13,205	4945	2970	2781	2273	12,960
1850...	16,355	2102	6422	....	2507	12,556	4693	2783	2013	2031	11,450
1851...	17,452	1680	5922	....	1294	10,041	5253	2329	2037	2233	12,452
1852...	15,041	3057	7819	....	1437	13,293	5243	3591	2602	3133	14,754
1853...	13,760	2723	8495	....	650	14,278	4555	3126	2843	3191	14,015
1854...	14,023	4420	6173	....	1359	12,955	5274	3552	2658	3267	14,751
1855...	12,227	5043	3817	....	1345	11,087	4516	3357	2430	2796	13,099
1856...	10,215	5953	3373	....	2943	12,945	4275	3549	1902	2545	10,889
1857...	10,889	3654	5203	....	1092	12,004	5070	3728	2066	2501	13,355

The total annual sales at Liverpool and their distribution were as follows:

	1850.	1851.	1852.	1853.	1854.	1855.	1856.	1857.
For home use	7,553	5,253	5,243	4,855	5,274	4,516	4,275	5,070
For Ireland and Scotland	3,579	2,329	3,591	3,126	3,552	3,857	3,549	3,728
Coastwise	2,145	2,233	3,138	3,191	3,267	2,796	2,545	2,501
For exportation	8,312	2,637	2,602	2,843	2,658	2,430	1,962	2,056
Total sales	21,593	12,452	14,574	14,015	14,751	13,099	12,271	13,355

DELIVERIES OUT OF STORE IN 1857.—LIVERPOOL.

	Virginia Leaf.	Virginia Stemmed.	Western Leaf.	Western Stemmed.	Maryland.	Total Hogsheads, etc.
For home use	340	291	254	1901	2275	5,070
For Ireland and Scotland	1941	1125	113	549	....	3,728
For coastwise	265	1131	327	625	183	2,501
For exportation	1039	48	983	....	31	2,056
Total	3594	2595	1632	3075	2450	13,355

ESTIMATED STOCK AT LIVERPOOL ON SALE EXCLUSIVE OF THAT HELD IN THE CHANNELS OF CONSUMPTION.

Of Virginia leaf	1174	against 2110 in 1856,	1616 in 1855,	1257 in 1854,	977 in 1853,	1,493 in 1852.
" stemmed	1086	" 1634	" 1352	" 829	" 1,217	" 1,123
Of Western leaf	1941	" 763	" 847	" 1147	" 4,039	" 2,175
" stemmed	3237	" 2502	" 4449	" 5308	" 4,600	" 5,330
Of Maryland	773	" 1221	" 528	" 608	" 732	" 989
Total	7611	" 8230	" 8292	" 9149	" 11,565	" 11,110

PARTICULARS OF LEAF AND STEMMED TOBACCO IMPORTED DURING THE LAST TEN YEARS, AND THE STOCK ON SALE AT THE CLOSE OF EACH YEAR.—IMPORTS.

	1848.	1849.	1850.	1851.	1852.	1853.	1854.	1855.	1856.	1857.
Virginia leaf	1,855	4,082	644	1,242	1,654	1,243	1,932	2,992	4,072	2,275
" stemmed	1,679	2,056	1,793	1,040	1,541	1,668	2,421	2,511	2,652	2,236
Kentucky leaf	1,364	2,530	3,335	1,971	2,282	5,087	1,160	1,269	1,393	2,305
" stemmed	5,556	4,473	5,349	4,565	5,878	4,963	5,651	3,012	2,184	3,342
Maryland and Ohio	23	64	1,436	1,223	1,938	1,317	1,791	1,303	2,644	1,445
Total	10,477	13,205	12,556	10,041	13,293	14,278	12,955	11,087	12,945	12,004

STOCKS ON HAND AT LIVERPOOL.

	1848.	1849.	1850.	1851.	1852.	1853.	1854.	1855.	1856.	1857.
Virginia leaf	2,852	4,170	2,381	2,254	1,694	1,146	1,598	2,178	2,631	1312
" stemmed	3,638	2,553	2,494	1,616	1,356	1,342	1,160	1,541	1,890	1461
Kentucky leaf	2,225	3,123	4,075	2,928	2,761	4,522	1,974	516	994	1567
" stemmed	7,380	6,450	7,240	7,542	6,779	5,806	6,440	4,960	3,410	3677
Maryland, etc.	24	51	1,263	701	1,280	1,207	1,115	1,020	2,034	1521
Total	16,119	16,355	17,452	15,041	13,760	14,023	12,227	10,215	10,889	5338

	1850.	1851.	1852.	1853.	1854.	1855.	1856.	1857.
Stocks in London, 31st December	26,647	22,863	18,090	17,455	11,384	10,041	11,101	10,326
" Liverpool	17,452	15,041	13,760	14,023	12,227	10,220	10,889	9,588
" Bristol, Hull, and Newcastle	1,870	1,200	2,400	2,200	2,100	1,700	1,512	1,600
" Scotland	1,985	1,370	1,400	1,500	1,300	1,800	1,921	770
" Ireland	1,600	950	1,200	1,400	900	1,100	1,000	860
Total in Great Britain	49,554	41,424	36,550	36,578	27,911	24,861	26,423	23,094

	1856.	1857.
Paraguay: Stock on 1st January	6337	3065
Imported during 12 months 1287—7624		5420—8455
Delivered	4550	6086
Stock on 31st December	3065 bales	2399
Greek and Turkey: Stock on 1st January	5022	2458
Imported during 12 months 2543—7565		9547—12005
Delivered	5107	6068
Stock on 31st December	2458 bales	5937

It may be here stated, as important to the export trade of tobacco, and as a specimen of the inequalities of the tariff duties on tobacco in Europe, that the Norwegian tariff, which differs in many essential particulars from that of Sweden, admits tobacco considerably lower; and, owing to this fact, and to the advantages resulting from different weights, it is found that tobacco blades may be imported into Norway at a rate nearly 30-3 per cent. less than into Sweden.

The following table exhibits the prices current at Liverpool, December 31, for the years 1855, '56, '57:

Liverpool Prices.		1855.	1856.	1857.
Virginia leaf:				
Ordinary and faded	Nomin.	6 @	Nom.	Nominal.
Ordinary sound	6 @	8 @	8 @	7 @ 8
Fair leafy, dry	6 @	9 @	9 @	8 @ 9
Good substance	6 @	10 @	9 @	9 @ 9
Fine Irish	7 @	7 @	10 @	10 @ 10
Stemmed:				
Ordinary short dry	Nomin.	Nominal.	Nominal.	Nominal.
Fair dry leafy	7 @ 8	11 @	12 @	10 @ 11
Good do. with substance	8 @ 9	13 @	12 @	12 @
Fine Irish	9 @ 10	14 @	15 @	12 @ 13
Western leaf:				
Ordinary	4 @	10 @	Nominal.	Nominal.
Middling to fine, dark	5 @ 6	8 @	9 @	7 @ 8
Fine dry and colory	6 @	10 @	10 @	9 @ 10
Stemmed:				
Ordinary	7 @	10 @	11 @	10 @
Middling	8 @	11 @	12 @	11 @ 11
Fine colory	8 @ 9	13 @	13 @	12 @ 13
Marylands:				
Dry leafy and sweet	6 @	8 @	8 @	7 @ 8
Colory and fine	8 @	9 @	11 @	9 @ 10
Paraguay	9 @	9 @	10 @	9 @ 10
Greek and Turkey	8 @	8 @	6 @	6 @ 10

IMPORTS OF TOBACCO INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Unmanufactured.		Snuff.		Cigars.	
	Pounds.	Value.	Pounds.	Value.	Thousand.	Value.
Sweden and Norway.....	264	\$40	.....	.....	.....	.....
Danish West Indies.....	.....	.....	.....	.....	4	\$37
Hamburg.....	2,143	478	2,320	\$364	18,251	58,205
Bremen.....	328,514	45,623	6,036	1021	89,360	275,329
Holland.....	66,045	8,965	3,205	649	55,171	163,698
Dutch West Indies.....	.....	.....	.....	.....	2	8
Dutch Guiana.....	.....	.....	.....	.....	2	12
Dutch East Indies.....	.....	.....	.....	.....	10	82
Belgium.....	106,035	12,514	1,181	143	198,499	600,168
England.....	32,074	3,705	134	73	536	4,009
Scotland.....	.....	.....	.....	.....	74	615
Gibraltar.....	.....	.....	.....	.....	120	545
Canada.....	.....	.....	.....	.....	37	541
British West Indies.....	16,801	2,310	195	44	10	169
British Honduras.....	14,070	974	.....	.....	68	343
British Australia.....	.....	.....	.....	.....	1,530	4,655
British East Indies.....	31,015	824	.....	.....	302	2,009
France on the Atlantic.....	27,798	3,241	824	821	37,873	133,989
France on the Mediterranean.....	.....	.....	.....	.....	70	392
French West Indies.....	.....	.....	.....	.....	1	10
Spain on the Mediterranean.....	936	79	.....	.....	.....	.....
Philippine Islands.....	562,430	57,837	.....	.....	7,731	60,828
Cuba.....	5,536,630	972,567	.....	.....	138,307	2,506,743
Porto Rico.....	11,629	1,170	.....	.....	42	375
Two Sicilies.....	.....	.....	25	5	.....	.....
Austria.....	.....	.....	13	6	.....	.....
Turkey in Asia.....	13,927	2,444	.....	.....	2	21
Ports in Africa.....	.....	.....	.....	.....	8	146
Hayti.....	275,229	42,613	.....	.....	.....	.....
San Domingo.....	125,045	15,182	.....	.....	12	240
Mexico.....	117,550	12,359	.....	.....	260	1,479
Central Republic.....	256	34	.....	.....	36	313
New Granada.....	1,142,236	155,385	.....	.....	13,547	384,530
Venezuela.....	150,712	18,320	.....	.....	12	33
Brazil.....	1,768	260	.....	.....	31	44
Chili.....	10,500	1,722	.....	.....	780	3,545
Peru.....	1,025	189	.....	.....	.....	.....
China.....	.....	.....	.....	.....	2,385	7,339
Total, year 1856-7.....	8,574,632	\$1,358,835	13,933	\$2026	560,043	\$4,221,096

EXPORTS OF THE MANUFACTURES OF DOMESTIC TOBACCO FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Snuff.		Tobacco.	
	Pounds.	Value.	Pounds.	Value.
Russia.....	.....	.....	6,000	\$700
Danish West Indies.....	.....	.....	66,549	13,509
Hamburg.....	64	\$64	81,224	16,469
Bremen.....	120	.....	84,302	18,826
Holland.....	.....	.....	16,143	2,292
Dutch West Indies.....	1,300	294	104,622	23,401
Dutch Guiana.....	.....	.....	4,175	683
Belgium.....	.....	.....	4,000	837
England.....	.....	.....	336,819	186,373
Scotland.....	.....	.....	52,131	8,608
Gibraltar.....	.....	.....	133,235	20,871
Malta.....	.....	.....	166,359	32,642
Canada.....	14,560	3,507	1,471,030	303,140
British N. Am. Posses.....	861	134	1,130,303	206,600
British West Indies.....	16,588	2,743	290,835	47,568
British Honduras.....	.....	.....	29,102	5,205
British Guiana.....	.....	.....	30,271	3,590
Brit. Posses. in Africa.....	.....	.....	463,352	72,639
British Australia.....	10,140	1,285	1,032,456	285,128
British East Indies.....	.....	.....	243,826	39,357
France on the Atlantic.....	1,296	648	65,676	10,180
France on the Mediter'n.....	500	49	71,681	11,751
French N. Am. Posses.....	725	208	39,146	6,541
Spain on the Mediterr'n.....	200	120	10,960	589
Canary Islands.....	.....	.....	27,022	3,062
Cuba.....	96	48	200,072	32,673
Porto Rico.....	.....	.....	130,431	21,756
Cape de Verd Islands.....	.....	.....	6,455	1,222
Azores.....	.....	.....	280	30
Sardinia.....	.....	.....	5,051	992
Turkey in Europe.....	.....	.....	10,175	1,676
Turkey in Asia.....	460	94	7,817	847
Ports in Africa.....	.....	.....	68,029	19,174
Hayti.....	14	4	52,151	9,945
Mexico.....	2,577	2,093	35,445	7,149
Central Republic.....	.....	.....	1,465	311
New Granada.....	.....	.....	70,232	11,103
Venezuela.....	.....	.....	97,402	14,376
Brazil.....	.....	.....	35,798	6,003
Uruguay.....	.....	.....	32,433	4,520
Argentine Republic.....	.....	.....	13,303	2,003
Chili.....	800	100	122,301	16,936
Peru.....	.....	.....	19,108	4,680
Sandwich Islands.....	100	15	33,183	6,214
China.....	.....	.....	35,682	10,082
Whale-fisheries.....	.....	.....	16,510	3,587
Total, 1856-7.....	50,401	\$11,526	7,456,666	\$1,447,027

We now add a summary of foreign tobacco, showing together the aggregate export trade for 1856-7:

EXPORTS OF FOREIGN TOBACCO FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Cigars.		Manufactured, other than Snuff and Cigars.	
	M.	Value.	Pounds.	Value.
Russia.....	36	\$945	.....	.....
Asiatic Russia.....	64	636	5,000	411
Russian Poss. in N. Am.....	85	1,018	14,763	2,408
Sweden and Norway.....	49	1,464	.....	.....
Danish West Indies.....	217	3,394	.....	.....
Hamburg.....	64	1,653	280,024	49,602
Bremen.....	141	2,438	651,730	126,177
Other German ports.....	.....	.....	.....	.....
Holland.....	72	1,083	51,149	8,091
Dutch West Indies.....	60	1,285	.....	.....
Dutch Guiana.....	38	465	.....	.....
Belgium.....	214	3,711	151,391	32,003
England.....	281	7,047	25,153	5,025
Scotland.....	80	1,018	.....	.....
Malta.....	4	320	.....	.....
Canada.....	1,746	33,141	.....	.....
British N. Am. Posses.....	193	2,217	10,400	1,680
British West Indies.....	66	657	.....	.....
British Honduras.....	40	947	.....	.....
British Poss. in Africa.....	24	530	.....	.....
British Australia.....	651	13,585	.....	.....
British East Indies.....	10	107	.....	.....
France on the Atlantic.....	362	6,769	9,480	1,902
France on the Mediter'n.....	15	236	.....	.....
French N. Am. Posses.....	11	208	.....	.....
French West Indies.....	15	372	.....	.....
Porto Rico.....	61	1,580	.....	.....
Portugal.....	6	168	.....	.....
Cape de Verd Islands.....	71	527	50	11
Sardinia.....	9	320	.....	.....
Two Sicilies.....	50	781	.....	.....
Turkey in Europe.....	10	159	.....	.....
Turkey in Asia.....	43	505	.....	.....
Ports in Africa.....	121	1,752	.....	.....
Hayti.....	128	1,700	1,015	243
Mexico.....	51	621	1,500	1,449
New Granada.....	462	8,490	.....	.....
Venezuela.....	1,209	32,704	.....	.....
Brazil.....	739	20,427	3,000	507
Uruguay, or Cispl. Rep.....	113	2,908	.....	.....
Buenos Ayres.....	110	3,595	.....	.....
Chili.....	985	30,274	45,000	11,816
Peru.....	534	17,650	.....	.....
Sandwich Islands.....	1,908	16,530	500	51
China.....	15	342	.....	.....
Whale-fisheries.....	25	609	.....	.....
Total.....	11,168	\$227,143	1,250,161	\$241,835
From warehouse.....	6,241	118,786	852,877	165,518
Not from warehouse.....	4,927	108,357	397,284	75,867

EXPORTS OF FOREIGN TOBACCO FROM THE UNITED STATES
FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Unmanufactured.		Snuff.	
	Pounds.	Value.	Pounds.	Value.
Bremen	11,651	\$1,580	.....	.....
Other German ports	846	188	.....	.....
Canada	11,176	2,123	780	\$156
Chili	51,233	1,750	.....	.....
Peru	.....	.....	500	200
Sandwich Islands	2,807	646	.....	.....
Total	77,763	\$14,287	1280	\$356
From warehouse	72,660	13,136	800	200
Not from warehouse	5,103	1,151	780	156

EXPORTS OF UNMANUFACTURED DOMESTIC TOBACCO FROM THE
UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Hhds.	Cases.	Bales.	Value.
Asiatic Russia	.....	10	.....	\$ 300
Russian Possess. in N. Am.	.....	.....	40	1,200
Sweden and Norway	395	.....	5	84,871
Swedish West Indies	9	.....	.....	1,932
Denmark	63	.....	.....	16,275
Danish West Indies	58	1	174	15,013
Hamburg	633	280	326	131,720
Bremen	46,045	390	3,524	4,916,356
Holland	27,758	.....	190	1,969,008
Dutch West Indies	15	.....	25	3,036
Dutch Guiana	59	.....	.....	7,540
Belgium	6,346	.....	688	904,257
England	29,376	213	92	4,674,105
Scotland	822	.....	.....	131,887
Ireland	160	.....	.....	29,477
Gibraltar	332	942	8	65,841
Malta	766	199	25	119,822
Canada	811	1981	466	181,964
Other British N. A. Possess.	137	13	.....	23,786
British West Indies	550	15	231	114,011
British Honduras	26	.....	60	6,365
British Guiana	133	100	.....	28,708
British Possessions in Africa	14	202	190	59,976
British Australia	165	20	.....	22,887
British East Indies	.....	14	.....	490
France on the Atlantic	10,145	.....	40	985,072
France on the Mediterranean	1,824	.....	121	308,709
French N. Amer. Possessions	.....	.....	1	16
French West Indies	630	.....	24	107,386
French Guiana	95	.....	.....	20,377
Spain on the Atlantic	7,436	.....	.....	1,092,414
Spain on the Mediterranean	117	.....	.....	27,531
Canary Islands	26	.....	.....	5,912
Cuba	18	.....	.....	3,212
Porto Rico	125	5	.....	27,000
Portugal	876	.....	.....	121,359
Madeira	22	.....	.....	4,270
Cape de Verd Islands	82	71	92	22,471
Sardinia	5,141	.....	.....	982,124
Tuscany	2,033	.....	.....	387,401
Two Sicilies	4,144	.....	.....	875,208
Austria	1,598	.....	.....	151,075
Austrian Possessions in Italy	5,054	.....	.....	1,085,893
Turkey in Europe	33	.....	.....	2,091
Turkey in Asia	41	.....	202	10,186
Ports in Africa	1,721	35	984	402,069
Hayti	88	954	3,995	97,760
Mexico	.....	.....	100	2,740
New Granada	579	.....	1,660	36,345
Venezuela	150	.....	41	28,226
Brazil	80	.....	9	14,462
Uruguay, or Cisplatine Rep.	5	.....	.....	1,096
Argentine Republic	.....	75	.....	1,035
Chili	3	.....	1,157	23,018
Peru	3	.....	.....	262
Sandwich Islands	111	20	.....	4,308
Other islands in the Pacific	.....	50	12	1,586
Total, year 1856-'7	156,548	5631	14,492	20,260,722

—For articles on tobacco, see *American Quarterly Review*, ix. 136; *De Bow's Review*, xii. 656, ii. 249, xi. 394; *Hunt's Merchants' Magazine*, x. 72, xv. 521, xvi. 396. On tobacco trade, see *American Almanac*, 1836.

Tokay, a town of northeast Hungary, county of Zemplin, on the right bank of the Theiss, at the influx of the Bodrog, 43 miles north-northwest of Debreczin. Population, 5700. It is celebrated as being the entrepôt for the famous Tokay wine, produced in the hilly tract called the Hegyalla, in the county of Zemplin, lat. 48° N., between the Bodrog and Hernad rivers. The wine of premier quality is bought up for the imperial cellars, and only the secondary and inferior growths are exported. Much of the wine sold as

Tokay is produced in other parts of Hungary. In manufacturing the genuine Tokay wine, the dried grapes are carefully separated from the others, and three sorts of wine are produced. The best is the *Essence*: this is the oily juice which runs from the fruit without any pressure. When this ceases to run, the grapes are moistened with common Tokay-must, and trodden out: this gives the *Ausbruch*. A second infusion of Tokay-must on the remaining grapes, pressed by hand, gives the *Mászlás* (Masklass).—See HENDERSON on *Wines*; *Ency. Amer.*

Tokens (Bank). These were silver pieces issued by the Bank of England, of the value of 5s., January 1, 1798. The Spanish dollar was at first impressed with a small profile of George III.; it was stamped on the neck of the Spanish king. Tokens were raised to the value of 6s. 6d., November 14, 1811. Bank tokens were also current in Ireland, where those issued by the Bank of Ireland passed for 6s. and lesser sums until 1817. They were soon after called in, on the revision of the British coinage.

Toll, from the Saxon *Tolne*; in German *Zoll* (called in law Latin *Telonium* and *Tolnetum*, with many other variations, which may be seen in Ducange, all which Latin terms are derived apparently from *τελώνιον*, "collection of tribute or revenue"). Tolls may be considered a payment in money, or in kind, fixed in amount, made either under a royal grant or under a prescriptive usage, from which the existence of such a grant is implied, in consideration of some service rendered, benefit conferred, or right forborne to be exercised by the party who is entitled to such payment.

An ancient toll may be claimed by the owner of a port in respect of goods shipped or landed there. Such tolls are port tolls, more commonly called port dues. The place at which these tolls were set or assessed was anciently called the Tolsey, where, as at the modern Exchange, the merchants usually assembled, and where commercial courts were held.—BOHN's *Cyclop.*

Marine tolls were first paid by vessels passing the Stade on the Elbe, A.D. 1109. They were first demanded by the Danes of vessels passing the Sound, 1341. Toll-bars in England originated in 1267, in the grant of a penny for every wagon that passed through a certain manor; and the first regular toll was collected a few years after for mending the road in London between St. Giles and Temple Bar. Tolls were also gathered for repairing the highways of Holborn Inn Lane and Martin's Lane, 1346. Toll-gates or turnpikes were used in 1665. Numerous acts relating to tolls and turnpike roads have been passed in Great Britain and the several States of the United States.—HAYDN.

By order of the London Court of Common Council, the tolls taken at the several bars of the city of London, for the wagons, carts, etc., not being the property of a citizen of London, were abolished December 25, 1854. These tolls had brought an annual revenue of only 2d. on each cart, or about £6000.

Ton, a weight used in Great Britain and this country, usually of 2240 lbs., but sometimes of 2000 lbs., called a short ton. By act of Congress it is decided that, unless specified to the contrary, a ton weight is to be understood as two thousand two hundred and forty lbs. avoirdupois.—See WEIGHTS and MEASURES.

Tonnage, in *Commercial navigation*, the number of tons burden that a ship will carry. Tonnage has long been an official term, intended originally to express the burden that a ship would carry, in order that the various dues and customs which are levied upon shipping might be levied according to the size of the vessel, or rather in proportion to her capability of carrying a burden. It has hence arisen that the term "tonnage," as applied to a ship, has become almost synonymous with that of size. It is, indeed, the only term used to give an idea of the magnitude of merchant ships, which are invariably spoken of according to

their tonnage, or as being ships of 50, of 500, or of 1000 tons. Not only are all dues and customs levied according to tonnage, but ships are also built, and sometimes sold and bought for a price per ton of their admeasurement; and they are also timbered, fastened, and have their anchors, cables, and boats, all in proportion to the same datum. Tonnage, therefore, in so far as these considerations are involved, is assumed to be a correct representation of the size of a ship.

It is evident that tonnage may express several results of measurements, and in each case may be a sufficiently fair criterion of the burden of a merchant vessel by which to levy dues; because all that is required thus far, either on the part of the government or of private interests, or on that of the owner, is, that the dues should be levied in equal proportion on all vessels. Thus, tonnage may be the product of a series of measurements, intended to express the exact size, or an approximation to the exact size of the ship. It may be the actual displacement or weight of the ship, either with or without the cargo; it may be the displacement of the cargo, or the dead weight which she will carry to a fixed draught of water; or it may be the exact capacity of the space which she has for the stowage of cargo. Yet to each of these there are important and practical objections. The first, or that by which the measured bulk of the ship would be the tonnage, might be easily evaded, and would lead to injurious results; because, as there must necessarily be fixed measuring places, such a law would have the effect of restricting vessels to that shape which would carry the greatest amount of cargo under the least possible measurements at these places. If the actual displacement, either load or light, of a vessel were to be her tonnage, it would be subject to the inconvenience that it could only be calculated correctly from the drawing of the ship, and therefore would be inapplicable to foreign ships arriving at our ports. An exact account of the draught of water, either load or light, would also be necessary, which being a variable quantity when the load draught is involved, and one of great difficulty to be determined when the light draught is required, would present almost insuperable objections; and, besides, the draught of water is a quantity easily concealed or falsified for fraudulent purposes. Above all objections, however, may be reckoned this: that if either the load or the ship represent the tonnage, it would be to the interest of the ship-builder to build large vessels with slight scantling and inadequate fastenings, that the weight of the vessel might be small in proportion to that of the cargo. If the tonnage were to express the difference between the two displacements, that is, the excess of the load displacement over the light, or the dead weight of the loading, although this would be the most correct in principle, and even mathematically correct, there is the objection that it involves a knowledge of both light and load draughts of water, and is therefore, on this account, practically, at least, as objectionable as the whole displacement. Lastly, if the tonnage were to be the space or capacity for the stowing of cargo, numerous openings would be afforded for fraudulent evasion; because the manner of measuring the ship for this space must be defined, and it is easy to build space which will not come within the limits of the defined measurements; or it is easy to build a vessel of such a form that the measurements made at given points shall not give a correct account of her capacity.

Measurement of Tonnage in the United States.—By an act of Congress, passed March 2, 1799, it is provided that, to ascertain the tonnage of any ship or vessel, the surveyor, or such other person as shall be appointed by the collector of the district to measure the same, shall, if the said ship or vessel be double-decked, take the length thereof from the fore part of the main stem to the after part of the stern-post above the upper deck, the breadth thereof at the broadest

part above the main wales, half of which breadth shall be accounted the depth of such vessel; and shall then deduct from the length three-fifths of the breadth, multiplying the remainder by the breadth, and the product by the depth, and shall divide this last product by ninety-five, the quotient whereof shall be deemed the true contents or tonnage of such ship or vessel. And if such ship or vessel be single-decked, the surveyor, or other person authorized, shall take the length and breadth as above directed, in respect to a double-decked ship or vessel, shall deduct from the said length three-fifths of the breadth, and, taking the depth from the under side of the deck plank to the ceiling in the hold, shall multiply and divide as aforesaid, and the quotient shall be deemed the tonnage of such ship or vessel.

METHODS AT PRESENT IN USE AMONG FOREIGN NATIONS FOR COMPUTING THE TONNAGE OF SHIPS.

FRANCE.—The three measures of length, breadth, and depth are multiplied together, and the product is divided by 94 for the tonnage.

In single-decked vessels the length is taken from the after part of the stem on deck to the stern-post; the extreme breadth is taken, being measured inside from ceiling to ceiling, and the depth from the ceiling to the under surface of the deck.

In vessels of two decks, at Bordeaux, the length of the upper deck and that of the keelson is measured, and the mean taken for the length. But at Brest, Marseilles, and Boulogne, the mean of the length on the two decks, from the stem to the stern-post, is taken as the length. The depth of the hold from the ceiling to the under surface of the lower deck is added to that of the height between decks, and considered as the depth. The extreme inside breadth is taken in the same way as in single-decked vessels. At Bordeaux an allowance is sometimes made for the rake of the stem and stern of the vessels.

At Boulogne, in measuring steamboats, the length of the coal and engine chambers is deducted from the length of the vessel, and her breadth is taken at the fore and aft extremities of the same, the mean of which is considered as the breadth. The depth is taken inside the pumps, from the lower surface of the deck, between the timbers. At Brest measures are frequently taken with a string, although contrary to law, and an error of seven tons in the tonnage of a cutter has been the result.

GREAT BRITAIN. See art. GREAT BRITAIN, p. 858.

SPAIN.—The breadths are measured at the following places: 1st, at the mizzen-mast; 2d, a few feet abaft the foremast; 3d, at a point half way between the two former. The heights at which the three breadths are taken at the above places are: 1st, on a level with the deck; 2d, on a level with the upper surface of the keelson; 3d, at a level half-way between the two former positions.

To find the area at each section, the half of the sum of the upper and lower measurements is added to the middle measurement, and this sum is multiplied by the height of one above the other. Then half the areas of the fore and after section is added to that of the middle section, and this sum is multiplied by the length which the sections are apart from each other. The result will express in Burgos cubic feet the capacity of the part of the hold between the fore and after sections, and it still remains to add the spaces between these and the stem and stern-post. The former may be found, without any considerable error, by multiplying the area of the foremost section by half its distance from the stem; and the latter in the same manner, by multiplying the area of the after section by half its distance from the stern-post. It is evident that the room occupied by the pumps must be deducted from the foregoing result, in order to obtain the fair quantity of space filled by the cargo.

Having thus found the capacity of the hold of any

vessel in the above manner in Burgos cubic feet, it is to be divided by $41\frac{81}{75}$, and the result will be the amount of displacement of such vessel in tons of Burgos measure, because each ton is reckoned equal to $41\frac{81}{75}$ feet of Burgos.

PORTUGAL.—For single-decked vessels, the length is measured from the cabin bulkheads to the forecabin bulkheads. The depth is measured from the upper surface of the keelson to the under surface of the beams. The extreme breadth of the deck is considered the breadth. The continued product of these three dimensions will give the contents in cubic feet, which, divided by $57\frac{126}{1000}$, gives the tonnage.

Vessels of two Decks.—In these vessels two distinct operations are made; one for the hold, the other for the middle deck. For the hold: The length is measured from the heel of the bowsprit to the stern-post. The breadth is the extreme breadth of the upper deck, deducting two feet. The depth is from the upper surface of the keelson to the under surface of the beams. For the middle deck: The length is considered as half of that for the hold, the other half being allowed for cabins, etc.—the breadth as before; and for the depth, the height of the middle deck to the under surface of the beams.

The foregoing is the method adopted at Lisbon; but at Oporto the length of the vessel is taken from the second timber at the bows to the stern-post; the breadth at the widest part from the inside of each bulwark on the upper deck; and the depth from the upper surface of the keelson, to the lower surface of the beams of the upper deck at the main hatchway.

If the keelson be more than ordinarily thick, allowance is made accordingly; and where there are two decks, the thickness of the lower deck is also deducted from the depth. The length is then multiplied by the breadth, and the product by the depth. The product is then divided by 96, the number of Portuguese cubic feet contained in a ton, and the result is the tonnage of the vessel.

NAPLES.—For vessels with two decks, the length is measured from one end of the vessel to the other, *overall*. The length is also measured from the after part of the stem to the rudder hatch, under the poop. The mean between these two lengths is multiplied by the extreme breadth of the vessel. The depth is then taken from the bottom of the well to the lower surface of the upper or poop deck; and the above product being multiplied by this depth, and divided by 94, gives the tonnage.

For single-decked vessels, the tonnage is found by multiplying the extreme length by the extreme breadth, and the product by the extreme depth, and divided by 94, as above.

NETHERLANDS.—The length is measured on deck from the stem to the stern-post. For the breadth, the hold is divided into four portions, and two measurements taken at each of the three divisions: 1st, across the keelson, on a level with the upper surface, from ceiling to ceiling; 2d, the greatest breadth of the hold at each division. The mean of these six measurements is considered the breadth. The depths are taken at each of the foregoing points of division, from the upper surface of the keelson to the lower surface of the upper deck between the beams, and the mean of these three is resumed. The length, breadth, and depth are then multiplied together, and two-thirds of the product is considered as the tonnage. Allowance for provisions and water, cabin and ship's stores, varying from $\frac{30}{100}$ to $\frac{45}{100}$, is deducted from the depth before it is multiplied by the length and breadth.

NORWAY.—From the after part of the stem, the length of the ship is taken to the inner part of the stern-post. Dividing the length of the vessel into four equal parts, the breadth is measured at each of these divisions. The depth of the vessel, from the

under surface of the upper deck to the keelson, is taken at the above three points of division. Then multiply the length by the mean of the three breadths, and this product by the mean of the three depths. The result of the foregoing is divided by $242\frac{1}{2}$, if there be no fractional parts of feet; but if there are, the calculation is made in inches, and the divisor becomes 322,776, the result thus obtained being the burden of the vessel in wood lasts, of 4000 Neva lbs. each. To reduce these into commerce lasts, one of which is equal to 5200 Neva lbs., it is multiplied by 10, and divided by 18.

RUSSIA.—Length of the keel in feet, multiplied by the extreme breadth over the sheathing, and the product multiplied again by half the breadth, and divided by 94, gives the number of English tons.

UNITED STATES.—If the vessel be double-decked, the length is taken from the fore part of the main stem to the after part of the stern-post, above the upper deck; the breadth, at the broadest part above the main wales, half of which breadth is accounted the depth. From the length three-fifths of the breadth is deducted; the remainder is multiplied by the breadth, and the product by the depth. The last product is divided by 95, and the quotient is deemed the true tonnage of such ship or vessel. See page 1855.

If the ship or vessel be single-decked, the length and breadth are taken as above for a double-decked vessel, and three-fifths of the breadth are deducted from the length. The depth of the hold is taken from the under side of the deck-plank to the ceiling in the hold. These are multiplied and divided as aforesaid, and the quotient is the tonnage. At some places a system of measuring, called carpenter's tonnage, appears to be adopted. The rule is as follows:

For vessels with one deck, multiply the length by the breadth of the main beam, and the product by the depth. Divide this second product by 95. For double-decked vessels, take half the breadth of the main beam for the depth, and work as for a single-decked vessel.

At New Orleans, the mode at present in use is to take the length from the stem to the after part of the stern-post, on the deck. Take the greatest breadth over the main hatch, and the depth from the ceiling of the hold to the lower surface of the deck at the main hatch. From the length deduct three-fifths of the breadth, multiply the remainder by the actual breadth and depth, and divide by 95 for a vessel with a single deck; but if the vessel have a double deck, half the breadth of the beam is considered as equivalent to the depth, and is multiplied accordingly.

Tonnage Duties.—By an act of Congress, May 31, 1830, it is ordered that no tonnage duties shall be paid by ships or vessels of the United States, of which the officers and two-thirds of the crew shall be citizens of the United States; and all acts imposing tonnage duties on such ship are repealed.

Under the provisions of the act of the 27th May, 1848, extending privileges to American vessels, bound from one port to another in the United States, touching at a foreign port for certain purposes, a bond for the return of the seamen and crew list, prescribed by law in cases of vessels bound on a foreign voyage, is required, and the seamen must all be accounted for.

American vessels, owned by Americans or others, without register, are subject to a tonnage duty of one dollar per ton, and 10 per cent. additional duty on the cargo, as foreign vessels.

American-built vessels, owned wholly or in part by foreigners, are subject to tonnage duty of thirty cents per ton, and 10 per cent. additional duty on cargo, unless exempt by treaty.

American vessels, on arrival from foreign ports, are subject to a tonnage duty of fifty cents per ton, unless the officers and two-thirds of the crew for the whole voyage are American citizens.

The discharge of seamen from an American vessel, although by mutual consent, certified by a consul, will

not exempt the vessel from the payment of tonnage duty incurred as above. The only exemption provided by law is in cases of sickness, death, desertion, or being made prisoners of war; which must be certified by an American consul.

All acts imposing duties on the tonnage of the ships and vessels of foreign nations, so far as they relate to the imposition of such duties, are repealed; provided that all discriminating or countervailing duties of such foreign nations, as far as they operate to the disadvantage of the United States, have been abolished.

TONNAGE STATISTICS.

THE TONNAGE OF VESSELS ENTERED AND CLEARED FROM THE PRINCIPAL COUNTRIES AND PORTS OF CHRISTENDOM.

Countries.		1851.	1852.	1856.
Great Britain	Ent'd.	7,872,094	7,987,447	7,528,387
	Ct'd.	8,108,104	8,242,702	7,479,648
United States	Ent'd.	4,998,440	5,292,880	* 7,186,316
	Ct'd.	5,180,054	5,278,165	7,070,821
France	Ent'd.	2,121,520	2,544,785	2,307,490
	Ct'd.	1,689,325	.....	.....
Turkey, from 8 princ. ports	Ent'd.	1,705,968	.....	.....
	Ct'd.	483,861	1,230,492	1,410,406
Austria.	Ent'd.	493,838	1,026,871	1,418,715
	Ct'd.	472,172	547,162	† 453,548
Russia	Ent'd.	611,868	914,194	587,954
	Ct'd.	620,378	632,114	.....
Prussia	Ent'd.	1,073,898	737,948	.....
	Ct'd.	744,586	841,680	781,816
Hamburg.	Ent'd.	743,186	845,184	774,616
	Ct'd.	241,206	490,634	* 498,000
Bremen	Ent'd.	362,248	428,756	* 509,922
	Ct'd.	475,694	.....	620,000
Chili	Ent'd.	470,924	.....	.....
	Ct'd.	293,454	274,226	† 200,880
Sweden	Ent'd.	270,620	333,834	428,884
	Ct'd.	295,811	283,310	† 431,479
Norway	Ent'd.	466,696	580,924	399,300
	Ct'd.	341,504	341,818	.....
Denmark (pr.)	Ent'd.	312,632	324,828	.....
	Ct'd.	316,761	.....	.....
Spain	Ent'd.	303,818	.....	.....
	Ct'd.	338,111	.....	634,213
Brazil	Ent'd.	373,609	.....	.....
	Ct'd.	300,266	.....	† 320,088
Two Sicilies .	Ent'd.	310,909	.....	297,631
	Ct'd.	.....	.....	.....

* Year ending June 30, 1857. † 1853. ‡ 1854. § 1855.

These statistics are the latest that can be obtained, and are given to show the comparative tonnage rather than as accurate statements. Several discrepancies, as in the case of the tonnage of France, are unavoidable.—For more accurate statistics, see the countries under their proper heads. For the statistics in regard to the tonnage of the United States, see article UNITED STATES.

Tontine, a species of life annuity, with benefit of survivorship, so called from Lorenzo Tonti, a Neapolitan, with whom the scheme originated, and who introduced it into France, where the first tontine was opened in 1638. The subscribers were divided into ten classes, according to their ages, or were allowed to appoint nominees, who were so divided; and a proportionate annuity being assigned to each class, those who lived longest had the benefit of their survivorship, by the whole annuity being divided among the diminished number. The terms of this tontine may be seen in the French *Encyclopédie*, Finance Division, vol. iii. In 1689 a second tontine was opened in France. The last survivor was a widow, who at the period of her death, at the age of 96, enjoyed an income of 73,500 livres for her original subscription of 300 livres. The late celebrated Mr. Jennings was an original subscriber for a £100 share in a tontine company; and being the last survivor of the shareholders, his share produced him £3000 *per annum*. He died worth £2,115,244, aged 103 years, June 19, 1798. The last French tontine was opened in 1759. They had been found very onerous, and in 1763 the Council of State determined that this sort of financial operation should not be again adopted. Tontines have seldom been resorted to in England as a measure of finance. The last for which the government opened subscriptions was in 1789. The

terms may be seen in Hamilton's *Hist. Public Revenue*, p. 210. There have been numerous private tontines in England and in the United States. The Tontine Building, Wall Street, New York, was erected during the years 1792-1794, upon this principle, by an association of merchants. By the constitution under which the association was formed, 208 shares were subscribed, at \$200 a share, severally depending upon a life selected by each subscriber. The old building was razed to the ground in 1855, and was superseded in the same year by a substantial edifice.

Top, a sort of platform surrounding the lower mast-head, from which it projects on all sides like a scaffold. The principal intention of the top is to extend the angle with the mast, and thereby give additional support to the latter. The top is also very convenient to contain the materials necessary for extending the small sails, and for fixing and repairing the rigging and machinery with greater expedition. In ships of war the tops are furnished with swivels, musketry, and other fire-arms, and are guarded with a fence of hammocks in time of action. Finally, the top is employed as a place for looking out, either in the day or night.—E. A.

Topaz (*Ger. Topas*; *Fr. Topase*; *It. Topazio*; *Sp. Topacio*; *Russ. Topas*). The name topaz has been restricted by M. Haüy to the stones called by mineralogists Occidental ruby, topaz, and sapphire; which, agreeing in their crystallization and most of their properties, were arranged under one species by M. Romé de Lisle. The word topaz, derived from an island in the Red Sea, where the ancients used to find topazes, was applied by them to a mineral very different from ours. One variety of our topaz they denominated chrysolite. Color, wine yellow. From pale wine yellow it passes into yellowish white, greenish white, mountain green, sky blue; from deep wine yellow into flesh red and crimson red. Specific gravity from 3.464 to 3.641.—Thomson's *Chemistry*.

Yellow Topaz.—In speaking of the topaz, a gem of a beautiful yellow color is always understood: it is wine yellow, of different degrees of intensity; and the fuller and deeper the tinge, the more the stone is esteemed. In hardness it yields to the spinelle. There are few gems more universal favorites than the yellow topaz, when perfect; the rich warm tone of its color, the vivacity of its lustre (which it retains even by the side of the diamond), and its large size, compared with many others, are characters which deservedly entitle it to distinction; it bears, accordingly, a high price when of good quality. It is chiefly employed for necklaces, ear-drops, bracelets, etc., in suit. No little skill and taste are required in cutting and duly proportioning this gem; the table should be perfectly symmetrical, and not too large; the bise of sufficient depth, and the collet side should be formed in delicate steps. It works easily on the mill, and the lapidaries are in general tolerably well acquainted with it; yet it is uncommon to meet with one well cut. The yellow topaz varies in price according to its beauty and perfection. A superlatively fine stone, perfect in color and workmanship, sufficiently large for an armlet, or any other ornament, and weighing nearly 80 carats, was sold for £100. Topazes have become more common since our intercourse with Brazil; consequently, they are less in demand, and lower in price. A fine stone of 60 carats may be purchased at from £20 to £35; and smaller, calculated for ring stones, at from £2 to £5, but it is not usual to sell them by weight.

Pink Topaz.—This is made from the yellow, which, when of intense color, is put into the bowl of a tobacco pipe or small crucible, covered with ashes or sand: on the application of a low degree of heat, it changes its color from a yellow to a beautiful pink. This is performed with little hazard; and, if the color produced happens to be fine, the price is much augmented.

Red Topaz.—This beautiful gem, which very seldom occurs naturally, is of a fine crimson color, tinged

with a rich brown; it is extremely rare, and generally taken to be a variety of ruby, for which I have seen it offered for sale. Its price, from its scarcity, is quite capricious; it has an exquisite pleasing color, very different from the glare of the artificial pink topaz.

Blue Topaz is also a beautiful gem, of a fine celestial blue color. It has occurred of considerable magnitude; the finest specimen known I brought in the rough from Brazil; when cut and polished, it weighed about $1\frac{1}{2}$ oz. Smaller specimens are not uncommon, and when light-colored are often taken for aqua-marinas, from which they may always be distinguished by their greater weight and hardness, etc.

White Topaz is familiarly called *Minas Nova*. It is a beautiful pellucid gem, and is used for bracelets, necklaces, etc. It possesses greater brilliancy than crystal; and, from its hardness, has been used to cover paste, etc., and to form doublets."—MAWE on *Diamonds*.

Top-mast, the second division of a mast, or that part next above the lower mast. *Top-gallant mast*, the mast next above the top-mast, and is generally the uppermost mast. *Top-sails*, large sails extending across the top-mast. *Top-gallant sails* are extended above the top-sail yards, in the same manner as the top-sails are extended above the lower yards.

Tornado (Spanish), a violent hurricane or gust of wind, which, arising suddenly from the shore, veers round to all points of the compass, and indeed has been described as blowing from all points at once. Tornadoes are usually accompanied with thunder-storms, and are generally of short duration. They are frequent in the Chinese seas and the West Indies.

Toronto, city, at one time the capital of Canada, is situated on Toronto Bay, in the township and county of York, lat. $43^{\circ} 32' N.$, long. $79^{\circ} 20' W.$ It is 45 miles northeast from Hamilton, 165 miles west from Kingston, 363 miles from Montreal, 543 miles from Quebec, and 1353 from Halifax, Nova Scotia.

The bay is a beautiful sheet of water, separated from the main body of Lake Ontario, except at its entrance, by a long narrow strip of sandy beach, the southwest termination of which is known as "Gibraltar Point." The city was founded in 1794 by Governor Simcoe, and is laid out in the form of a parallelogram, being above three miles long by one and a half wide; the streets, which are straight and wide, intersecting at right angles. The esplanade fronting the bay extends for a distance of two miles. In 1817 the population amounted to 1200; in 1830 to 2860; in 1842 to 15,336; in 1850 to 25,166; in 1852 to 30,763; and in 1854 to over 40,000. The city is lighted with gas, and is well supplied with water, by companies incorporated for those purposes.—See TRADE. From Toronto the capital was removed to Quebec, and in 1857-'58 was finally established at Ottawa, formerly Bytown.

Tortoise-shell (Fr. *Ecaille de Tortue*; It. *Scaglia de Tartaruga*; Ger. *Schildpad*; Malay, *Sisik kwayakura*), the brown and yellow scales of the *Testudo imbricata*, or tortoise, a native of the tropical seas. It is extensively used in the manufacture of combs, snuff-boxes, etc., and in inlaying and other ornamental work. The best tortoise-shell is that of the Indian Archipelago; and the finest of this quarter is obtained on the shores of the Spice Islands and New Guinea. When the finest West Indian tortoise-shell is worth, in the London market, 46s., the finest East Indian is worth 60s. per lb. Under the latter name, however, a great deal of inferior shell is imported, brought from various parts of the East Indies. The goodness of tortoise-shell depends mainly on the thickness and size of the scales, and in a smaller degree on the clearness and brilliancy of the colors. Before the opening of the British intercourse with India, the greater part of the tortoise-shell which eventually found its way to Europe was first carried to Canton, which then formed the principal mart for the commodity. It is still an

article of trade from that city; but the imports and exports are inconsiderable, Singapore being now the chief mart for this article. Its price at the latter varies from 750 and 900 to from 1000 to 1600 dollars per picul, according to quality.—CRAWFORD'S *Indian Archipelago*; *Singapore Chronicle*; *Canton Register*.

Toulon (*Telo Martius*), a commercial and important military and naval port of France, department of Var, on a fine bay of the Mediterranean, 40 miles southwest from Draguignan. Lat. (of observatory) $43^{\circ} 7' 5'' N.$, long. $5^{\circ} 56' E.$ Population, 40,000. Mean temperature of year, $62^{\circ} 2$; winter, $48^{\circ} 5$; summer, $75^{\circ} 2$ Fahrenheit. It is strongly fortified, defended by a double line of bastioned fortifications, and strengthened by forts on the adjacent heights. The French consider it impregnable. It has a tribunal and chamber of commerce, tribunal of marine, school of navigation, commercial college, and public library. The streets are watered by numerous fountains. Around the harbor are immense magazines and arsenals, ship-building docks, rope and sail-works, and the *bagne* or convict prison, usually occupied by 4000 to 5000 culprits. Toulon was originally a Roman colony; it was taken by the constable of Bourbon in 1524, and by Charles V. in 1536. It was given up to the English in August, 1798; in December of the same year it was taken by the French republicans, after a memorable siege, during which Napoleon commenced his military career. *Toulon-sur-Arroux* is a commune and village, department of Saône-et-Loire, eighteen miles north-northwest from Charolles. Population about 1700.

Toys (Ger. *Spielezeug*, *Spellsachen*; Du. *Speelgoed*; Fr. *Jouets*, *Bimbelots*; It. *Trastulli*; Sp. *Dijes*, *Juquetes de niños*; Russ. *Igrushki*) include every trifling article made expressly for the amusement of children. How frivolous soever these articles may appear in the estimation of superficial observers, their manufacture employs thousands of hands, and gives bread to many families.

Children's toys are brought in immense numbers from the hilly regions of Germany, Austria, and Switzerland. The forests supply abundance of timber at very low cost; and the peasant mountaineers, simple and frugal, employ their leisure hours and the time of their children in fabricating these articles. Dealers are sure to be found who will drive a trade in these trifles in some country or other. The *Art Union Journal*, a few years ago, gave some curious information concerning the better kind of carved German toys: "The best German toys come from the town of Sonneberg, on the southeastern frontier of the forest of Thuringia. It has a population of 4000 inhabitants, of which the greater part are employed in the trade. The principal toy-merchants, numbering about thirty, provide themselves with goods from many hundred different makers of common articles, resident in the town and its vicinity; these, again, are furnished by the neighboring villagers with the requisite roughly-prepared articles in wood, which are fitted up, carved, and painted by the makers in the town. Every year about 25,000 cwt. of these goods are exported to almost every part of the world, but the manufacturers are confined to the use of wood or pasteboard, or these two materials combined. The factory from which the best toys are derived is that of Adolph Fleischmann, who employs none but first-rate workmen; and it is interesting to notice the many admirable productions these uneducated artists produce—models and groupings of figures that would cast no discredit on the atelier of a Bailey or a Westmacott."

Trade, Board of. See BOARD OF TRADE, p. 312.

Trade-winds (so called from their favoring commerce), easterly winds which constantly prevail, with slight variations, within the tropics. It is a common notion that the northeast trade-wind blows exactly from the northeast point nearly to the equator, when it gradually becomes more and more easterly, till at

length it blows due east; and so with the southeast trade. This notion is, however, erroneous. The trade-winds in the Atlantic and Pacific oceans extend to about 28° of latitude each side of the equator, so that a ship, after passing 30° , may expect to enter them every day. But, on first entering them, they will be found to blow from the east, or even a little southerly, and, as you advance, to draw round gradually to north-east, and even north, at the southern limit of the north-east trade, where it is commonly represented as being due east. This limit varies with the position of the sun, reaching, when the sun has a southern declination, to within three or four degrees north latitude; and, as the sun acquires a more northern declination, receding ten or twelve degrees from the equator. At this point the mariner enters the region of *calms* and *variables*, as they are called, where the wind has more or less southerly direction, and sometimes blows freshly from the south-southwest. This region varies from 150 to 550 miles, and is subject to heavy rains. On passing this range the southeast trade begins, and is subject to the same phenomena as the northeast. To the north and south of the northeast and the southeast trades westerly winds will be found generally to prevail, though less regular in the northern than in the southern hemisphere; and it has been remarked that the average of the passages made by the Liverpool packets from New York out, for a period of six years, was twenty-three days, and from Liverpool to New York, that is, from east to west, thirty-eight days.—E. A. See WINDS.

Trade-winds is a name given to certain remarkable aerial currents, on account of their signal aid to navigation. In those parts of the Atlantic and Pacific oceans which are remote from the influence of the land, between the limits of about 28° or 30° north and south latitude, there is a constant easterly wind. On the north side of the equator it blows from between the north and east, and on the south side from the south and east, according to the distance from the equator; these winds are called the northeast and southeast trade-winds, and are the cold currents of air flowing from the poles to the equator, altered in direction by the rotation of the earth upon its axis. The direction and extent of the trade-winds vary with the seasons of the year, and in different parts of the world their course is entirely altered, the most remarkable modification shown being the monsoons.—See MONSOONS; also, articles ATLANTIC OCEAN, GULF STREAM, CURRENTS, WINDS.

Tragacanth, a species of gum, the produce of the *Astragalus tragacantha*, a thorny shrub growing in Persia, Crete, and the islands of the Levant. It extends about the end of June from the stem and larger branches, and soon dries in the sun. It is inodorous, impressing a very slightly bitter taste as it softens in the mouth. It has a whitish color; is semi-transparent, and in very thin, wrinkled, vermiform pieces; it is brittle, but not easily pulverized, except in frosty weather, or in a warmed mortar. It should be chosen in long twisted pieces, white, very clear, and free from all other colors; the brown, and particularly the black pieces, should be wholly rejected.—THOMSON'S *Chemistry*; THOMSON'S *Dispensatory*; MILBURN'S *Oriental Commerce*.

Treasury Notes. A species of Treasury Notes, termed Continental currency, was issued by order of the Continental Congress. This depreciated rapidly, and no provision was made afterward for its redemption by Congress. The amount issued was estimated at \$400,000,000; Mr. Jefferson calculated that the real value given for these notes was only \$72,000,000. The assignats of the French Republic during the revolution were authorized by the National Assembly, in April, 1790. At one period they amounted to the enormous sum of eight milliards of francs (8,000,000,000), or equivalent to nearly £350,000,000 sterling.—ALTON'S *History of Europe*. In May, 1812, Mr. Albert Gallatin, Secretary of the Treasury, recommended the

issue of Treasury Notes to the extent of \$4,900,000, repayable one year after date, and receivable in the mean time for government dues, and bearing 5 2-5 per cent. interest. These were authorized by act of Congress, June 30, 1812. Treasury Notes were also suggested by Mr. A. J. Dallas, Secretary of the Treasury, in January, 1815. He reported that the Treasury would require for the fiscal year \$40,906,124 in addition to the ordinary revenue (see *Funding System, U. S.*, p. 607), of which \$15,000,000 was to be in Treasury Notes at 5 2-5 per cent. per annum (or about $1\frac{1}{2}$ cent per day for every hundred dollars).

Up to December 4, 1819, the amount issued was \$36,680,794, viz.:

By act of 20th June, 1812	\$5,000,000
" 25th February, 1813	5,000,000
" 4th March, 1814	10,000,000
" 26th December, 1814	8,318,400
" 24th February, 1815	8,362,394

Total.....\$36,680,794

Of this amount all were redeemed prior to October 1, 1824, except \$19,756. Further issues of Treasury Notes was made under acts of 12th October, 1837; 21st May, 1838; and 2d March, 1839. From the year 1812 to 31st December, 1843, the total issue of Treasury Notes was \$84,611,833, and amount received from loans \$98,360,112, viz.:

Years.	Loans.	Treasury Notes.	Total.
1812	\$10,032,400	\$2,835,500	\$12,867,900
1813	20,039,635	6,094,800	26,134,435
1814	15,080,546	8,297,865	23,378,411
1815	14,857,423	20,406,897	35,264,320
1816	1,357,586	8,136,549	9,494,135
1817	.....	734,542	734,542
1818	.....	8,765	8,765
1819	.....	2,291	2,291
1820	3,040,000	824	3,040,824
1821	5,000,000	324	5,000,324
1837	.....	2,992,989	2,992,989
1838	.....	12,716,820	12,716,820
1839	.....	3,857,276	3,857,276
1840	.....	5,539,547	5,539,547
1841	5,665,756	7,993,500	13,659,256
1842	11,383,405	3,425,329	14,808,735
1843	11,853,353	1,518,150	13,401,508
Total.....	\$98,360,112	\$84,611,833	\$182,971,945

Of the issues between 1837 and 1843, there were outstanding September 30, 1847, \$239,789. Further emissions were authorized by act of Congress, under date of 23d July, 1846, and 28th January, 1847; \$10,000,000 by the act of 1846, not exceeding 6 per cent. interest; and \$23,000,000 by the act of 1847; and a further issue by act of December, 1857.

In March, 1858, the bills for the new issue of Treasury Notes were opened at the Treasury Department. The result was, that \$2,600,000 were taken at rates varying at $\frac{3}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, $\frac{1}{2}$, and $\frac{1}{4}$. The remainder of the 5,000,000 was taken in 5 per cents. Some of the bids were for permanent investment, while others were for speculation.

There is a species of Treasury Notes in common use in England, known as Exchequer Bills. These were first created in the year 1696, two years after the incorporation of the Bank of England. They have been issued annually ever since. These bills bear an interest of 1d., $1\frac{1}{2}$, 2 or $2\frac{1}{2}$ pence per day on each £100, equivalent to $1\frac{1}{2}$ @ 3 per cent. per annum. Of these bills there were issued in 1852, £17,742,800, at $1\frac{1}{2}$ d.; 1853, £17,742,500, at 1d. @ $2\frac{1}{2}$ d.; 1854, £16,029,600, at $2\frac{1}{2}$ d.; 1855, £17,183,000. These are a favorite investment for short periods.—See EXCHEQUER.

In 1768 the Empress Catharine the Second, of Russia, established the Banque d'Assignat, to issue government notes payable to bearer. The amount at first issued was 40,000,000 of roubles. In 1786 the amount was extended to 100,000,000, and they soon after rapidly depreciated.

Treaties, Commercial. By a commercial treaty is meant a treaty between two independent nations, for facilitating, and most commonly also regulating, the commerce carried on between them. During the

Middle Ages, and down, indeed, to a comparatively recent period, foreigners resident in a country, whether for commercial or other purposes, were for the most part subject to very harsh treatment. At one time it was usual in England to make aliens liable for the debts and crimes of each other; and the practice, formerly, so common, of laying heavier duties on the goods imported and exported by aliens than by British subjects, is not even yet, we grieve to say, altogether abandoned. In France and some other countries, during the 14th and 15th centuries, a stranger was incapable of bequeathing property by will; and the whole of his personal as well as real estate, fell, at his death, to the king or the lord of the barony. This barbarous law was known by the name of *Droit d'Aubaine*, and was not completely abolished in France till a very late period.—ROBERTSON'S *Charles V.*, vol. I. Previously to last century, the laws with respect to shipwreck, though infinitely more humane than they had been at a more remote period, were calculated rather to promote the interest of the sovereign of the country, or the feudal lords on whose territories shipwrecked vessels might be thrown, than those of the unfortunate owners or survivors. The most serious obstacles were then also opposed by the prevalent insecurity, and the arbitrary nature of the tolls which the lords were in the habit of exacting, for the transit of commodities through the territories of one state to those of another. The practice of confiscating shipwrecked property continued in France till 1681, when it was abolished by an edict of Louis XIV. It was at one time common in Germany, to use the words of M. Bouchaud, "*pour les prédicateurs de prier Dieu en chaire, qu'il se fasse bien des naufrages sur leurs côtes!*"—*Théorie des Traités de Commerce*, p. 118. And the fact that the celebrated jurist Thomasius wrote a dissertation in defense of such prayers, affords, if possible, a still more striking proof of the spirit of the period.

Under such circumstances, it became of much importance for commercial states to endeavor to obtain, by means of treaties, that protection and security for the persons and properties of their subjects, when abroad, against unjust treatment and vexatious exactions, which they could not have obtained from the laws of the countries in which they might happen to reside. Thus it was stipulated by Edward II., in 1325, that the merchants and mariners of Venice should have power to come to England for ten years, with liberty to sell their merchandise and to return home in safety, "*without having either their persons or goods stopped on account of other people's crimes or debts.*"—ANDERSON, *anno* 1325. The commercial treaties negotiated during the 15th, 16th, and 17th centuries, are full of similar conditions; and there can be no doubt that by providing for the security of merchants and seamen when abroad, and suspending, with respect to them, the barbarous laws and practices then in force, they contributed materially to accelerate the progress of commerce and civilization. Commercial treaties were also negotiated at a very early period for the regulation of neutral commerce during war, and for defining the articles that should be deemed contraband, or which it should not be lawful for neutral ships to convey or carry to either belligerent. These are obviously points that can only be decided by express stipulations.

Instead, however, of confining commercial treaties to their legitimate and proper purposes—the security of merchants and navigators, and the facility of commercial transactions—they very soon began to be employed as engines for promoting the commerce of one country at the expense of another. For more than two centuries, those engaged in framing commercial treaties have principally applied themselves to secure, either by force or address, some exclusive advantage in favor of the ships and products of their particular countries. Hence these compacts are full of regulations as to the duties to be charged on certain articles,

and the privileges to be enjoyed by certain ships, according as they were either produced by or belonged to particular countries. It was in the adjustment of these duties and regulations that the skill of the negotiator was chiefly put to the test. It was expected that he should be thoroughly acquainted with the state of every branch of industry, both in his own country and in the country with which he was negotiating; and he was to endeavor so to adjust the tariff duties, that those branches in which his own country was deficient might be benefited, and those in which the other was superior might be depressed. The idea of conducting a negotiation of this sort on a fair principle of reciprocity is of very late origin; success in circumventing, in overreaching, or in extorting, from fear or ignorance, some oppressive, but at the same time worthless privilege, was long esteemed the only proof of superior talent in negotiators.

In an able tract, attributed to Mr. Eden, afterward Lord Auckland, published in 1787 (*Historical and Political Remarks on the Tariff of the French Treaty*), there is the following outline of the qualifications necessary to the negotiator of a commercial treaty: "Besides a general knowledge of the trade and reciprocal interests of the contracting parties, he ought to be precisely acquainted with their several kinds of industry and skill; to discover their wants, to calculate their resources, and to weigh with nicety the state of their finances, and the proportionate interest of their money; nay, further, he should be able to ascertain the comparative population and strength of each country, together with the price and quality both of first materials, and also of the labor bestowed upon them: for this purpose he should inquire into the operations of every class of merchants and manufacturers concerned in the trade; should consult their expectations on each of its several branches; and collect their hopes and fears on the effect of such a commercial revolution, on the competition of rival nations. A good treaty of commerce, independent of the art of negotiation, is pronounced, by one who well knew the extent and difficulty of the subject, to be a '*master-piece of skill.*'"

It is visionary to imagine that any nation will ever continue to grant to another any exclusive advantage in her markets, unless she obtain what she reckons an equivalent advantage in the markets of the other. And if a commercial treaty stipulating for an exclusive privilege be really and *bonâ fide* observed by the country granting the privilege, we may be sure that the concessions made by the country in whose favor it is granted are sufficient fully to countervail it. Those who grasp at exclusive privileges in matters of this sort, or who attempt to extort valuable concessions from the weakness or ignorance of their neighbors, are uniformly defeated in their object. All really beneficial commercial transactions are bottomed on a fair principle of reciprocity; and that nation will always flourish most, and have the foundations of her prosperity best secured, who is a universal merchant, and deals with all the world on the same fair and liberal principles.

As early as 1783, Mr. Pitt, then Chancellor of the Exchequer, proposed a bill in the British Parliament, based upon the liberal principle of "admitting to all the ports of the British dominion American vessels loaded with goods the growth or produce of the United States, on the same terms as British vessels or goods;" but the proposition at once startled the fears of the British merchants, who, with the aid of Lord North, Mr. Fox, and Lord Sheffield, succeeded in transferring the whole subject to the discretion of the king and his council. The consequence was, that an order was immediately issued, not only excluding American vessels from all participation in the colonial trade, but prohibiting the exportation from the United States of provisions and fish, even in British bottoms.

English Treaties.—The first formal and written treaty made by England with any foreign nation was entered into A.D. 1217. The first commercial treaty was with the Flemings, 1 Edward, 1272; the second with Portugal

and Spain, 1308.—ANDERSON. The chief treaties of the principal civilized nations of Europe will be found described in their respective places. The following forms an index to them:

Abo, peace of.....	1743	Grand Alliance.....	1689	Pyrenees, treaty of the.....	1659
Aix-la-Chapelle.....	1668	Greece, treaty of London.....	1829	Quadruple Alliance.....	1718
Aix-la-Chapelle, peace of.....	1748	Hague, treaty of the.....	1659	Radstadt, peace of.....	1714
Akermann, peace of.....	1826	Hague, treaty of the.....	1669	Radstadt, congress of.....	1797
Alt Radstadt.....	1706	Halle, treaty of.....	1610	Ratibon, peace of.....	1630
America, peace with.....	1783	Hamburg, peace of.....	1762	Ratibon, treaty of.....	1806
Amiens, peace of.....	1802	Hanover treaty.....	1725	Religion, peace of.....	1555
Armed Neutrality.....	1800	Holland, peace with.....	1784	Rhine, Confederation of the.....	1806
Arras, treaty of.....	1485	Holy Alliance.....	1815	Ryswick, peace of.....	1697
Arras, treaty of.....	1482	Hubertsberg, peace of.....	1763	St. Germaine, peace of.....	1570
Augsburg, league of.....	1686	Interim.....	1548	St. Germain-en-Laye.....	1679
Baden, peace of.....	1714	Kiel, treaty of.....	1814	St. Ildefonso, alliance of Spain with	
Barrier treaty.....	1715	Laybach, congress of.....	1721	France.....	1795
Basle, peace of.....	1795	League.....	1676	Seville, peace of.....	1792
Bassein, India.....	1802	Leipsic, alliance of.....	1631	Sioröd, peace of.....	1613
Bayonne, treaty of.....	1808	Leoben, peace of.....	1797	Smaicald, league of.....	1529
Belgium, treaty of London.....	1839	Lisbon, peace of.....	1668	Spain, pacification of (London)...	1834
Belgrade, peace of.....	1789	London, treaty of (Greece).....	1829	Stettin, peace of.....	1570
Berlin, peace of.....	1742	London, convention of (Turkey).....	1840	Stockholm.....	1630
Berlin decrees.....	1806	Lübeck, peace of.....	1629	Stockholm, peace of.....	1719
Berlin convention.....	1808	Lunenburg, peace of.....	1801	Stockholm, treaty of.....	1724
Breda, peace of.....	1667	Madrid, treaty of.....	1593	Stockholm, treaty of.....	1813
Bretigny, peace of.....	1360	Methuen treaty.....	1726	Temeswar, truce of.....	1664
Bucharest, treaty of.....	1812	Milan decrees.....	1807	Teschén, peace of.....	1779
Cambray, league of.....	1508	Münster, peace of.....	1648	Tausin, peace of.....	1595
Cambray, peace of.....	1529	Nantes, edict of.....	1518	Tilsit, peace of.....	1807
Campo-Formio, treaty of.....	1797	Naumberg, treaty of.....	1554	Tolentino, treaty of.....	1793
Carlowitz, peace of.....	1699	Nice, treaty of.....	1519	Toplitz, treaty of.....	1813
Carlsbad, congress of.....	1819	Nimeguen, peace of.....	1678	Triple Alliance.....	1717
Cateau-Cambresis, peace of.....	1559	Noyon, treaty of.....	1516	Triple Alliance of the Hague.....	1668
Chaumont, treaty of.....	1814	Nuremberg, treaty of.....	1532	Troppau, congress of.....	1820
Chunar, India.....	1781	Olivia, peace of.....	1660	Troyes, treaty of.....	1420
Cintrá, convention of.....	1808	Paris, peace of (see Paris).....	1763	Turkmauchay, peace of.....	1828
Closterseven, convention of.....	1767	Paris, treaty of.....	1796	Ulm, peace of.....	1620
Coalition, first, against France.....	1792	Paris, peace of (Sweden).....	1810	Utrecht, union of.....	1579
Coalition, second, against France.....	1793	Paris, capitulation of.....	1814	Utrecht, peace of.....	1713
Coalition, third, against France.....	1805	Paris, treaty of.....	1814	Valençay, treaty of.....	1813
Coalition, fourth, against France.....	1806	Paris, peace of.....	1815	Verona, congress of.....	1822
Coalition, fifth, against France.....	1809	Paris, treaty of.....	1817	Versailles, peace of.....	1783
Coalition, sixth, against France.....	1813	Partition, first treaty.....	1698	Vienna, treaty of.....	1725
Concordat.....	1801	Partition, second treaty.....	1700	Vienna, treaty of alliance.....	1731
Confians, treaty of.....	1465	Passarowitz, peace of.....	1713	Vienna, definitive peace.....	1737
Constantinople, peace of.....	1712	Passau, treaty of.....	1552	Vienna, peace of.....	1809
Constantinople, treaty of.....	1823	Petersburg, peace of.....	1762	Vienna, treaty of, March 25.....	1815
Copenhagen, peace of.....	1660	Petersburg, treaty of.....	1772	Vienna, treaty of, May 31.....	1815
Cressy.....	1544	Petersburg, treaty of.....	1805	Vienna, treaty of, June 4.....	1815
Dresden.....	1745	Petersburg, treaty of.....	1810	Vossem, peace of.....	1763
Family compact.....	1761	Peterswalden, convention of.....	1813	Warsaw, treaty of.....	1768
Fontainebleau, peace of.....	1679	Pinitz, convention of.....	1781	Warsaw, alliance of.....	1682
Fontainebleau, treaty of.....	1765	Poland, partition of.....	1795	Westminster, peace of.....	1674
Fontainebleau, concordat at.....	1813	Pragmatic Sanction.....	1439	Westminster (with Holland).....	1716
Friedwald, treaty of.....	1551	Pragmatic Sanction.....	1713	Westphalia, peace of.....	1648
Fuessen, peace of.....	1745	Prague, peace of.....	1663	Wilna, treaty of.....	1561
Ghent, pacification of.....	1576	Presburg, peace of.....	1805	Worms, edict of.....	1521
Ghent, peace of (United States).....	1814	Public good, league for the.....	1464	Wurtzburg, treaty of.....	1610
Golden Bull.....	1356				

Treaties of Commerce and Navigation between the United States and foreign Nations.—The United States has treaties, conventions, or reciprocal regulations of commerce and navigation with thirty-eight foreign nations, all of which are in force, either in pursuance of the stipulations and terms expressed therein respectively, or by virtue of decrees, royal orders, or other local regulations on the part of foreign governments, on the one side, and of proclamations by the President of the United States on the other. The difficulty of referring to any particular treaty, or of ascertaining at a glance the precise character of the commercial regulations of any particular country, is ob-

vious. With a view, chiefly, to remedy this inconvenience, the following summary of these treaties has been prepared; and it will enable all interested in the foreign trade of the United States readily to ascertain the footing on which our commerce and navigation are placed in foreign countries with which treaties exist, and the treatment to which the commerce and navigation of such foreign countries, respectively, are entitled in the ports of the United States.

The following are the foreign countries, arranged in alphabetical order, between which and the United States commercial treaties are now in force, with the dates of such treaties, respectively:

Argentine Confederation.....	July 10 and 27, 1853.	Morocco.....	September 16, 1836.
Austria.....	August 27, 1819.	Muscot.....	September 21, 1833.
Belgium.....	November 10, 1845.	New Granada.....	December 12, 1846.
Bolivia.....	November 30, 1836.	Oldenburg.....	March 26, 1847.
Borneo.....	June 23, 1850.	Peru.....	July 26, 1851.
Chili.....	May 16, 1832.	Portugal.....	April 23, 1841.
China.....	July 3, 1844.	Prussia.....	May 6, 1828.
Costa Rica.....	July 10, 1851.	Russia.....	October 2, 1859.
Denmark.....	April 26, 1826.	San Salvador.....	July 2, 1859.
Ecuador.....	June 13, 1839.	Sandwich Islands.....	December 20, 1849.
France.....	June 24, 1822.	Sardinia.....	November 26, 1838.
Great Britain.....	July 3, 1815.	Siam.....	April 14, 1836.
Guatemala.....	March 3, 1849.	Sweden and Norway.....	July 4, 1827.
Hanover.....	June 10, 1845.	Switzerland.....	November 9, 1855.
Holland.....	August 26, 1852.	Tripoli.....	June 4, 1806.
Hanse Towns.....	December 20, 1827.	Tunis.....	February 24, 1824.
Japan.....	March 31, 1854.	Turkey.....	May 7, 1830.
Mechlenburg Schwerin.....	December 9, 1847.	Two Sicilies.....	December 1, 1845.
Mexico.....	April 5, 1831, and February 2, 1843.	Venezuela.....	January 20, 1836.

By virtue of notice from the United States, the treaty with Denmark "ceased and determined," in accordance with the 11th article of the same, April 14, 1856.

On the 24th of May, 1828, an act was passed by the Congress of the United States, respecting commerce and navigation with foreign nations, in the following words: "*Be it enacted, etc.,* That, upon satisfactory evidence being given to the President of the United States, by the government of any foreign nation, that no discriminating duties of tonnage or impost are imposed or levied in the ports of the said nation upon vessels wholly belonging to citizens of the United States, or upon the produce, manufactures, or merchandise imported in the same from the United States, or from any foreign country, the President is hereby authorized to issue his proclamation, declaring that the foreign discriminating duties of tonnage and impost within the United States are, and shall be, suspended and discontinued, so far as respects the vessels of the said foreign nation, and the produce, manufactures, or merchandise imported into the United States in the same, from the said foreign nation, or from any other foreign country; the said suspension to take effect from the time of such notification being given to the President of the United States, and to continue so long as the reciprocal exemption of vessels belonging to citizens of the United States, and their cargoes, as aforesaid, shall be continued, and no longer."

By virtue of proclamations issued by the President of the United States, in accordance with the provisions of the law above recited, vessels belonging to Tuscany, Brazil, and Chili, are admitted into the ports of the United States on the same terms as American vessels, with the produce or manufactures of their own, or any other country; similar reciprocity being granted in those countries, respectively, to vessels and cargoes of the United States. The dates of the proclamations of the President respecting these countries are as follows: Tuscany, September 1, 1836; Brazil, November 4, 1847; Chili, November 1, 1850.

By the President's proclamation of June 7, 1827, vessels of the Pontifical states are admitted into the ports of the United States on the same terms as American vessels only when laden with the produce and manufactures of said Pontifical states; and by similar proclamation of April 20, 1847, French vessels in ballast, or laden with the produce of St. Pierre and Miquelon, and coming directly from those islands, are treated in ports of the United States as national vessels. Like favors and privileges are, of course, conceded to vessels of the United States in the Pontifical states, and at the islands of St. Pierre and Miquelon, respectively.

Summary of Treaties with the United States.—*Argentine Confederation.*—Treaties of July 10 and 27, 1853, both proclaimed April 9, 1855. The former relates to the navigation of the rivers Parana and Uruguay, and the latter establishes and regulates friendship, commerce, and navigation between the Argentine Confederation and the United States. Duration of both undefined. United States vessels enter all the places and ports on the rivers Parana and Uruguay which belong to the Argentine Confederacy, and which are open to commerce, on the payment of the same custom-house duties, harbor, light, police, and pilotage dues that are paid by the vessels of the most favored nation. This restriction to equality with the vessels of the most favored nation is qualified and enlarged by the treaty of July 27, 1853, which equalizes the vessels of the United States in all the places, ports, rivers, and territories of the confederation, with the national flag, as to tonnage, light or harbor dues, pilotage, salvage in case of shipwreck, or any other local charges whatever. Merchandise introduced into any part of the territories, ports, or places of the Argentine Confederation, in vessels of the United States, is treated, in respect of duties and all other charges, as if imported in national ves-

sels; and if such merchandise be of the growth, produce, or manufacture of the United States, it is subject to no other or higher duties than similar merchandise, the growth, produce, or manufacture of any other country. In regard to exports, United States vessels enjoy equality, as to drawbacks and bounties, with the national flag. The province of Buenos Ayres having seceded from the other provinces of the Confederation, decrees have been issued by the federal power which affect, in some respects, the commercial regulations of the republic. The latest decree of this kind is one imposing heavy differential duties on foreign merchandise introduced into the other, or fluvial provinces, through the port of Buenos Ayres. This decree, should it be carried into effect, will divert from this port, heretofore the general depôt for the trade of the other provinces, such foreign merchandise as is destined for the different points on the Parana and the Uruguay rivers.

Austria.—Treaty of August 27, 1829, to continue in force ten years from February 10, 1831, with the twelve months' notice stipulation. United States vessels are treated as national vessels, coming from the same places, in Austrian ports, whether in the direct or indirect trade. The same duties are charged on importations into Austrian ports, whether of merchandise the growth, produce, or manufacture of the United States, or of any other country; and these duties are no higher than on similar merchandise from any other country. Any favors hereafter granted by either party to the commerce or navigation of another country to become common to the other party on like conditions. The treaty establishes perfect equality between the flags of the two parties in the ports of each.

Belgium.—Treaty of November 10, 1845, to continue in force ten years from the 30th March, 1846; each party reserving the right to renounce the treaty after the expiration of that period, on giving to the other twelve months' notice of its intention to do so. United States vessels pay the same duties of tonnage, pilotage, anchorage, buoys, light-houses, clearance, brokerage, and all other charges, as Belgian vessels. This equality applies, no matter whence the vessel comes. The Belgian government guarantees restitution for any duties levied by Holland on United States vessels navigating the Scheldt. Steam-vessels of the United States engaged in regular navigation between the United States and Belgium are exempt from the payment of duties of tonnage, anchorage, buoys, and light-houses. Vessels of both parties enjoy, as to coasting trade, equal privilege with the most favored nation. The treaty restricts the equality of flags, as to duties, to the direct trade, but contains a clause providing that, "it is well understood, 1st. That the goods shall have been really put on board in the ports from which they are declared to have come; 2d. That putting in at an intermediate port by uncontrollable circumstances, duly proved, does not occasion the forfeiture of the advantage allowed to direct importation." In the indirect trade, the flag of the United States is placed on an equality with the flag of the most favored nation—except the nation of production—as to import duties. The importations of salt, and of the produce of the national fisheries, are excepted from this equality. A law of the Belgian government, of June 8, 1853, provides that "the government is empowered to allow vessels proceeding from trans-Atlantic countries, or from a port beyond the Straits of Gibraltar, to touch at an intermediate port, whether for the purpose of receiving orders or carrying on commercial transactions, by discharging or receiving cargoes." This law, while it remains in force, suspends the practical operation of that article of the treaty restricting the equality of flags to the direct trade; under its operation, the flag of the United States is equalized with the Belgian flag, whether the vessel proceeds from a port in the United States or not.—See *Report from Department of State*, Ex. Doc. No. 2, 34th Congress, 1st session, p. 135.

Bolivia.—Treaty, or general convention of peace, friendship, commerce, and navigation, of November 13, 1856. Ratifications exchanged May 28, 1858, and proclamation of the President of the United States issued October 3 of the same year. To continue in force twelve years from date of ratification, and further, for one year after either party gives the other notice of its intention to renounce it. The vessels of the United States visiting the "coasts or countries of Bolivia" (the port of Cobija) are placed, as to all charges and privileges, on a footing of equality with the vessels of the most favored nation. Should United States vessels, either of war (public or private), of trade, or employed in the fisheries, whether through stress of weather, want of water or provisions, pursuit of pirates or enemies, be forced into the rivers, bays, or ports of Bolivia, they shall be received and treated with humanity, and all favor and protection shall be given to them suitable to their respective exigencies. Merchandise and articles of commerce of every kind and description, the importation of which is not prohibited to all other nations, imported in vessels of the United States into Bolivia, are subject to the same duties as similar merchandise and articles imported in the vessels of the most favored nation. The merchants and citizens of the United States are allowed to manage for themselves all their commercial transactions, whether of consignment and sale of their goods, or with respect to the purchase of their return cargoes, or loading and sending off their vessels. This convention is styled the "Peru-Bolivian," and was negotiated when these two republics were confederated under one government. Peru having at a subsequent period re-established its independence of Bolivia, disavowed the convention, and a new treaty was entered into with that republic. It is still in force, however, as regards Bolivia. By a decree of January 27, 1853, the Bolivian government declared free to the commerce and mercantile navigation of all the nations of the globe the waters of the navigable rivers, which, flowing through the territories of Bolivia, empty into the Amazon and Paraguay; and, by virtue of a treaty of June 14, 1856, between Brazil and Paraguay, the navigation of the Upper Paraguay river was made free, and Bolivia opened to an Atlantic market.

Borneo.—Convention of June 23, 1850, ratified July 11, 1853,—establishes perpetual peace, friendship, and good understanding between the citizens and subjects of the two contracting parties. No higher duty than one dollar per registered ton to be levied on American vessels entering the ports of the Sultan of Borneo; and this fixed duty to be in lieu of all other charges or duties whatever. Importations in United States vessels subject only to the same duties as apply to similar importations in vessels of the most favored nation; and no prohibitions exist, either as respects importations or exportations; the latter of which, if the produce or manufacture of the sultan's dominions, to be always exempt from duty. Citizens of the United States are permitted to enter, pass through, and trade in, all parts of the sultan's dominions, and to enjoy all the privileges granted to the citizens of the most favored nations. They may also purchase, rent, occupy, and acquire, in a legal manner, all kinds of property within the dominions of the sultan.

China.—Treaty concluded July 3, 1844, and proclamation made by the President of the United States April 18, 1846. Not limited as to duration; the United States, however, reserving the right, after the expiration of twelve years from the date of the convention, to open negotiations, should it be deemed necessary to do so, for such modifications in the articles relating to commerce and navigation as may be requisite. Vessels of the United States may enter any of the five ports open to foreign commerce, viz.: Canton, Amoy, Foo-chow-Fu, Ningpo, and Shanghai, but no other ports, under penalty of confiscation of vessel and cargo. When American vessels shall have entered port, offi-

cers may be sent on board as a guard, at the expense of the custom-house; and within forty-eight hours after a vessel shall have cast anchor, the proper officer must deposit the ship's papers in the hands of the American consul, who will forthwith communicate to the superintendent of customs the name and tonnage of such vessel, the names of her men, and the character of the cargo; after which the superintendent will give a permit for discharging; or, if the master so desire, he may, within twenty-four hours depart, without breaking bulk, for another port; in which case he will not be liable to pay tonnage or other duties until he proceeds to discharge at such other port. Tonnage duties to be, on vessels of over 150 tons, 5 mace (74 cents) per ton; 150 tons or under, 1 mace (14½ cents), paid only at one port. United States vessels may import and export all kinds of merchandise not prohibited in the tariff. No new restrictions or monopolies to be created. Duties to be paid in Sycee silver or in foreign money. Discharging cargo without a permit subjects the captain to a fine of \$500, and the confiscation of the goods so landed; but if part of cargo only is landed, duties to be paid on such part only. Goods are not to be transhipped from on board one vessel to another, unless there be some particular occasion for doing so, which occasion shall be certified by the consul to the superintendent of customs. Imported goods, having paid duties on their resale or transit in any part of the empire, are subject to the imposition of no other duty than they were accustomed to pay at the date of the treaty. It is also provided that vessels forced in any way to take refuge in any port other than one of the free ports, shall receive friendly treatment, and the means of safety and security. The importation of opium is prohibited, but a large contraband trade is regularly carried on in this article through the connivance of Chinese officials. Saltpetre and spelter are government monopolies, and can be sold only to the government merchants. Rice and other grains are free of duty. Should a difference arise as to the value of clocks, watches, jewelry, or of other merchandise on which there is an ad valorem duty, and the parties can not agree, the question may within twenty-four hours, but not afterward, be referred to the consul of the party interested, to be adjusted by him and the superintendent of customs.

Chili.—Convention of amity, peace, commerce, and navigation of May 16, 1832; ratifications exchanged, and proclamation made April 29, 1834. To continue in force twelve years from date of exchange of ratifications, with the usual stipulation providing for twelve months' notice after that period. Vessels of the United States are placed on an equal footing in respect of charges and privileges with those of the most favored nation. Vessels driven into Chilian ports by stress of weather or other compulsory causes, to be protected, and favored in every respect, until they are placed in a condition to continue their voyage. Imports, the produce or manufacture of any country, not prohibited to be imported, subject to the same duties, charges, and fees under the United States flag as when imported in vessels of the most favored nation. Citizens and merchants of the United States are allowed to manage for themselves their own commercial operations. All favors granted to the citizens or flag of any other nation to become common, on similar conditions, to the citizens and vessels of the United States; exceptions being reserved by Chili in favor of Bolivia, the Central American states, Mexico, Peru, and the Argentine Confederation. The government of the republic of Chili notified that of the United States, under date of October 31, 1850, that no other or higher duties of tonnage or impost would be imposed on vessels of the United States, no matter whence they came, or of what origin might be their cargoes, than were levied on national vessels under like circumstances; consequently, the United States flag is now placed on a footing of

equality, both in the direct and indirect trade, with that of Chili.

Costa Rica.—Treaty of amity, commerce, and navigation, July 10, 1851. Perpetual amity established, and the stipulations relating to navigation and commerce may be abrogated at the expiration of seven years, after the lapse of twelve months from the time that notice to that effect shall have been given by either party to the other. Vessels of the United States are placed on an equal footing with national vessels in the ports of Costa Rica as to tonnage duties, light or harbor dues, pilotage, salvage in case of damage or shipwreck, or any other local charges. Mail-packets of the United States have liberty freely and securely to come to all harbors, rivers, and places to which other foreign ships of the same description are, or may be permitted to come; to enter, anchor, and remain there, and refit, subject to the laws and statutes of the country. The coasting trade reserved by each party, respectively, to its own flag; and all favors hereafter granted to other nations by either of the two parties to become common to the other. Imports in United States vessels of articles the growth, produce, or manufacture of the United States, to be subject to the same duties as if imported in national vessels; and these duties to be no higher, nor other than are charged on similar imports the growth, produce, or manufacture of any other foreign country; similar equality of flag as to exports. By a decree of August 31, 1854, the local commercial legislation of Costa Rica was completely remodeled and materially modified. Liberty of commerce to the vessels of all nations is granted; certain descriptions of merchandise monopolized by the government, and other descriptions which are prohibited, being specified; among the latter being included rum, fire-arms, and munitions of war, which can be imported only upon special permission; and the former consisting of tobacco, gunpowder, and saltpetre, which can be admitted only on government account.

Denmark.—Convention of friendship, commerce, and navigation of April 26, 1826; ratified August 10, 1826; proclamation made October 14 of the same year. Vessels of the United States permitted to frequent all the coasts and countries of Denmark, no matter whence they may come or how they are laden, on terms of the most perfect equality as to tonnage and other charges, with the national flag, the coasting trade excepted, which is reserved by each contracting party to its own flag. This equality of flags not to apply to the northern possessions of Denmark, viz.: Iceland, the Feroe Islands, and Greenland, nor to the direct navigation between Denmark and the West India colonies of his Danish majesty. In passing the Sound or the Belts, United States vessels to pay the same dues as the most favored nation. United States vessels permitted to import into any part of his Danish majesty's dominions merchandise, whether of the growth, produce, or manufacture of the United States, or of any foreign country, on the same terms, and with the same privileges as to duties, charges, and fees of every description whatever, as apply to similar imports under the national flag; and should the merchandise be of the growth, produce, or manufacture of the United States, to be subject to no other or higher duties than similar merchandise of any other foreign country. This equality, however, not to apply to the Danish possessions of Iceland, the Feroe Islands, nor to Greenland; nor the flags to be equal in the direct trade between Denmark and her West India colonies. Merchandise in United States bottoms to pay at the Sound and Belts the same duties as similar merchandise in vessels of the most favored nation. In consequence of the onerous, and, as the United States think, the illegal taxes upon the navigation and commerce of the United States at the Sound, notice was given April 14, 1855, in accordance with the provisions of article 11 of the treaty, of the desire of the United States to terminate the same at the

expiration of twelve months from that date. The treaty accordingly "ceased and determined" April 14, 1856, and the commerce of the United States with Denmark is now unprotected by any treaty stipulations.

Ecuador.—Treaty of June 13, 1839; ratifications exchanged April 9, 1842; proclamation made by the President of the United States September 23, of the same year. To continue in force twelve years from the date of ratifications, and after the expiration of that period until the end of one year after either of the parties shall have given notice to the other of its intention to renounce it. Vessels of the United States placed on a footing of equality in the ports of Ecuador with the national flag, no matter whence they come, certain privileges in favor of vessels built in the dock-yard of Guayaquil being reserved; but these privileges also to be accorded to vessels of the United States, should they ever be granted to Spain, or to Mexico, or the other Hispano-American republics. Any favors hereafter granted to the commerce or navigation of other countries to become common to those of the United States. Imports in vessels of the United States, whether of the growth, produce, or manufacture of the United States or of any other country, subject to the same duties and charges as if imported in national vessels; and merchandise, the growth, produce, or manufacture of the United States, admitted on the same terms as similar merchandise of any other foreign country. United States commerce entitled to any privileges hereafter granted to the commerce of any other foreign nation. In all lawful commerce, whether as respects imports, exports, duties, drawbacks, etc., the United States flag enjoys an equality with the flag of Ecuador; the coasting trade and the reservation in favor of vessels built at Guayaquil excepted. Such vessels, when under the national flag, are, by decree of August 23, 1845, exempt from tonnage, anchorage, and other port dues, and are entitled to a reduction of 3 per cent. on all produce, merchandise, etc., imported by them, for consumption, into any of the ports of the republic.

France.—Convention of June 22, 1822, to be in force for two years from October 1, 1822; and after the expiration of that time, until one of the parties shall have declared its intention to renounce it; which declaration shall be made at least six months before it can take effect. Equality of treatment. Tonnage and other navigation dues in French ports upon American vessels, five francs per ton; in United States ports upon French vessels, 94 cents per ton. The navigation duty of 94 cents per ton is payable by American vessels, no matter from what port they may have last proceeded; but the equality of treatment as to cargoes with the French flag is applicable only when the voyage has been direct, and the origin of the merchandise is attested by certificate from the custom-house at the port of departure, *visé* by the French consul at such port. In French ports an extra duty on articles of the growth, produce, or manufacture of the United States, imported in American vessels, at 20 francs per ton of merchandise; in United States ports, upon similar products of France, imported in French vessels, an extra duty at \$3 75 per ton of merchandise; these extra duties not applicable in either country to merchandise of the other destined for transit or re-exportation. Should this convention be continued in force after two years, the additional duties, at the expiration of that period, to be reduced one-fourth of their amount, and successively from year to year, so long as neither nation shall give the six months' notice of its intention to renounce it. Neither party having given the notice, the additional duties ceased to exist by the annual reduction of one-fourth, from October 1, 1827. By virtue of a ministerial decree of December 17, 1851, American vessels laden with cotton for France may touch at English ports without losing the benefit of direct importation, provided bulk be not broken, and no operation of commerce be transacted. Navigation and commerce between the United

States and French colonial possessions are regulated by the laws and decrees of the French government. American vessels proceeding direct from the United States in ballast, or laden with articles the growth or manufacture of their own country, to the islands St. Pierre and Miquelon, are treated on the same footing as national vessels.

Guatemala.—Convention of peace, amity, commerce, and navigation concluded March 3, 1849, and proclaimed by the President of the United States July 28, 1852. To continue in force twelve years from the date of the exchange of ratifications; and after that period, for twelve months after either party shall have given notice to the other of its intention to renounce it. Vessels of the United States are admitted into the ports of Guatemala, no matter whence they may have sailed, on the same terms, as to tonnage and all other navigation dues, as national vessels. Any favors granted to the navigation of other foreign nations are to become common to that of the United States, on equal conditions. The coasting trade reserved by each nation to its own flag. Imports into the ports of Guatemala in vessels of the United States, whether of articles the produce, growth, or manufacture of the United States, or of any other country, placed on the same footing, as to duties and all other dues and charges, as similar imports under the national flag; and if the articles so imported are of the growth, produce, or manufacture of the United States, they are subject to no higher or other duties than similar articles, the growth, produce, or manufacture of any other foreign country. By decree of May 6, 1852, every vessel which shall anchor in the ports of Guatemala, no matter whence it may come, is required to pay a tonnage duty of twenty-five cents per ton of measurement ascertained from her papers. Among the vessels free of this duty are—vessels in ballast anchoring for supplies, and discharging no cargo; vessels of war and regular mail or steam-packets not discharging over twenty tons of cargo; and vessels receiving on board, for exportation, produce of the country, excepting cochineal.

Great Britain.—Treaty of July 3, 1815, to continue in force four years. Continued in force ten years by the 4th article of the convention of London, October 20, 1818, and renewed indefinitely April 2, 1828, with an additional article containing the usual stipulation as to twelve months' notice. "Reciprocity treaty" concluded June 5, ratified June 9, and proclaimed by President of the United States September 11, 1854. To continue in force ten years from the date at which it went into operation (1855), with the usual stipulation as to twelve months' notice after that period. It secures reciprocal freedom of fishery on the coasts of the United States and the British provinces in America, and of trade in raw products. United States vessels admitted into British ports in Europe on the same footing as national vessels. The vessels must be built and owned in the United States, and navigated by a master and a crew three-fourths of which are citizens of the United States. Vessels of the United States permitted to touch for refreshments, but not for commerce, in the course of their voyage to or from the British territory in India, or to or from the dominions of the Emperor of China, at the Cape of Good Hope, the island of St. Helena, or such other places as may be in the possession of Great Britain, in the African or Indian seas—such vessels being subject, in all that regards this article, to the laws and regulations of the British government from time to time established. Merchandise imported into British ports in United States bottoms must consist of articles the growth, produce, or manufacture of the United States; and the same duties are charged, whether imported in United States or British vessels, as on similar produce of any other foreign country. The importation, in American vessels, of the productions of any country but the United States, is prohibited. The intercourse between the

United States and the British West Indies is not affected by the treaty. The vessels of the United States are admitted into the British East India possessions on the footing of those of the most favored nation; that is, they pay the same tonnage and import duties and other charges as the vessels of such nations; but, when laden, they must proceed direct to the United States. With the British West Indies the trade was regulated, prior to 1850, by diplomatic agreement. By reciprocity treaty of 1854, a free trade in the raw staples of the United States and Canada, Newfoundland, New Brunswick, Nova Scotia, and Prince Edward Island, respectively, is established. By the act 12 and 13 Victoria, chapter 29, which went into force January 1, 1850, the comprehensive principle was adopted of admitting into the ports of Great Britain, and of British possessions, goods of any sort, in a ship of any country, from any part of the world; certain restrictions, deemed necessary either for the safety of the state or for the protection of the revenue, still remaining in force. American vessels in British ports are, therefore, equalized with British vessels as to tonnage and import duties, and all other charges whatever. By circular of the Treasury Department of the United States, October 15, 1849, instructions were issued to custom-house officers and others interested, as follows: "1. In consequence of the alteration of the British navigation laws, British vessels from British or other foreign ports will (under our existing laws), after the first day of January next, be allowed to enter in our ports with cargoes of the growth, production, or manufacture of any part of the world. 2. Such vessels and their cargoes will be admitted, from and after the date before mentioned, on the same terms as to duties, imposts and charges, as vessels of the United States and their cargoes. By the act 17 Victoria, chapter 5, the coasting trade of Great Britain is opened to foreign flags, subject only to the same regulations as apply to British vessels engaged in the same trade.

Hanover.—Treaty of June 10, 1846, to continue in force twelve years from date; and further, until either party gives to the other twelve months' notice of its intention to renounce it at the expiration of the period. Vessels of the United States received in Hanoverian ports on the same terms, as to navigation dues of every description, as national vessels; and, in the navigation of the River Elbe, are equalized with Hanoverian vessels as to the tolls collected at Brunshausen or Stade. Whatever merchandise or produce may be imported in Hanoverian vessels may also be imported in United States vessels, on terms of perfect equality as to duties, irrespective of the country of origin, or whence imported. The equality guaranteed by the treaty extends only to such vessels of the high contracting parties as are built within their respective territories, or lawfully condemned as prizes of war, or adjudged to be forfeited. It is also stipulated that vessels of the kingdom of Hanover may select their crews from any of the states of the Germanic Confederation, provided that the masters of each be a subject of the kingdom of Hanover.

Hanse Towns.—Treaty of December 20, 1827, to continue in force twelve years from date; either party reserving the right, after the expiration of that period, to renounce the treaty at the end of twelve months, after having given notice of its intention to do so. Navigation duties of every description whatever, the same on United States vessels as on national, whether in the direct or indirect trade; and perfect equality in all other respects. Imports into the ports of the Hanse Towns in vessels of the United States, subject to the same duties, charges, etc., as similar imports under the flag of the Hanse Towns. Each one of the three Hanseatic towns, Hamburg, Bremen, and Lübeck, agrees separately, and each for itself, to the stipulations of the treaty. Hanseatic vessels are entitled to equality in the ports of the United States with the national flag,

if owned exclusively by a citizen or citizens of any or either of the Hanse Towns, and of which the master shall also be a citizen of any or either of them, and provided that three-fourths of the crew shall be citizens or subjects of any or either of the said republics or towns, or of any or either of the states of the Germanic Confederation. This privilege secures to the flag of the Hanse Towns a large share of the carrying trade between the United States and the German states.

Holland.—Treaty of August 26, 1852, additional to that of January 19, 1839, and substituting for articles 1 and 2 of the latter treaty other articles; and providing that the duration of the new treaty shall be limited to the term of two years from the date of ratification (February 25, 1853), with the usual twelve months' notice. Vessels of the United States, whencesoever coming, are treated in Dutch ports, including also the foreign possessions of Holland, as national vessels, with respect to duties of tonnage, harbor dues, light-house, pilotage, quarantine, or other port charges of any kind whatever—the coasting trade and national fisheries being reserved. Entire reciprocity guaranteed to the flag of the United States, and perfect equality with the national flag, as to the duties of import and export, both in Dutch ports in Europe and in those of Dutch possessions abroad. All differential and discriminating duties as respects the flag are abolished. The equality as to export duties, stipulated in the treaty of 1852, applies only when the vessels of the United States clear for the same ports as national vessels. Thus the export duty on coffee in Java is the same when exported in United States bottoms as when exported in Dutch vessels, when both have the same destination; but if the Dutch vessel proceeds to Amsterdam, and the United States vessel clears for Boston, the former enjoys a discriminating privilege in respect of the amount of duty.

Japan.—Treaty concluded March 31, 1854; ratifications exchanged February 21, 1855; and proclamation made by the President of the United States June 22 of the same year. American vessels permitted to enter the ports of Hakodade and Simoda, and no other ports of the Japanese empire, unless in distress, or forced by stress of weather. The only charge for entering is for pilotage, the rates of which, for the port of Simoda, are as follows: Vessels drawing over 18 feet pay \$15; over 13, and less than 18, \$10; under 13, \$5. Vessels of the United States are permitted to exchange only gold and silver coin, and articles of goods for other articles of goods, under such regulations as shall be temporarily established by the Japanese government. Wood, water, provisions, coal, and goods required, can only be procured through the agency of Japanese officers, appointed for that purpose. As a means of opening the commerce of Japan, or even of the ports opened to American vessels—viz., Simoda and Hakodade—the treaty has proved totally inefficient. The treaty grants the privilege to shipwrecked persons and other citizens of the United States, living temporarily at Simoda, to go where they please within the limits of seven Japanese miles from a small island in the harbor, and at Hakodade within limits hereafter to be defined. "Living temporarily" has been defined by the Japanese authorities to mean "a sojourn of four or five days on shore." Wood and water, and such supplies as could be had, have been freely sold at pretty good prices; but permission to trade, in a mercantile sense, has been absolutely refused. The privileges of this treaty are said to have been recently extended to all nations.

Mecklenburg Schwerin.—Declaration of accession to treaty with Hanover, December 9, 1847, to continue in force until June 10, 1858, with the usual twelve months' notice stipulation after that period, and a conditional six months' notice by the United States, if a contingency should occur rendering it expedient, in the opinion of that government, to renounce the treaty. Vessels of

the United States subject to the same duties in the ports of the Grand Duchy of Mecklenburg Schwerin as national vessels; the coasting trade being reserved. This equality applies only to vessels built within the respective territories of each party, or lawfully condemned as prizes of war, or adjudged to be forfeited, etc., and belonging wholly to citizens of each. Importations of articles the growth, produce, or manufacture of the United States, subject to no higher duties than similar articles the growth, produce, or manufacture of any other foreign country; such duties to be the same, whether imported in vessels of the United States or in national vessels. This equality is applicable to the indirect as well as to the direct trade. Besides the stipulations contained in the treaty with Hanover, other articles are added. Import duty on raw cotton and paddy, the produce of the United States, is abolished by the treaty; and maximum rates of import duty on tobacco, rice, and whale-oil, and for transit on the Berlin-Hamburg railroad, are prescribed.

Mexico.—Treaty of April 5, 1831, revived, as to general stipulations relating to commerce and navigation, by article 17 of the treaty of February 2, 1848, and to continue in force from date of ratification of said treaty (May 30, 1848) for a period of eight years, with the usual stipulation providing for twelve months' notice after that period by either party wishing to renounce it. Vessels of the United States may enter all the open ports of the Mexican republic on the same terms, as to tonnage duties, light or harbor dues, pilotage, salvage, and all other local charges, as apply to national vessels. The coasting trade is reserved by each country, respectively, to its own flag. United States vessels may import into Mexican ports merchandise, the growth, produce, or manufacture of the United States, on the same terms as if the said merchandise were imported under the national flag; the duties of import to be no higher or other than levied on similar merchandise, the growth, produce, or manufacture of the most favored nation.

Morocco.—Treaty concluded September 16, 1836, and proclamation thereof made by the President of the United States January 30, 1837; to continue in force fifty years, with the usual stipulation requiring twelve months' notice after that period by either party wishing to renounce it. United States vessels permitted to put into any ports in the dominions of the Emperor of Morocco for provisions or other supplies, without any interruption or molestation, and to put in for repairs, and to land and reload their cargoes, without paying any duty whatever. Should American vessels be cast ashore on any part of the coasts of Morocco, either by stress of weather or other cause, to be permitted to remain undisturbed until the commander may think proper to proceed on his voyage. Importations from the United States, and American commerce generally, to be on the same footing as those from Spain, or from the most favored nation for the time being. Masters forbidden to transport their cargoes on board other vessels. Merchants of the United States allowed to employ such interpreters and other agents as they shall think proper; and American citizens permitted to pass and repass the country and sea-ports whenever they please, without molestation. The tariff of duties is often arbitrarily raised in Morocco. The general rate is 10 per cent. on imports, excepting certain specified articles, on which specific duties are levied. (Tobacco is a monopoly of the government, and the trade is usually rented out at rates reaching as high as \$100,000 per annum. Were the trade in this article freed from the pressure of this monopoly, its importation from the United States would be largely increased.)

Muscat.—Treaty of September 21, 1833; President's proclamation issued June 24, 1837. Establishes perpetual peace between the United States and his majesty the Sultan of Muscat and his dominions. Vessels of the United States pay 5 per cent. duties on the car-

goes landed, to be in full of all duties of import and export, tonnage, license to trade, pilotage, anchorage, or of any other charge whatever. No charge to be paid by American vessels entering any of the sultan's ports for the purpose of refitting, or refreshments, or to inquire the state of the market. The duties and other charges on commerce in the dominions of the sultan are given under the head of Navigation. The articles of muskets, powder, and balls, can be sold only to the government, in the island of Zanzibar; but in other ports of the sultan's dominions said munitions of war may be sold to the highest bidder without restriction. Duties of tonnage, import and export, license to trade, etc., to be the same for American citizens as for citizens of the most favored nation. The trade between the United States and the dominions of the Sultan of Muscat, especially the island of Zanzibar, is yearly increasing. It reaches annually in value about \$1,000,000, and is carried on chiefly from Salem, Massachusetts. Articles of American manufacture most in demand in the market of Zanzibar are the various descriptions of cotton goods, the annual exportation amounting to about 6000 bales. Every facility for commercial operations is extended to American vessels and mercantile houses, and the duties or other charges never exceed those stipulated in the treaty.

New Granada.—Treaty of December 12, 1846, to continue in force twenty years, unless either party should notify the other, twelve months before the expiration of that period, of its intention to reform any or all of its stipulations; and beyond that period, for twelve months after either shall have given notice of its intention to propose such modifications. Vessels of the United States to enter all the ports of New Granada on a footing of entire equality with the vessels of that republic, without regard to the port or country whence they may have sailed. Should such vessels be driven into the ports of the republic by pirates, enemies, or from stress of weather, to be protected, and all facilities, etc., afforded them; and, unless they remain in port over forty-eight hours, to be exempt from all port or harbor charges, pilotage excepted. The coasting trade reserved by each of the contracting parties to its own flag. Duties on imports and exports under the United States flag the same as under the national flag; and on articles the growth, produce, or manufacture of the United States, these duties not to be higher or other than are levied upon similar articles, the growth, produce, or manufacture of any other foreign country. Merchandise belonging to citizens of the United States, in transit across the Isthmus of Panama, to be free from import duties, and subject only to the same tolls that are levied in like cases on merchandise belonging to citizens of New Granada. For the privileges granted on the Isthmus of Panama, the United States guarantee to New Granada the perfect neutrality of that territory, and her sovereignty and rights of property over the same. The stipulations of the treaty respecting commerce have been modified by subsequent decrees of the government of New Granada. Those of chief interest provide that the coasting trade shall be thrown open to all flags, and payment of navigation duties shall be demanded only at one port. Panama, Cartagena, Choco, Buenaventura, and Yumaco, are free ports—no other than navigation duties being charged. More recent enactments, however, impose a tonnage duty of 40 cents per ton on all vessels entering port; and a tax of \$3 per pound on all mail matter crossing the Isthmus.

Oldenburg.—Declaration of accession of the Grand Duke of Oldenburg to treaty with Hanover, March 10, 1847. The same stipulations and privileges as are granted under the treaty with Hanover of June 10, 1846. The same privileges, as respects the commerce of the United States, as are extended to said commerce in Hanoverian ports. The stipulations relative to the Stade and Weser tolls, contained in the treaty between

the United States and Hanover, are omitted in the declaration of accession by Oldenburg; this government having no control over, or interest in, said tolls.

Peru.—Treaty of July 26, 1851; ratifications exchanged the 16th, and proclamation made by President of the United States the 19th July, 1852. To continue in force ten years from date of ratification; and beyond that period, until twelve months shall have elapsed after either party shall have given the other notice of its intention to renounce it. No higher or other duties or charges on account of tonnage, light-houses, or harbor dues, pilotage, quarantine, salvage, etc., to be levied on United States vessels of 200 tons or upward, than are payable in the same ports on national vessels of the same tonnage. The coasting trade is reserved by each country, respectively, to its own flag. Imports in vessels of the United States to be subject to the same duties as similar imports in national vessels; and if of the growth or manufacture of the United States, the duties to be no higher or other than on similar merchandise the growth or manufacture of any other nation. Like equality of flags as to exports. Should the tariff of Peru be changed so as to augment the duties of import or export, such change not to apply to United States commerce until the expiration of eight calendar months thereafter. Steam-vessels of the United States, if belonging to a regular line owned by citizens of the United States, to be permitted to navigate the ports of entry of Peru with the same privilege as any association or company whatsoever. The treaty provides that whale-ships of the United States shall have access to the port of Tumbes, as well as to the ports of entry of Peru, and may sail from one port to another for the purposes of refreshment and refitting; and shall be permitted to sell or barter their supplies or goods, including oil, to the amount of \$200 *ad valorem* for each vessel, without paying any tonnage or harbor dues, or any duties or imposts upon the articles so sold or bartered. They shall be permitted, with like exemption from tonnage and harbor dues, to sell or barter supplies or goods, including oil, to the additional amount of \$1000 *ad valorem* for each vessel, upon payment, on said additional articles, of the same duties as are payable upon like supplies or goods and oil when imported in the vessels and by the citizens of the most favored nation. A decree of the Peruvian government restricts the terms "supplies or goods, including oil," to articles the produce of the fisheries, and withholds the privileges of the stipulations of the treaty, above condensed, from all other descriptions of "goods" or merchandise.

Portugal.—Treaty of August 26, 1840; ratifications exchanged April 23, 1841; and proclamation made April 24 of the same year; to continue in force six years from date of ratifications; and further, until the end of one year after either of the contracting parties shall have given notice to the other of its intention to renounce it. Vessels of the United States arriving, either laden or in ballast, in the ports of Portugal (including Portuguese possessions), to be treated on an equal footing with national vessels coming from the same place, with respect to the duties of tonnage, light-house dues, pilotage, port charges, and all other charges whatever. Each party reserves to its own flag, respectively, the coasting trade. On the importation into the kingdom of Portugal and its possessions, where foreign commerce is allowed, in vessels of the United States, of any articles the growth, produce, or manufacture of the United States, no other or higher duties to be levied than on similar articles the growth, produce, or manufacture of any other foreign country; and, in all cases of direct importation, the vessels of each country to be equalized in the ports of the other. Should the indirect trade of any other foreign country be placed upon the same footing as the direct trade, similar privileges to be accorded to the United States on equal conditions. Any favor granted since the date

of the treaty, or which may hereafter be granted by either of the high contracting parties, as respects commerce and navigation, is to apply to the other party, freely if it has been freely granted, and on similar equivalents where it has been conditional. By virtue of the reciprocity, as it respects navigation, Portuguese vessels are exempt from tonnage duty in the ports of the United States. In the indirect trade with Portugal, imports under the United States flag are subject to differential duties.

Prussia.—Treaty of May 1, 1828, to continue in force twelve years, with the usual stipulation requiring twelve months' notice after that period by either party desiring to renounce it. United States vessels to be treated in Prussian ports, as to the duties of tonnage, light-houses, pilotage, salvage, and port-charges, as well as to all other duties, fees, or charges whatsoever, as national vessels. The coasting trade reserved to each country. Cargoes under the United States flag, whatever the origin, or whencesoever imported, to be subject to the same duties and charges only as if imported under the national flag. Like equality as to exports. Articles the growth, produce, or manufacture of the United States, to be subject to the same duties as like articles the growth, produce, or manufacture of any other foreign country. Two treaties of amity and commerce were entered into between the United States and Prussia prior to that condensed above—one of July, August, and September, 1785; and the other of July 11, 1799. By article 12 of the treaty of May 1, 1828, the 12th article of the former treaty, and from the 18th article to the 24th, inclusive, of the latter, with the exception of the last paragraph in article 19, are revived, in so far as they do not affect treaties or conventions concluded by either party with other powers, during the interval between the expiration of the treaty of 1799 and the commencement of the treaty of 1828. Articles 12 of the treaties of 1785 and 1799, respectively, relate to the principle of free ships making free goods. In reference to this point, article 12 of the treaty of 1828 provides that, the parties being still desirous to establish between themselves, or in concert with other maritime powers, further provisions to insure just protection and freedom to neutral navigation and commerce, and which may, at the same time, advance the causes of civilization and humanity, engage again to treat on this subject at some future and convenient period.

Russia.—Treaty of December 6 [18], 1832, to continue in force until January 1, 1839, with the usual stipulation for twelve months' notice to renounce it by either party desiring to do so. No such notice having been given, the treaty continues in force. United States vessels arriving in Russian ports, either laden or in ballast, to be treated on the same footing as national vessels, coming from the same place, with respect to duties of tonnage. In regard to light-house duties, pilotage, and port charges, as well as to the fees and perquisites of public officers, and all other duties and charges levied upon vessels of commerce, the United States flag is placed upon the footing of the most favored nation with which Russia has no special treaty stipulating for entire reciprocity. Any favors hereafter granted to the navigation of any other foreign nation, to become common to the United States on similar or equal conditions. All kinds of merchandise and articles of commerce, being the growth, produce, or manufacture of the United States, may be imported into Russian ports on the same terms as apply to similar articles the produce or manufacture of any other foreign country; and, whether the imports be of the growth, produce, or manufacture of the United States, or of any other foreign country, perfect equality is granted with the national flag. Any favor hereafter granted to the commerce of other foreign nations to become common to the commerce of the United States. Certain special privileges to be retained by Russia in reference to com-

merce with Prussia, and Sweden and Norway; but they do not affect the general reciprocity stipulated in the treaty. The treaty establishes entire reciprocity between the flags of the two countries. July 22, 1854, a treaty was concluded between Russia and the United States, establishing the principle that "free ships make free goods," and containing a stipulation to the effect that other nations may, by a formal declaration of a desire to accept and be governed by the principle, become entitled to all the resulting rights and privileges. The Russian government, under date November 28, 1856, officially signifies to the government of the United States its adhesion to the principles announced in the reply of the latter government to the declarations of the Congress at Paris, April 16, 1856, in reference to privateering. The communication of the representative of the Russian government at Washington thus conveys the concurrence of the emperor: "His majesty entirely concurs in the views of the government of the United States which the Hon. Mr. Marcy has laid down in his equally lucid as temperate note of the 28th of July. The proposition of the federal government, in the opinion of his imperial majesty, deserves so much the more to be taken into consideration that the honorable Secretary of State argues not for the exclusive interest of the United States, but for those of the whole of mankind. The undersigned is accordingly instructed to notify the Hon. Mr. Marcy that his majesty the emperor accepts, for his part, the condition under which the United States consent to the abolition of privateering—namely, that the private property of the subjects and citizens of the contracting parties shall in times of war be respected by their respective naval forces, as well as by those of all the powers which may join in this declaration."

San Salvador.—Convention concluded January 2, 1850. To continue in force twenty years, if neither party notify the other twelve months before the expiration of that period of its desire to reform any of its stipulations; and beyond twenty years, until twelve months shall have elapsed after such notice shall have been given by either party. Vessels of the United States, no matter whence they may have come, or how laden, to be treated in the ports of San Salvador, as to all duties of tonnage, light-house, or any other charges of whatsoever denomination or character, as national vessels. From this equality the coasting trade is excepted, which is reserved to the national flag; but should any favors of navigation be granted hereafter to any other foreign nation, it will immediately apply to the flag of the United States. Imports into San Salvador in vessels of the United States, no matter whence imported or of what origin, to be subject to the same duties, charges, and fees of every description, as similar imports in vessels of San Salvador; and if these imports consist of articles the growth, produce, or manufacture of the United States, to be subject to no higher or other duties than similar imports, the growth, produce, or manufacture of any other foreign nation.

Sandwich Islands.—Treaty concluded December 20, 1849; ratifications exchanged August 24, 1850, and proclamation made by the President of the United States November 9, 1850. Establishes perpetual peace and amity between the United States and the Hawaiian Islands, and provides that the treaty shall continue in force ten years, with the usual stipulation providing for twelve months' notice by either party wishing to renounce it after that period. United States vessels in direct voyages, if laden, or in respect of any voyage, if in ballast, to pay the same duties of tonnage, harbor, light-houses, pilotage, quarantine, or other navigation charges of whatever kind, that are paid by national vessels. Steam vessels employed in carrying the public mails of the United States across the Pacific, or from one port to another therein, to have free access to the ports of the Sandwich Islands, to refit, refresh, land passengers and their baggage, or for any purpose per-

taining to the mail service of the United States, without being subject to any of the duties above specified. Whale-ships of the United States may enter the ports of Hilo, Kealahakua, and Hanalei, and also the open ports of Honolulu and Lahaina, exempt from tonnage or harbor dues of any description, with certain privileges of trade, as set forth herewith. They may also pass from port to port of the islands for the purpose of procuring refreshments, but may not land their seamen or passengers, except at Honolulu or Lahaina. The privilege of the same ports is also granted to armed vessels of the United States. Imports of merchandise, the growth, produce, or manufacture of the United States, to be subject to the same duties, whether imported in vessels of the one country or of the other; and these duties to be the same as are levied upon similar merchandise, the growth, produce, or manufacture of, or imported from, any other country. Absolute liberty of trade allowed between the citizens of the two countries, without restriction, unless in articles prohibited. Whaling vessels of the United States may trade or barter their supplies or goods, except spirituous liquors, to the amount of \$200 *ad valorem* for each vessel, without being liable to pay duties therefor; and the further privilege is granted to such vessels at the ports designated above, and exempt, as therein stated, from tonnage and harbor dues, to trade or barter, except in spirituous liquors, to the further amount of \$1000 *ad valorem*, by paying on the additional goods so traded or bartered the usual duties levied on similar merchandise imported under the flag of the most favored nation.

Sardinia.—Treaty of November 26, 1833, to continue in force ten years from March 13, 1833—the date of exchange of ratifications; and, after the expiration of that period, until twelve months shall have elapsed after either party shall have given notice to the other of its intention to renounce it. Vessels of the United States arriving in Sardinian ports, either laden or in ballast, to be treated, as to the duties of tonnage, light-houses, pilotage, and port charges, as well as to all fees and charges of whatever kind or denomination, as national vessels coming from the same place. All imports in United States vessels into Sardinian ports to pay the same duties and charges only as if brought in Sardinian vessels. Imports, the growth or manufacture of the United States, to pay the same duties only as like produce of the most favored nation. The "Separate Article" of the treaty, respecting "differential duties," ceased to have effect, by virtue of a law of Sardinia, July 6, 1860. Freedom of transitsage, from and to the port of Genoa, through the territories of Sardinia, is stipulated by the treaty, with specified exceptions.

Sweden and Norway.—Treaty of July 4, 1827, reviving certain articles of the treaty of April 3, 1783, together with the 1st, 2d, 4th, and 5th separate articles of the said treaty, and containing additional commercial stipulations; to continue in force ten years, with the usual stipulation requiring twelve months' notice to be given by either party desiring to renounce it, after the expiration of that period. Vessels of the United States proceeding from any port to the ports of Sweden and Norway, including those of the island of St. Bartholomew, laden or in ballast, are treated as national vessels coming from the same port, as to all duties of navigation and tonnage. Entire reciprocity and perfect equality, as to import duties and all other charges, between the flag of the United States and that of Sweden and Norway; and this reciprocity and equality applies, whether the voyage be direct from the ports of the United States, or indirect from any other foreign port.

Switzerland.—Convention signed November 25, 1850; ratifications exchanged November 8, 1855; and proclamation made November 9 of the same year. To continue in force ten years from date of ratification, if neither party gives notice to the other one year before

the expiration of that period; and so on from year to year, until the expiration of twelve months after such notice shall have been given. Imports and exports to and from Switzerland take place through the ports and territories of France and other adjacent countries; and the charges of transitsage, in consequence, are a heavy drawback upon the industry and commerce of the confederation. This remark applies especially to the restrictions on transitsage through France. In all that relates to the importation, exportation, and transit of their respective products, the United States and the Swiss Confederation to treat each other reciprocally as the most favored nation, union of nations, etc. All future commercial privileges granted by either party to any nation, union of nations, etc., immediately to become common to the other party on equal conditions. Should differential duties be established in the Swiss Confederacy upon the products of any nation, the United States to be at liberty to determine the manner of establishing the origin of its own products destined to enter that confederacy. The frontier territory of Switzerland is divided into six departments for the collection of customs duties. The central points of these, respectively, are at Basle, Schaffhausen, Coire, Lugano, Lausanne, and Geneva. No merchandise can be imported or exported, unless by special license, except through one or other of those frontier custom-houses.

Siam.—Treaty of amity and commerce of March 20, 1833; ratifications exchanged April 14, 1836; and proclamation made by the President of the United States June 24, 1837. Establishes perpetual peace between the United States and Siam. Vessels of the United States entering any port of the Siamese dominions, and selling or purchasing cargoes of merchandise, to pay, in lieu of all import and export duties, tonnage, license to trade, or any other charges whatsoever, a measurement duty of 1700 ticals, or bats (equal to \$1037), for every fathom of 78 English inches in breadth upon vessels selling merchandise, and of 1500 ticals (equal to \$915) per fathom, similar measurement, upon vessels purchasing cargoes with specie. It is prohibited to sell munitions of war to any person except the king, and also to export rice or import opium, the latter being contraband. It is stipulated that if hereafter the duties payable by foreign vessels be diminished in favor of any other nation, the vessels of the United States shall be entitled to like diminution; and should any foreign nation, other than Portugal, be hereafter permitted to have consuls in Siam, the same privilege shall be accorded to the United States. United States merchants, desirous of bringing their goods on shore for trade, must deposit them in the king's factories, paying the customary rent of the country therefor. The treaty of 1833 completely suspended all commercial operations between the United States and Siam. On a vessel, say of 25 feet beam, the duty, at 1700 ticals per 78 inches, would amount to \$3988 46! In 1855 (April) a new treaty was negotiated between Great Britain and Siam, to the privileges of which American commerce is entitled by article 4 of the treaty of 1833 between the United States and Siam. This new treaty with Great Britain authorizes that nation to have a resident consul at Bangkok, after April 6, 1856; and after the same date the measurement duty is to be abolished, and a general import duty of 3 per cent. to be paid in money or kind, at the option of the importer. Disputes as to the value of goods are to be settled by arbitrators. Opium may be imported free, but can be sold only to the opium farmer or his agent. Export duty specific.

Tripoli.—Treaty of peace and amity of June 4, 1805, not limited as to duration. Establishes a firm, inviolable, and universal peace, and a sincere friendship "on the terms of the most favored nation," and guarantees to the United States like favors with those hereafter granted to any other nation. Vessels of the United States in the ports of Tripoli to be subject to

the same duties, charges, and privileges as the vessels of the most favored nation. United States vessels destined for Tripolitan ports must be provided with proper passports; to examine which, not more than two persons, besides the rowers, are allowed to proceed from any Tripolitan man-of-war, or to go on board, unless permitted so to do by the American captain. In case of distress, United States vessels may put in, land and re-embark cargo, and repair, without the payment of duties. The commerce between the United States and Tripoli—the protection to be given to American merchants, masters of vessels, and seamen—the right of establishing consuls in the regency of Tripoli, and the privileges, immunities, and jurisdictions enjoyed by such consuls, to be on the same footing with those of the most favored nation.

Two Sicilies.—Treaty of December 1, 1845, to be in force ten years from date, either party reserving the right to terminate it after that period, on giving twelve months' notice of its intention to do so. When importing articles of the growth or the manufacture of the United States, American vessels to be on the same footing as to duties, charges, etc., with national vessels. This equality as to navigation dues applies only in respect of direct voyages if laden, or of any voyage if in ballast. Merchant vessels of the United States, forced by stress of weather, or other similar cause, into Sicilian ports, to be exempt from port and tonnage duties, provided no operation of commerce is carried on. The coasting trade is reserved by each country to its own vessels. The direct importation of articles of the growth, produce, or manufacture of the United States to be subject to the same duty, whether imported in vessels of the United States or in those of the Two Sicilies. In the indirect trade, importations under the flag of the United States into the ports of the Two Sicilies to be subject to differential duties. A decree was issued, December 18, 1864, by the King of the Two Sicilies, extending to the indirect trade of such foreign nations as would be willing to reciprocate all the advantages of the national flag. Under the act of 1828, previously given at length in the *article SICILY*, page 1714, the government of the United States has reciprocated the privileges thus granted by the government of the Two Sicilies; and the flag of the United States is therefore equalized, in Sicilian ports, with the national flag in the indirect trade.

Turkey.—Treaty concluded May 7, 1830, and ratified February 2, 1831. Not limited as to duration. Vessels of the United States to be treated, in ports of the Ottoman empire, in like manner as vessels of the most favored nation; to have the same liberty to pass the canal of the imperial residence, and to go into and come from the Black Sea, either laden or in ballast; and may be laden with the produce, manufactures, and effects of the Ottoman empire, except such as are prohibited, as well as with those of their own country. United States vessels must sail under their own flag, and are prohibited from lending their flag to the vessels of other foreign nations, or to those of the rajahs. Importations into Ottoman ports in vessels of the United States to be subject to the same duties, charges, etc., as importations under the flag of the most favored nation. American merchants established in the states of the Sublime Porte for purposes of commerce, to be at liberty to employ *sensars*—brokers or factors—of any nation or religion; such merchants or other American citizens residing in the Turkish dominions not to be amenable to Turkish tribunals for offenses committed, but to be tried by their own minister or consul, and punished according to his sentence. By virtue of the most favored-nation stipulation, vessels of the Ottoman Porte are admitted into United States ports on the same terms as American vessels. Duties, according to the tariff of the Ottoman Porte, are based upon the *ad valorem* principle; and the treaty nations usually name commissioners every five or six years, who, in

concert with a commission named by the Sublime Porte, regulate the "fixed values" of merchandise imported. The present rates were fixed by a British commission of this character; and, in regard to many articles of American importation, especially cottons and rum, the mode of valuation works a practical discrimination, which can be remedied only by the action of an American commission remodeling existing valuations, as respects the manufactures of the United States.

Tunis.—Treaty of August, 1797, modified by convention of March 26, 1799, and by subsequent treaty of February 24, 1824. Establishes perpetual peace and friendship between the United States and the Bey of Tunis. Vessels of the United States permitted to enter all the ports of the kingdom of Tunis on paying the usual duties which are paid by the vessels of the most favored nations: Should the government of Tunis have need of the services of an American vessel not previously engaged, it must have the preference on paying the same freight that is usual with merchants for the same service. Commerce with Tunis under the United States flag to be conducted on precisely the same footing, as to import duties, fees, and all charges whatsoever, as is commerce under the flag of the most favored nation. American merchants to be permitted to establish themselves, transact their own business, or appoint their agents, factors, etc., in the territories belonging to the kingdom of Tunis.

Venezuela.—Treaty of peace, friendship, navigation, and commerce, concluded January 20, 1836; ratified May 31, and proclamation made by President of the United States June 30, of the same year. To continue in force twelve years from date of ratifications; and further, until either party gives twelve months' notice of its intention to renounce it. Vessels of the United States, no matter whence they come, or with what laden, to be on a footing with national vessels. The same equality, including bounties, duties, and drawbacks, to apply in regard to exportation or re-exportation. Vessels of the United States shipwrecked, foundered, or in any other way damaged, on the coasts, or within the dominions of Venezuela, to receive all necessary assistance and protection. Whatever may be imported in Venezuelan vessels may also be imported in vessels of the United States, and on the same terms, as to duties and all other charges. The same equality as to exports. Articles, the growth, produce, or manufacture of the United States, to be subject in Venezuela to no higher or other duties than similar articles, the growth, produce, or manufacture of any other foreign country. All favors hereafter granted to other foreign nations to apply equally to the United States on similar conditions. The customs, tariffs, and commercial regulations of Venezuela are subject to frequent, and, occasionally, onerous changes. The latest of these—that of April 27, 1856—imposes an extraordinary contribution upon certain imports and exports, to take effect from and after July 1, 1856. Among the exports thus affected are coffee, cocoa, indigo, hides, quinia, sarsaparilla, dye-wood, etc. The extraordinary import duty is 20 per cent. on the amount of regular duties, and 15 per cent. on all articles that are included in the free list, excepting gold and silver in bars, bullion, or dust, printing-presses, printed books, machinery, etc.—*Com. Relat. U. S.*

Trebizond, anciently Trapezus, from its resemblance to a trapezium, a town of Asia Minor, on the southeast coast of the Black Sea, lat. 40° 1' N., long. 39° 44' 52" E. Population variously estimated at from 15,000 to 30,000. The town is built on the declivity of a hill rising gently from the sea. It is a place of great antiquity; and, from the year 1203 to the final subversion of the Eastern empire by Mohammed II. in the 15th century, was the seat of a dukedom, or, as it was sometimes called, an empire, comprising the country between the Phasis and the Halys. Its fortifications are still of considerable strength, at least for a

Turkish city. The space included within the walls is of great extent; but it is principally filled with gardens and groves. The houses are mean in their outward appearance, and comfortless within.—TOURNEFORT, *Voyage du Levant*; KINNEER'S *Journey through Asia Minor*.—Trebizond has two ports, one on the west and one on the east side of a small peninsula, or point of land, projecting a short way into the sea. That on the east is the best sheltered, and is the place of anchorage for the largest ships. It is, however, exposed to all but the southerly gales; but it does not appear that, with ordinary precaution, any danger need be apprehended. The ground, from one-fourth to half a mile east from the point, is clean, and holds extremely well. Ships moor with open hawse to the north, and a good hawser and stream anchor on shore, as a stern-fast. At night the wind always comes off the land. Captain Middleton says that the only bad weather is from the northwest; but that, though the swell be considerable, it does not cause any heavy strain upon the cables.—*Nautical Magazine*, vol. ii. p. 181.—At Platana, near Trebizond, and quite as exposed, Turkish vessels have from time immemorial rode in safety the whole winter; a satisfactory proof that the danger supposed to be incident to the roads along the coast is wholly visionary.—*Ibid*.

Trade.—In antiquity, and in more modern times, previously to the conquest of Constantinople by the Turks, and the exclusion of all foreign vessels from the Black Sea, Trebizond was the seat of an extensive trade. Any one, indeed, who casts his eye over a map of Western Asia must be satisfied that this city is the natural emporium of all the countries to the southeast of the Black Sea, from Kars on the east, round by Diarbeker to Amasia on the west. Erzeroum, the principal city of Armenia, is only about 135 miles southeast from Trebizond. Its merchants are distinguished by their superior attainments, and by their enterprise and activity. For a lengthened period they derived most part of their supplies of European commodities by way of Smyrna or Constantinople: nothing, however, but the impossibility of obtaining them at so convenient a port as Trebizond could have made them resort to such distant markets as those now mentioned; and it may well excite surprise, considering the period during which the Black Sea has been open, that efforts were not sooner made to establish an intercourse with Armenia, Georgia, and the northwestern parts of Persia, through this channel. We are glad, however, to have to state, that within these few years this has been done, and, notwithstanding the difficulties that necessarily attach to every attempt to open new channels of commerce with semi-civilized nations, the experiment has proved more than ordinarily successful. The policy of Russia has, of late years, given to Trebizond an importance it did not formerly possess. Previously to the 1st of January, 1832, the trade between Europe and Persia, by way of the Black Sea, principally centred in the Russian port of Redout Kalé, at the mouth of the Phasis. This was a consequence of the exemption granted in 1822 to the Russian provinces to the south of the Caucasus from the duties charged in the other parts of the empire. But the exemption having ceased at the period referred to, and the trans-Caucasian provinces having been subjected to the same duties as the other provinces, the transit trade to Persia by way of Redout Kalé, Teflis, and the Caspian Sea, almost entirely ceased, and it is now carried on through Trebizond, Erzeroum, and Tabreez. In consequence, the increase of trade at Trebizond has been very remarkable.

Of the exports, silk is by far the most important; and next to it are nuts, saffron, tobacco, copper, wax, shawls, beans, galls, leeches, etc. Their total value was estimated in 1846 at £479,874, of which silk made nearly a half, or £210,080. See TURKEY.

Tree-nails, certain long cylindrical wooden pins

employed to connect the planks of the ship's side and bottom to the corresponding timbers. They are superior to spike-nails or bolts of iron, which are liable to rust and loosen. The thickness of the tree-nails is usually proportioned to the length of the ship, allowing one inch to every hundred feet.

Trees (*Age of*). Among others mentioned in an article in the *American Almanac* for 1838, p. 102, are, the Wallace oak at Ellerslie, Scotland, 700 years. (Some oaks are supposed to have lived 1500 years.) Oak on estate of James Wadsworth, Genesee, New York, 500 years. Few trees at Fountain's Abbey, England, 1200 years; and in Scotland, said to be 2500 years. Elms, in Switzerland, 335 years. Cedars on Lebanon, 800 years. Olives, in the Garden of Olives, Jerusalem, 800 years. *Banians*, in Hindostan, 3000 years. *Cypresses*, at Grenada, 800 years.

Tret. In Commerce, an allowance of 4 lbs. for every 104 lbs. for the waste which certain kinds of goods are liable to from dust, etc.

Trieste, a city and sea-port of the Austrian dominions, the capital of a district of Illyria, situated near the northeast extremity of the Gulf of Venice, lat. (of light-house) 45° 38' 6" N., long. 13° 46' 5" E. Population in 1850-'51, of the city only, 50,000 (?), and including the district comprised within the limits of the free port, 82,596. It is divided into the old and new towns. The former is built upon elevated ground; the latter, which is lower down, is laid out with greater regularity, and is partly intersected by a canal, into which vessels not drawing more than nine or ten feet water enter to load and unload. The harbor of Trieste, though rather limited in size, is easy of access, and convenient. It is protected from southerly gales by the *Molo Teresiano*, so called from the Empress Maria Theresa, at the extremity of which the new light-house, mentioned below, has been constructed. The port, with the mole, forms a crescent one and a half mile in length, being a continued quay, faced with hewn stones, with stairs and jetties for the convenience of embarkation. On the north side of the port is a dock or harbor, appropriated exclusively for vessels performing quarantine. It is walled round; and is furnished with hotels, warehouses, and every sort of accommodation required for the use of passengers and goods. Ships under 300 tons burden lie close to the quays; those of greater size mooring a little farther out. The principal defects of the port are, its limited size, and its being exposed to the northwest winds, which sometimes blow with much violence, and throw in a heavy sea. The gales, however, are seldom of long continuance; and the holding ground being good, when the anchors are backed and proper precautions taken, no accident occurs. The tide at Trieste is scarcely perceptible; but the depth of water is influenced by the wind, being increased by a long-continued sirocco or southeast wind, and diminished by the prevalence of the east-northeast wind, known by the name of *Boro*. The access to the port is not obstructed by any bar or shallow; and there is good anchorage in the roads, in from 6 to 7 and 10 fathoms water. A good sailing vessel may beat in by night or by day, except it blow hard from the northeast or east-northeast, when she had better anchor in the Bay of Roses, or Pirano, where she will ride in perfect safety. Ships bound for Trieste are under no obligation to take pilots; but those entering the port for the first time would do well to take one on making the coast of Istria. Boats are always hovering off Rovigno; they are not manned by regular pilots, but by fishermen, who, though unfit to be trusted with the management of the ship, know the bearings of the places and the depth of water. The fee usually paid them for pilotage is twenty dollars; in addition to which, they are supported at the ship's expense during the performance of quarantine. The light-house at the extremity of the Theresian mole is 106 feet (Engl.) high. The light is intermittent; and may

be seen, supposing the eye of the observer to be elevated 12 feet above the level of the sea, about 12 nautical miles, or from Pirano on the side of Istria, and the shoals of Grado on the Italian coast. A light-house has also been erected on the point of Salvore, bearing from Trieste west by south, distant about 18 miles. The lantern is elevated about 103 feet above the level of the sea. From this point Pirano Bay opens, where vessels may anchor in safety in all sorts of weather.

Trieste has no command of internal navigation; but being the most convenient, or rather the only sea-port, not merely of the Illyrian provinces, but of the Duchy of Austria, and the greater part of Hungary, she possesses an extensive commerce. This has been increased by the facilities afforded to all sorts of mercantile transactions by the privilege of *porto franco* conferred on the town, and a considerable extent of contiguous country. Under this franchise, all goods, with but very few exceptions, may be imported into and exported from the city free of all duties whatever. Foreign products, when taken for consumption from Trieste into the interior, are subject to the payment of duties regulated by the interior tariff of Austria. These are very various, consisting partly of the raw and partly of the manufactured products of Austria Proper, Illyria, Dalmatia, Hungary, and Italy; with foreign articles imported and warehoused. Among the principal articles of raw produce may be specified corn, chiefly wheat and maize, with rice, wine, oil, shumac, tobacco, wax, etc.; silk, silk rags and waste, hemp, wool, flax, linen rags, hides, furs, skins, etc. The produce of the mines makes an important item, consisting of quicksilver, cinnabar, iron, lead, copper, brass, litharge, alum, vitriol, etc.; the forests of Carniola furnish timber, for ship-building and other purposes, of excellent quality and in great abundance, with staves, cork wood, box, hoops, etc.; marble also ranks under this head. Of manufactured articles, the most important are, thrown silk, silk stuffs, printed cottons from Austria and Switzerland, coarse and fine linens, and all sorts of leather. Under this head are also ranked soap, Venetian treacle, liquors, etc., with jewelry, tools and utensils of all sorts, glass-ware and mirrors, Venetian beads, refined sugar, and a host of other articles. Of foreign articles imported and reshipped, the most important are sugar, coffee, and dye-stuffs. Trieste is also a considerable depôt for all sorts of produce from the Black Sea, Turkey, and Egypt.

Customs Regulations.—The custom-house at Trieste has nothing whatever to do with the entry, reporting, etc., of vessels. When a ship arrives, she is reported to the health office; which publishes a list of arrivals and departures, with a statement of their cargoes, as they appear in the manifests. Ships are cleared by the same office, the masters being assisted by the consuls of the country to which they belong. As soon as a vessel has performed quarantine, she loads or unloads without any interference or inspection by the customs officers, or by any one else. Goods unsuceptible of contagion may be landed during quarantine. Being a free port, the bonding and warehousing system is, of course, unknown at Trieste.

Quarantine is strictly enforced at Trieste, and the establishments for facilitating its performance are complete and efficient. The Board of Health at this port is the central or principal one for the Austrian states; and maintains an active correspondence with all the principal ports, both in the Mediterranean and elsewhere. There are two lazarettos—that called St. Teresa, or Lazaretto *Nuovo*, is appropriated to vessels from the Levant and Egypt, which are, for the most part, subjected to the long or full quarantine of forty days. It is spacious, and properly guarded; having a sufficient number of military and medical officers and assistants; with extensive quays and magazines for housing and airing goods, dwelling-houses and apartments for resident officers and passengers, etc. It is, in fact, one of

the most perfect establishments of the kind in existence. The other, or old (*Vecchio*) lazaretto, contiguous to the great mole, is appropriated to ships and passengers performing a quarantine of not more than twenty-eight days; and, though inferior to the former, is sufficiently capacious and convenient. The sanitary offices, including that of harbor master, are near the centre of the port; where also are moored vessels under observation for a term not exceeding eight days. Here also are facilities for communicating *vicé voce* with persons under quarantine; and spacious warehouses, with adequate guards and other officers. But, notwithstanding these conveniences, if a vessel arrive having an infectious malady on board, she is not allowed to enter either lazaretto at Trieste, but is sent to an island near Venice, fitted out for the purpose, where assistance may be afforded with less risk of propagating infection.

Careening, Stores, etc.—Timber at Trieste is excellent, workmen good, and their wages moderate; so that it is a very favorable place for careening and repairing. Water is very good, but rather scarce; so that if a large supply be required, due notice must be given. Ships are served in regular rotation. Beef is very good, but rather high priced. Butter and cheese are dear; and fuel is excessively so. On the whole, therefore, Trieste can not be considered as a favorable place for the provisioning of a ship.

Banking.—There are no public banks at Trieste. The Bank of Vienna has an office here, but it is merely for the exchange of its notes for cash, or more frequently, of large notes for small ones. These notes, being guaranteed by government, are legal tender, and in general circulation, but no other company is allowed to issue notes to be used as a circulating medium. There is not, however, any deficiency of currency. Banking business is transacted by private companies, or by individuals, who are subject to certain regulations, and are obliged to lay before competent authority an attested statement of the capital embarked in their concerns. Their business principally consists in procuring bills of exchange from other places for the use of the merchants of Trieste, or in discounting (in which latter operation they have many private competitors), at the rate of from 4 to 6 per cent. per annum, according to the nature of the paper offered, and in proportion to the scarcity or abundance of cash.

The Austrian official returns of imports from the United States for Trieste alone, it is seen, exceed the returns for all the Austrian ports, as per United States Treasury Reports. More than three-fourths of the foreign commerce of Trieste is carried on along the shores of the Mediterranean. The remainder is distributed between England, the United States, Brazil, Mexico, the Antilles, Russia, and the Netherlands. The direct trade between the port of Trieste and the two Americas, the Indies, and China, has within a few years become more active, and the tonnage specially employed by this port in such direct trans-Atlantic commerce notably augmented, in consequence of the successful competition on the part of the states lying on the basin of the Mediterranean with Trieste for a portion of this trade.

The average annual value of the general commerce of Trieste during the preceding ten years was: Imports 140,000,000 francs; and exports 76,000,000 francs; a total of 216,000,000 francs.

The figures from 1839 to 1849 show an increase in imports of 70 per cent., and in exports of 8 per cent. The great difference between the increased values of total imports and exports is accounted for by the fact that but a small proportion of the produce or manufactures of Austria finds its way to foreign countries through the port of Trieste. Most of this kind of merchandise destined for the East, the United States, and South America, is forwarded by the lower Danube, by the Elbe, and by Hamburg and Bremen. Besides, this difference can not be regarded as an evidence that the

balance of trade is so heavily against Trieste, when it is considered that many millions of dollars are annually expended in the markets of this port by the 70,000 sailors, the 25,000 passengers conveyed by steamships, and the 10,000 vessels that yearly arrive there.

It is proposed, and not only with the sanction, but under the patronage of the Austrian government, to construct three first-class steamships to run regularly between New York and Trieste, touching at Corfu, Malta, Algiers, Cadiz, and Lisbon. Should this project prove successful (and the high character of its originators is a strong guarantee of its success), its effect upon the commercial and political relations of the United States must be very great. In opening new channels to the industry of the Old World, it will also increase the demand for the raw produce and manufactures of the United States. The advantages of this proposed steam communication between New York and Trieste will be greatly increased by the completion of about sixty miles of railroad between Trieste and Vienna. This, when completed (and the work is in active progress), will connect Trieste with all the principal cities of Europe, and make it the entrepôt of a large German trade. It already enjoys steam communication with the Levant, Constantinople, and Alexandria; and, when the proposed line to New York shall have been established, Trieste will become an extensive dépôt for the raw materials of the United States. During the four years ending with 1853, New York received direct from Trieste merchandise to the value of \$2,085,282, and exported direct to the same place goods of the value of \$1,550,575. The following summary exhibits the general foreign trade of Trieste in 1851 compared with that of 1850, and also the increase:

Years.	Imports.	Exports.	Total.	Imports from U. States.
	Francs.	Francs.	Francs.	Francs.
1851	225,337,000	94,451,000	319,788,000	14,588,000
1850	202,126,000	91,347,000	293,473,000	10,547,000
Increase 1851	23,211,000	3,104,000	26,315,000	4,041,000

The following table, translated and condensed from Austrian official documents, will present an interesting statement of the number of American vessels employed in the trade of Trieste from 1842 to 1851, inclusive:

Years.	Vessels.	Years.	Vessels.
1842	38	1847	45
1843	48	1848	42
1844	51	1849	50
1845	55	1850	25
1846	60	1851	31

During the same period, the largest number that entered (the Austrian flag excepted) was 3386 vessels, under the Greek flag; and the smallest, 28, under the Belgian flag. The relative importance of the flag of

each nation in the general foreign commerce of Trieste will be seen from the following condensed table:

NUMBER OF VESSELS, OF ALL NATIONS, WHICH ARRIVED AT THE PORT OF TRIESTE DURING TEN YEARS, ENDING WITH 1851, AND THE PROPORTION WHICH THE FLAG OF EACH BEARS TO THE WHOLE NUMBER.

Flags.	Number in ten Years.	Proportion to the whole.
Austrian	5,80	37.50 per cent.
Greek	3386	24.0 "
English	967	6.75 "
Sicilian, etc.	724	5.0 "
Ottoman	485	3.50 "
Ionian	448	3.25 "
United States	445	3.25 "
Swedish, etc.	370	2.50 "
Russian	259	2.50 "
Sardinian	286	2.0 "
French	252	1.75 "
Danish	226	1.25 "
Dutch	222	1.25 "
Papal States	212	1.25 "
Hanseatic	126	0.90 "
Spanish	117	0.80 "
Prussian	81	0.60 "
Others	186	1.25 "

COMMERCE OF TRIESTE IN 1856.—(VALUE IN FLORINS.)

	Imports.	Exports.
Austrian ports	29,341,302	47,727,508
Foreign ports	91,627,897	61,418,602
Total by sea	120,969,199	109,146,410
Total by land	32,802,000	24,551,722

We add a tabular statement of the commercial movement of that port during a period of ten years:

Years.	Ships.	Tonnage.
1846	16,782	985,514
1847	17,321	1,007,331
1848	17,812	926,815
1849	20,553	1,269,258
1850	21,124	1,323,796
1851	24,101	1,408,802
1852	27,931	1,556,652
1853	29,317	1,675,886
1854	26,556	1,730,911
1855	21,081	1,439,197

On comparing the average of the first three years of this period with the average of the last three years (973,220 against 1,631,663), the increase within so short a space is found to be in the proportion of 68 to 100. Marseilles is far from exhibiting the same rapidity of progress. The basis of the prosperity of Trieste, besides, is all the more solid, as it is owing to the increased intercourse both with purely Austrian and foreign ports. The national trade, for instance, from 1846 to 1848, amounted to 416,709 tons average per annum; from 1853 to 1855 it had increased to 854,753 tons average per year, or more than double. During the years 1850 and 1855, inclusive, the Austrian tonnage entered in and out at Trieste was 6,206,316; foreign, 2,981,928 tons. The trade with Greece, Egypt, the Levant, and Black Sea, had risen from 257,741 tons to 496,394 tons average per year during the same period.

COMMERCE OF TRIESTE AND VENICE FOR THE YEAR 1851.

Countries.	Trieste.				Venice.			
	Entered.		Cleared.		Entered.		Cleared.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
American	55	26,007	56	28,581	8	2,749	7	2,445
Hanse Towns	29	5,753	30	6,738	13	2,319	19	1,967
Belgian	4	673	5	720	1	155	1	155
Brazilian	2	850	3	990	....	....	....	....
Danish	16	2,079	16	2,910	4	632	2	354
French	16	2,268	14	2,080	15	1,757	15	1,737
Greek and Ionian	443	60,818	452	62,302	127	17,641	150	20,090
English	86	22,438	87	24,230	86	20,156	96	22,657
Neapolitan	447	41,544	440	36,608	191	18,009	205	22,411
Holland	62	9,663	61	9,535	13	1,974	13	1,958
Turkey	191	21,538	234	27,724	41	5,083	59	7,065
Pontifical States	397	23,319	681	37,245	13	2,074	12	1,820
Portuguese	5	1,116	5	1,234	1	100	1	100
Prussian	10	2,194	8	2,010	....	....	....	....
Russian	2	260	....	....	....	....	....	....
Sardinian	19	3,677	20	3,986	13	2,104	13	2,104
Spanish	23	4,955	24	5,721	4	1,227	4	1,227
Sweden and Norway	37	7,487	37	9,227	26	5,038	26	4,592
Tuscan	8	1,559	8	1,363	10	1,945	0	1,783
Total	1,852	238,078	2,181	263,603	566	82,943	632	92,385
Austrian	11,410	624,625	11,112	604,433	4871	388,628	4635	383,903
Total, 1851	13,262	862,703	13,293	868,036	5437	471,576	5267	476,288
Total, 1856	10,905	773,477	10,854	772,485	4581	459,661	4543	405,729

The treaty of 1829, between the United States and Austria, establishes a perfect reciprocity of commercial intercourse between the two countries. Its principal stipulations are as follows:

There shall be, between the United States territories and those of Austria, a reciprocal liberty of commerce and navigation. All the ports, places, and rivers of the territories of either power, open to foreign commerce, shall be open to the inhabitants of each respectively. Austrian vessels arriving, either laden or in ballast, in the ports of the United States, and, reciprocally, vessels of the United States, either laden or in ballast, arriving in the ports of Austria, shall be treated, on their entrance, during their stay, and at their departure, upon the same footing as national vessels coming from the same place, with respect to the duties of tonnage, light-houses, pilotage, and port charges, of whatever kind or denomination, levied in the name or to the profit of the government, the local authorities, or of any private establishment whatever. All kinds of merchandise, and articles of commerce, either the produce of the soil or of the industry of either country, which may lawfully be imported into each respectively, shall be admitted on payment of the same duties and charges, of whatever kind or denomination, as are applicable if imported under the national flag. This equalization of import duties and other charges to apply to the vessels and cargoes of each country respectively, whether they clear directly from the ports of the country to which they belong, or from the ports of any other foreign country. The produce or manufacture of either country shall be admitted into the ports of the other on the same terms as the like articles, being the produce or manufacture of any other foreign country; and no prohibition shall be imposed on the importation or exportation of any article, the produce or manufacture of either country, to or from the ports of the other, which shall not equally extend to all other nations. The vessels of both powers, respectively, shall be admitted into the ports of either, on the same terms as national vessels, with the produce or manufacture of their own or of any other country. An exact reciprocity shall be observed in the ports of the territories of either power, in respect to the vessels of the other exporting or re-exporting merchandise or produce of any country not prohibited; and the same bounties and drawbacks shall be allowed, whether such exportation or re-exportation be made in vessels of the one party or of the other. The coasting trade is reserved by each power to its own vessels, respectively. All favors hereafter granted by either party, in respect of navigation or commerce, to any other nation, shall become common to the other party, freely, if it was freely granted to such other, or on similar terms if it were conditional. The consuls, vice-consuls, agents, and commissioners of each of the high contracting parties shall enjoy, in the ports of the other, the same privileges and powers as those of the most favored nation. The treaty to continue in force for ten years, with the usual twelve months' notice by either party desiring to terminate it after that time.

Tonnage Duties.—On the 24th January, 1851, the central maritime government of Austria issued public notice that from that date the tonnage duties in force at the port of Trieste should be extended to all ports throughout the empire open to commerce. These duties are regulated by orders dated 8th November, 1845, and are as follows:

National vessels, 50 tons, or under.....	per ton,	Fl. Kr. 0 2
National vessels, 100 tons.....	"	0 4
National vessels, over 100 tons.....	"	1 6
Foreign vessels, without regard to tonnage	"	1 0

A mercantile house in New York, long engaged in the direct trade between that port and Trieste, furnishes the following statement of charges on a vessel of 1000 tons burden, entering the latter port:

Cooperage, at 6 kreutzers per ton	Fl. Kr. 100 0
Pilotage, at 3 kreutzers per ton	50 0
Health department upon arrival and at departure	2 32
Marine institute.....	12 0
Light-house dues, 7 kreutzers per ton.....	116 40
Total expense on a vessel of 1000 tons	281 12

The florin equals 60 kreutzers=48½ cents; consequently, the whole expenses amount to \$136 37½. Whether vessels take freight for several parties, or a single house, the stevedores make the same charges for stowing away the goods. The following are their fees for principal merchandise, viz.: for cotton, 2 florins per ton; for wool, hemp, flax, oakum, and roots, 1 florin 30 kreutzers per ton. Goods of such weight as raisins (black and red), figs, olive-oil, steel, cream of tartar, argol, etc., 30 kreutzers per ton; rags, grain, sumach, laurel leaves, tobacco, yellow berries, and juniper berries, 1 florin per ton. Goods which are measured, 30 kreutzers per ton measurement. Other articles in the same proportion. In discharging vessels, the only expenses are the lighters, which are provided by the agents of the vessels, and which are paid for by the receivers of the goods, in accordance with a general tariff, which the proprietors of the lighters have fixed upon by general consent. The captains are obliged to put the goods on board the lighters at their own expense. For this purpose hands can at all times be procured at 1 florin 15 kreutzers to 1 florin 30 kreutzers per diem. (55 cents to 64 cents). Men-of-war, national as well as foreign, and vessels putting in from stress of weather, or other necessity (which must, however, be verified), and not transacting any operations of commerce, are admitted to entrance, and allowed to purchase fresh provisions and other necessities, and to take a pilot, exempt from tonnage duties. Tonnage of national vessels to be ascertained by their register; of foreign vessels, by Austrian measurement.

Sanitary Regulations.—These are numerous and complicated; such only are subjoined as relate to vessels coming from all ports of the Americas, including all the ports of the West Indies: 1. Vessels with clean bills of health to be admitted, with crew and passengers, immediately on arrival, to free pratique. 2. Vessels with suspicious bills of health, such as having touched on their passage at suspected places, to be subjected to ten days' quarantine at the lazaretto, for passengers, crews, and susceptible goods; and goods not susceptible, to 5 days. 3. Vessels with foul bills of health to be subjected to fifteen days' quarantine at the lazaretto, for passengers, crews, and susceptible goods; and goods not susceptible, 10 days. The quarantine charges are very moderate, being, for entry and departure, upon a ship of 100 tons and upward (exclusive of 72 cents per diem for wages and food to the gondolier), about \$4 32; quarantine dues upon goods, 6 kreutzers (a little more than 4½ cents) per 100 florins value (\$48 50); and upon susceptible goods, 4 kreutzers (3½ cents) per 1000 lbs. weight.

General Remarks.—The development of the maritime commerce of Austria dates back as far as 1815, or, rather, from that period down to 1830; during which it gradually attained, chiefly by the aid of steam navigation, a high state of prosperity. The great commercial activity of the empire is principally concentrated at the port of Trieste; Venice and Fiume, so far, at least, as it respects foreign trade, being but subsidiary to this vast entrepôt. Besides these, Austria possesses on the Adriatic, 25 ports of secondary rank, which claim importance chiefly from their extensive coasting trade. The principal of these are Chioggia, 15 miles south of Venice; Rovigno, in Istria; Zara, Spalato, and Ragusa, in Dalmatia. This city was founded about the middle of the 15th century, and once enjoyed an extensive trade. It still exports manufactures of silk, leather, rosoglio, anchovies, etc. It continued to be a republic under the successive protection of the Greeks, Venetians, and Turks, until 1806, when it was

erected by Napoleon into a duchy for Marshal Marmont. Trieste, Venice, and Fiume, with some small ports on the Croatian shore contiguous to Fiume, are free ports. Prior to the year 1850, all produce and merchandise of whatever description, transported from one part of the Austrian territories into another (the empire being divided by an internal customs line), were subject to duties of entrance and clearance, equally as if they had been imported from, or exported to, a foreign country. By an imperial patent, issued on the 7th June, 1850, this line was suppressed, and all duties, prohibitions, etc., previously existing, were abolished; some formalities being reserved in respect to certain articles of which the government retained the monopoly. In submitting to the emperor his *projet* for this reform, the minister of finance observed, that "the influence of such a measure, in consolidating the vast and widely-extended resources of the empire, in establishing its unity and augmenting its power, would more than counterbalance the inconsiderable reduction of \$1,699,110 which it would cause in the revenues of the empire."

This liberal measure was soon after followed by another, equally beneficial to the foreign commerce of Austria—namely, the new tariff that went into operation on 1st February, 1852. In the complicated details of this tariff, there were various changes favorable to American trade. The duty on cotton, although considerably reduced from former rates, was, prior to the adoption of this tariff, 80 $\frac{1}{2}$ cents per 125.5 lbs. The tariff of 1852 reduced it again 48 $\frac{1}{2}$ cents per 110 $\frac{1}{2}$ lbs. for one year, and the year following to about 4 cents per 110 $\frac{1}{2}$ lbs. Since this latter period—namely, January 1, 1854—the article has been made free. Still later modifications of the Austrian tariff have been made, but they do not apply to any of the United States staples of export. Previously, tobacco was a strict government monopoly; under the new tariff, individuals are allowed to enter it for their own use, at reduced rates. Manufactured, it paid before 1852, \$19.40 per 100 lbs.; under the new tariff, this was reduced to \$12.12 $\frac{1}{2}$ per 100 lbs. This duty has been retained in the new tariff of 1854, with an additional duty, however, of 1 florin per livre de Vienna (48 $\frac{1}{2}$ cents), on unmanufactured, and 2 florins 80 kreutzers per livre de Vienna (\$1.21 $\frac{1}{2}$), on manufactured. The duties were reduced also on rice, whale oil, and the products of the whale-fishery, wooden-ware, tools, implements, and machinery for agricultural and household purposes, India rubber fabrics, etc. During the first year of the operation of the tariff of 1852, cotton twists paid \$3.88 per 110 $\frac{1}{2}$ lbs.; the ensuing year this was reduced to \$3.39 $\frac{1}{2}$. The centner before 1852 was equivalent to 125.5 lbs.; but, in order to bring about a conformity to the centner of the German Customs Union, it was fixed that year at 110 $\frac{1}{2}$ lbs.; that being the weight of the Prussian zoll-centner. Several articles, when imported by sea, are admitted by the tariff of 1852 at rates still more moderate; for example, alum, in general rated at 72 $\frac{1}{2}$ cents per 110 $\frac{1}{2}$ lbs., pays only 8 $\frac{1}{2}$ cents when brought in by sea. As the United States stand on the footing of the most favored nation, by virtue of the treaty of 1829, the provisions of the tariff of 1852 have contributed considerably to the employment of United States shipping.

The commercial reform of 1852 was, in a great measure, the result, or rather one of the results, of the revolution of 1848. Immediately after tranquillity had been restored, the Baron de Bruck, then minister of commerce, was charged with an administrative commission to prepare a new tariff upon the following bases, adopted by the Council of Ministers: An assimilation, as nearly as can be, to the tariff of the German Customs Association; the substitution of specific for *ad valorem* duties; the adoption of the quintal of 110 $\frac{1}{2}$ lbs., as a basis of quantities. On imports: The abolition of prohibitions; adequate protection to na-

tional industry; a graduating scale of duties on manufactured articles, according to the amount of labor employed thereon; a reduction of all taxes on articles of first necessity, either for manufactures or consumption. On exports: Balance-duties (weighing-dues), and all necessary formalities as simple as possible; a substitution of protective duties for prohibitions; the abolition of all premiums or drawbacks, unless in certain specified cases. On the preceding bases, the tariff which has been in part considered was submitted to the council, and had been under consideration several months, when the treaty of a customs league between Prussia and Hanover permitting no further delay, it was submitted to the emperor, and signed on the 6th day of November, 1851, at the very time that a commercial congress, to be composed of delegates from the different German states, was summoned to meet at Vienna in January, 1852. The imperial patent, which designated the 1st February, 1852, as the day on which the new tariff should go into effect, contained several orders of a temporary character. One was an extra duty of 10 per cent. on the aggregate duties levied on certain merchandise before prohibited. The duty on raw cotton was modified, and other temporary provisions were made, which, so far as they concern American trade, have been already adverted to.

Indeed, the tariff itself was not designed to be permanent. It was tried only as an experiment, and, by limitation, was to expire at the end of October, 1854; the government being meanwhile precluded, on the one hand, from raising the duties on imports for manufacturing purposes, and on the other from reducing them on articles manufactured half or in whole. At the same time, the export duties on articles of the former class could not be reduced, nor could similar duties on those of the latter be raised. The imperial patent, moreover, contained one notable provision, viz.: the duration of the tariff was to depend on the contingency of a treaty of commerce (with Prussia) being effected before the period fixed for its termination. It would shed but little light upon the commercial relations of the United States with Austria to follow up, and recount in this work, the proceedings of the commercial congress assembled at Vienna during the winter of 1852, or to recapitulate the resolutions adopted by the delegates of the southern states before presenting themselves at Berlin. It will suffice to say, that on the 19th February, 1853, a treaty was effected between Austria and Prussia, which was acquiesced in by all the other states of the Zoll-Verein. This treaty, stipulating as it does for large and reciprocal commercial concessions between the two powers, as a fitting prelude to a general customs league between all the German states, necessarily led to a revision of the tariff of 1852. This resulted in the adoption of the tariff now in force; to understand which, however, it must be borne in mind that many of the articles enumerated in that portion of the tariff, though rated at different duties when coming from foreign countries, are free when imported by the frontiers of the German Association, or coming from the interior of the associated states.

These privileged articles are specifically defined in a supplemental appendix to the tariff, dated February 10, 1854, and prefaced in the following terms: "As the first result of the arrangement entered into at Berlin by the Executive Commission, conformably to the 23d article of the treaty of commerce and of customs of the 19th February, 1853, and for the purpose of correcting some erroneous impressions, public notice is given that the following are the true constructions and modifications of the tariff of the 5th December, 1852. Said constructions and modifications shall be carried into effect so soon as they are received at the different bureaux of customs." (Then follows the list of articles coming under the special provisions of the treaty.)

The causes that compelled the revision of the tariff

of 1852, as well as the adoption of the present tariff (of 1854), are set forth in an article which appeared in the official journal, published at Vienna, of the 15th December, 1853.

In reference to the treaty with Prussia, this article holds the following language: "Other considerations induced a revision of the tariff of 1852. The treaty with Prussia is the first step in reforming the commercial policy of the empire. From it must result, at no very distant day, an Austro-German Customs Union; and a general reduction in tariff duties is the most fitting prelude to so desirable an event. Besides, the commercial treaty of August 7, 1852, concluded with Parma and Modena, removes all obstacles to an Austro-Italian Customs Union; and thus the event referred to (an Austro-German Customs Union) would present a guarantee for the prosperity and peace of the continent. The changes and modifications which could contribute to this end should command our most serious consideration. These are principally such reductions in tariff duties as are demanded by the best interests of commerce—not, however, to an extent that

might in any way prove detrimental to the industrial resources of the empire. Succeeding, as it does, a restrictive system, in operation for more than half a century, the tariff of 1852 is still encumbered with onerous duties and oppressive restrictions, repugnant to a great association of states accustomed to the most liberal system of commercial policy. Besides, the augmented exports of 1852 and 1853 demonstrate the wise policy of a general reduction of tariff duties, and furnish incontestable evidence that such a measure will most effectually repair the evils of past commercial legislation." The preceding remarks contain a summary of the official *exposé* already referred to, and explain the motives that induced the general remodification of the Austrian tariff. The abolition of the government monopoly of tobacco would remove the most serious and the only remaining restriction on American commerce. The customs union with the Germanic states, so much desired by Austria, will accomplish this, if it should not be effected before that event shall happen.—*U. S. Com. Relations.* The following is an exhibit of the commerce of the U. S. with Austria for 37 years:

COMMERCE OF THE UNITED STATES WITH TRIESTE AND OTHER AUSTRIAN PORTS ON THE ADRIATIC, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	\$31,781	\$303,580	\$340,361	\$229,792	....	\$98,139	1,885	....
1822.....	38,752	436,068	475,720	274,375	....	2,551	2,551	....
1823.....	25,697	919,618	945,315	189,137	....	13,285	3,318	....
1824.....	6,596	518,057	524,653	268,667	....	157,717	2,185	....
1825.....	8,834	643,568	652,402	105,839	....	2,033	3,246	....
1826.....	13,887	273,938	287,320	193,152	....	4,000	1,879	....
1827.....	42,671	234,122	276,793	168,546	....	10,304	2,090	....
1828.....	119,233	205,755	324,488	237,378	....	....	3,068	....
1829.....	409,288	280,200	689,488	191,896	....	460	6,384	129
1830.....	310,830	293,261	594,120	132,093	....	912	4,662	232
Total....	\$9,7098	\$4,113,562	\$5,110,660	\$1,986,075	....	\$296,053	31,578	411
Sept. 30, 1831.....	\$276,561	\$262,808	\$539,369	\$161,062	....	\$1,900	4,215	....
1832.....	109,911	936,776	1,196,686	362,027	....	....	6,497	1,521
1833.....	146,617	498,447	654,964	314,611	....	....	3,504	1,701
1834.....	518,609	594,728	1,473,337	680,614	....	22,000	7,530	3,337
1835.....	818,375	384,038	1,202,413	492,567	....	4,477	6,592	2,618
1836.....	1,138,491	829,674	1,968,165	1,020,099	\$2,300	2,300	8,944	4,931
1837.....	1,253,370	793,231	1,611,591	629,405	44,150	....	2,179	12,919
1838.....	643,223	125,740	768,963	672,378	....	7,919	4,974	2,738
1839.....	429,578	162,671	592,249	477,539	....	1,500	3,069	2,874
1840.....	1,690,350	196,264	1,736,620	873,305	....	....	11,828	6,081
Total....	\$6,994,931	\$4,639,366	\$11,634,297	\$4,783,727	\$46,450	\$40,536	59,132	38,745
Sept. 30, 1841.....	\$1,258,776	\$52,980	\$1,311,756	\$418,606	....	....	10,350	1,201
1842.....	743,179	136,526	884,705	413,210	....	....	10,520	361
9 mos., 1843.....	490,240	118,938	579,178	72,957	....	....	8,679	1,732
June 30, 1844.....	1,257,285	168,735	1,426,020	232,089	....	\$8,038	10,537	3,918
1845.....	1,433,103	368,775	1,801,878	321,550	....	....	15,470	9,198
1846.....	1,104,463	366,143	1,470,611	379,719	....	....	12,552	3,341
1847.....	1,175,375	73,348	1,248,723	187,341	....	7,533	7,361	5,279
1848.....	1,701,495	107,727	1,809,222	385,813	....	1,287	16,229	4,693
1849.....	942,480	464,376	1,406,856	409,178	....	3,900	11,176	5,753
1850.....	1,179,893	312,111	1,492,004	467,601	....	....	5,968	6,880
Total....	\$11,251,303	\$2,169,659	\$13,430,962	\$3,283,064	....	\$15,808	109,702	42,415
June 30, 1851.....	\$2,265,573	\$280,894	\$2,496,467	\$730,788	....	....	10,179	13,371
1852.....	2,408,530	329,850	2,738,419	808,749	....	....	14,024	13,400
1853.....	2,062,484	171,804	2,234,288	528,567	....	....	11,735	9,244
1854.....	1,697,319	206,290	1,903,609	741,191	....	\$147,736	13,015	5,401
1855.....	1,277,577	122,274	1,399,801	496,283	....	....	9,517	7,029
1856.....	2,233,793	206,065	2,444,848	476,541	....	....	16,916	5,557
1857.....	2,173,061	232,616	2,455,681	422,365	....	22,000	16,181	1,514

* Nine months to June 30, and the fiscal year from this time begins July 1.

Trinidad. Trinidad is separated from the main land of South America by the Gulf of Paria. It is about 90 miles long and 50 miles wide, with an estimated superficial area of 2020 square miles. Capital, Puerto d'España. Trinidad appears at a distance like an immense ridge of rocks along its whole north front; but on entering the Gulf of Paria, one of the most magnificent, variegated, richly luxuriant panoramas that nature ever formed is presented to the eye of the voyager. To the east the waves of the mighty Orinoco dispute for the empire of the ocean with contending billows, and the lofty mountains of Cumana rise from the horizon in stupendous majesty; and on the west appear the cape, headlands, mountains, hills, valleys,

and plains of Trinidad, enameled with eternal verdure. The fecundity of the soil, its gigantic vegetation, its beautiful rivers, enchanting slopes, forests of palms, groves of citrons, and hedges of spices and perfumes, its fine azure skies and elastic atmosphere, have each and all combined to crown the isle with the appellation of "The Indian Paradise." The island is evidently a section of the opposite continent; the same strata, the same rocks, fossils, etc., are common to both. Its formation is evidently volcanic, and in many parts volcanic action is still going on, as indicated by its mud volcanoes and other cognate developments. The precious metals are not found here, nor indeed are any others, except in small quantities. Coal is found about

five miles from the shore. But the most remarkable mineral phenomenon is the asphaltum, or pitch lake, which covers an area of half a league.

Staples as in the other islands. United States vessels also export heavy quantities of iron, brass, lead (old), and hides. The imports from the United States in 1853 were \$537,604, and exports to United States were \$31,483. American vessels in Port of Spain in 1853, 59; tonnage, 11,472. Imports from United States from 1st January to 30th June, 1853, \$308,716; imports from 1st July to 31st December, 1852, \$268,148.

Port Regulations.—Upon every ship or vessel of 50 tons and upward, for every registered ton, 36 cents. Upon every ship or vessel of 25 tons and upward, but under 50 tons, for every ton of registered tonnage, 30 cents; and upon every ship or vessel under 25 tons, for every registered ton, 6 cents. Lumber, staves, bricks, slates, shingles, coal, etc., are also subject to a small wharfage duty. Sugar, cocoa, coffee, rum, indigo, etc., are liable to an export duty in this island. Trinidad embraces an area of 1970 square miles, containing a population of 45,284.

Trinity House. The full title of this corporation is, "The Master, Wardens, and Assistants of the Guild, Fraternity, or Brotherhood of the most Glorious and Undivided Trinity, and of Saint Clement, in the Parish of Deptford, Stroud, in the County of Kent"—an institution to whose members is intrusted the management of some of the most important interests of the seamen and shipping of England. The earlier records, together with the house of the corporation, were destroyed by fire in 1714; so that the origin of the institution can only now be inferred from usage and the occasional mention of its purposes in documents of a former period. A similar society, for the like purposes, was afterward established at Hull, and also another at Newcastle-upon-Tyne in 1537; which three establishments, says Hakluyt, were in imitation of that founded by the Emperor Charles V. at Seville, in Spain; who, observing the numerous shipwrecks in the voyages to and from the West Indies, occasioned by the ignorance of seamen, established, at the *Casa de Contratacion*, lectures on navigation, and a pilot-major for the examination of other pilots and mariners; having also directed books to be published on that subject for the use of navigators. According to some authorities the incorporation was founded in the year 1515. It is probable that with Henry VII. originated the scheme, afterward carried into effect by his son, Henry VIII., of forming efficient Navy and Admiralty Boards, which then first became a separate branch of public service. During the reign of Henry VIII. the arsenals at Woolwich and Deptford were founded, and the Deptford yard establishment was subsequently placed under the direction of the Trinity House, who likewise surveyed the navy provisions and stores. The earliest official document relating to the Trinity House now extant is a charter of incorporation made by Henry VIII. in the sixth year of his reign. An exemplification of this charter was granted by George II., in the third year of his reign.

The revenue under the management of the Trinity House arises from the dues payable to the corporation on account of light-houses, buoyage and beaconage, and ballastage; and from the interest of money in the funds, and the rent of freehold property, amounting to about £166,000 annually. Hitherto by far the greater portion of this large revenue has been expended on pensions to poor disabled seamen, and on the maintenance of their widows, orphans, etc.; and it is admitted that it has been both judiciously and economically administered. It is henceforth, however, to form part of the "Mercantile Marine Fund." The act provides that payments now chargeable on the "fund" for pensions, etc., may be commuted. The expenses of light-houses, ballastage, and beaconage are also to be charged on the "fund," and the rates of toll are to be revised

and fixed by her majesty in council. The ballastage rates under the Trinity House, being a charge peculiar to the Thames, are to be made peculiarly applicable to services performed for the safety and convenience of the shipping frequenting that river.

Of this corporation Lord Palmerston lately remarked, at the annual dinner given by the board of managers, "There is, indeed, a unity of operation between the government that may have to administer the affairs of this country and this body; for it is the function of the Trinity Corporation to provide pilots for those thousands of keels that plow the waves that wash our shore; and, on the other hand, to erect those lights which warn navigators from dangers which they would otherwise have to encounter, and which point out to them the havens where safety is to be obtained."—See *article LIGHT-HOUSES.*

Tripang, or Sea Slug (*Biche de Mer*), a species of fish of the genus *Holothuria*, found chiefly on coral reefs in the Eastern seas, and highly esteemed in China, into which country it is imported in large quantities. It is an unseemly-looking substance, of a dirty brown color, hard, rigid, scarcely possessing any power of locomotion, or appearance of animation. Sometimes the slug is as much as two feet in length, and from seven to eight inches in circumference. A span in length, and two or three inches in girth, is, however, the ordinary size. The quality and value of the fish, however, do not by any means depend upon its size, but upon properties in it neither obvious to nor discernible by those who have not been long and extensively engaged in the trade. In shallow water the animal is taken out by the hand, but in deeper water it is sometimes speared. When taken, it is gutted, dried in the sun, and smoked over a wood fire; this being the only preparation it receives. The fishery is carried on from the western shores of New Guinea, and the southern shores of Australia, to Ceylon inclusive. Indeed, within the last few years it has been successfully prosecuted on the shores of the Mauritius. The whole produce goes to China. In the market of Macassar, the great staple of this fishery, not less than thirty varieties are distinguished, varying in price from five Spanish dollars a *picul* (133½ lbs.) to fourteen times that price, each variety being distinguished by well-known names. The quantity of tripang sent annually to China from Macassar is about 7000 piculs, or 8383 cwt.; the price usually varying from 8 dollars a picul to 110 and 115, according to quality.—CRAWFORD'S *Indian Archipelago*, vol. iii. p. 441. There is also a considerable export of tripang from Manilla to Canton. Besides tripang, *fish maws* and *sharks' fins* are exported to China from every maritime country of India.

Tripoli. This regency is the most advanced of all the Barbary states, in civilization. It possesses a vast sea-coast, extending 350 leagues, from Tunis to Egypt. With the exception of where the desert meets the sea, near Monkhar, the northern or maritime part of Tripoli, for a few miles from the coast, has the same fertility and productions as Morocco and Tunis. Its area is estimated at 100,000 square miles, with a population of 1,800,000. Its products are corn and fruits, in great variety and abundance; also cotton, silk, tobacco, saffron, madder, and castor-oil. In the interior, senna, dates, and galls are the principal staples. The exports consist of dates, olives, straw mats, earthen-ware, and other domestic manufactures, partly exported by sea, and partly disposed of in barter to Bedouin traders. The other manufactures of Tripoli are carpets, thick cloaks, camlets, goats'-hair sacking, prepared skins, Morocco leather, and potash. These, together with the produce of Central Africa, which annually arrives in caravans, are exchanged for European and colonial goods. The principal trade of Tripoli is with Malta, Tunis, and the Levant. The sea-ports are Tripoli, Bengazi, and Dernah, with several others of little or no importance.

The navigation and commerce of the two principal ports, for a series of years, are thus given by French authorities: In 1846 there entered, Turkish vessels, 108; Greek, 35; Tuscan, 14; Maltese, 14; French, 14; Russian, 4; English, 3; Sardinian, 1; Austrian and Sicilian, each, 1. Total, 195 vessels; of which 167 were laden with merchandise valued at 1,872,000 francs. During the same year there cleared—Turkish vessels, 78; Greek, 25; Tuscan, 15; Maltese, 18; French, 14; English, 3; Russian, 2; Sardinian, 2; Austrian and Sicilian, each, 1. Total, 159 vessels; of which 121 were laden with produce valued at 983,000 francs. In the port of Bengazi there entered the same year 142 vessels, of which 113 were laden. Provisions (chiefly barley) and tobacco are extensively and profitably imported into Tripoli. This trade is chiefly monopolized by the Turks, Greeks, and Russians. The vessels of these countries trade with the ports of the Levant, carrying to those places cargoes of salt taken on board at Zoara.

COMMERCIAL MOVEMENTS OF THE REGENCY OF TRIPOLI IN 1851 AND 1854.

	1851.	1854.
Imports	francs 2,995,000	2,217,000
Exports	" 5,817,000	5,524,000
Total	" 8,812,000	5,821,000

Navigation returns for this port in 1851 are condensed as follows:

Entered	204 vessels	18,360 tons.
Cleared	191 "	16,879 "

FOREIGN TRADE OF TRIPOLI IN 1852 AND 1853.

Countries.	Imports.		Exports.	
	1852.	1853.	1852.	1853.
Malta	1,648,000	1,667,000	2,133,329	2,698,000
Turkey	404,000	390,000	1,350,000	1,454,000
Egypt	152,000	285,000	60,000	150,000
Tunis	184,000	226,000	310,000	607,500
Tuscany	791,000	727,000	837,979	861,000
France	554,000	367,000	278,000	614,000
Algeria	4,000	...	25,000	...
Roman states	5,000	5,000	25,000	...
Austria	150,114	799,500	4,000	5,000

The duty exacted in the Tripolitan ports is four piastres per 80 kilograms—equal to about eight cents per ton. Pilots are not often employed; when required, the captain of the port must furnish them free of expense. Quarantine regulations the same as at Constantinople. Notwithstanding Tripoli is tributary to the Ottoman empire, there is a separate treaty between the United States and that regency, ratified June 4, 1805, placing the commerce between the two countries on the footing of the most favored nation.—*Com. Rel. U. S.*

Treaties.—By the treaty concluded with Tripoli June 4, 1805, it is stipulated that the consuls and agents of both nations, respectively, shall have liberty to exercise their religion in their own houses; and those of the same religion shall not be impeded in going to the consul's house at the hour of prayer. The consuls shall have liberty and personal security given them to travel within the territories of each other both by land and sea, and shall not be prevented from going on board any vessel that they may think proper to visit. They shall have, likewise, the liberty to appoint their own dragomans and brokers. In case of any dispute arising between the contracting parties, no appeal shall be made to arms, nor shall war be declared under any pretext whatever; but if the consul residing at the place where the dispute shall happen shall not be able to settle the same, the government of the country shall state its grievances in writing, and transmit it to the other; and the period of twelve calendar months shall be allowed for answers to be returned, during which time no act of hostility shall be permitted by either party; and in case the grievances are not redressed, and a war should be the event, the consuls and citizens or subjects of both parties, respectively, shall be permitted to embark, with their effects, unmolested, on

board of what vessel or vessels they shall think proper. If any disputes shall arise between citizens of the United States, or any persons under their protection, such disputes shall be settled by the consul of the United States in the same manner as stated above, in Morocco. The same provision is made in the treaty with Tripoli, in respect of homicides, as in the treaty with Morocco. The care of the property of citizens of the United States dying in the regency of Tripoli is to be committed to the care of the consul, unless otherwise disposed of by will; and no hindrance is to be interposed to the execution of any will that may appear.

"The commercial intercourse of the United States within this consular district is dependent solely on the regulations of the mother country. These regulations are set forth in the tariff settled between Turkey and Great Britain on the 31st of October, 1850, and which applies also to the United States, under that clause of our treaty with Turkey which secures to us all the privileges of "the most favored nations." The commerce of the United States with this regency stands on the same footing as that of the most favored nations. It enjoys no exclusive privileges nor suffers any peculiar restrictions. There is only a port charge of about three cents the ton, which is levied equally on foreign and national vessels.

"The true par or intrinsic value of the piastre of this country is 12½ sous, French; but we reckon it at 12½ cents. The present bey has, however, issued a gold currency, composed of pieces of 100, 80, 40, 20, and 10 piastres each, which are about 20 per cent. deficient in weight; and, consequently, in gold money the piastre is worth only ten cents. The Christian population refuse to accept this new gold currency at its nominal value, but the arbitrary power of the bey compels its circulation among his own people, and prices have advanced nominally already since its appearance, without other apparent cause. Whether absolute power can effect the magical work of maintaining in free circulation two currencies of the same denominations and names, but of different intrinsic values, remains to be seen.

"The duties on exports to the United States, as to all other countries, are, on oil, 2½ piastres the metal, which is about 5-08 gallons, United States liquid measure. Thus we have 6½ cents per gallon. This oil is olive-oil, and is of a quality highly esteemed in Europe. The exportation of horses and camels is prohibited, and only allowed as a special favor to individuals or governments. The exportation of grain is generally confined to the bey himself, who consequently makes his own price. A very large portion of the oil is also exported by the bey. The import duties on goods of the United States are established at 3 per cent. *ad valorem* by treaty. The internal taxes on the products of the soil are levied at 10 per cent., but the management of assessors, by assessing the crop in its growing state, frequently causes the actual tax to exceed this rate. Besides, there are octroi duties, more or less heavy, on all articles of produce sold in the cities for consumption."—*Com. Rel. U. S.* See TREATIES, COMMERCIAL.

Tron Weight, the most ancient of the weights used in Scotland; and though its use is now prohibited by law, it is still occasionally employed in some of the rural districts in weighing wool, cheese, butter, etc. The tron pound was not a well-defined weight, but varied from twenty-one to twenty-eight ounces avoirdupois.

Trough of the Sea, in *Marine language*, the surface of water between two waves.

Troy Weight, one of the most ancient of the different kinds used in Britain. The pound English Troy contains twelve ounces, or 5760 grains. It is used in the weighing of gold, silver, and jewels; the compounding of medicines; in experiments in natural philosophy; in comparing different weights with each other.

er; and is now made the general standard of English weight in Great Britain and in the United States.

Before the American Association for the Advancement of Science in 1857, J. B. Gibbon, Esq., Assayer of the Mint of North Carolina, read a paper on the rise and gradual discontinuance of Troy weight in coinage and commerce. He stated that about 1900 years ago, or about fifty-two years before the Christian era, Julius Cæsar had described the inhabitants of Great Britain and Gaul as making use of brass and iron rings, by weight, for money. Gold-ring money of the Celts was also annually dug up in Ireland; and similar money was employed by the Scandinavians, on the shores of the Baltic. They were multiples of one certain ounce, or integers of its proportions—the word for ounce being claimed as a purely Celtic one. Recently an ambassador wrote from Antwerp that he had purchased a gold chain of Rubens with the links stamped by the goldsmiths of the day to mark their weight and fineness. In South Africa, at the present day, there was a similar employment of metal rings; and a civilized country of antiquity, as appeared from paintings still remaining on walls, employed rings which were carried to Cush or Ethiopia. Another nation had pieces of coin stamped with the likenesses of idols for the same purpose. The old pound of the Anglo-Saxons was called *Easterling*, from which came the modern sterling. In France there was a pound called the pound of Rochelle, and the Germans named it the pound of Cologne. A new system, by which the pound of silver in tale was also made the pound in gross, was arranged by Charlemagne in the 8th century. In England, under William the Conqueror, it was decreed that measures, weights, etc., should remain as they had been under his predecessors. In 1256, by consent of the whole realm, it was determined that the silver penny, called *Easterling*, should be round, and that it should be of the weight taken from the middle of the ear. Twenty of these penny-weights were to make an ounce, twenty ounces one pound; eight pounds of silver a gallon of wine; and eight gallons of wine a bushel, the eighth part of a quarter. Troy weight was supposed to have been derived from the Eastern nations, and transmitted first to Troyes, in France, from Cairo, during the crusades. From Troyes it was carried into England by the goldsmiths, and found favor there under Henry VIII., who began to debase the standard fineness of silver coins and to reduce their weight. Before this a statute established a common standard by which silver and wheat were assumed to be the natural tests, the one of the other. Unfortunately, neither was exactly suited for the purpose. It had been found by experiment with white and red wheat, forty to forty-three grains were required to balance a grain of silver, and from twenty-eight to thirty-five or thirty-six grains of white wheat effected the same thing. In short, grains were not intended to serve as a just measure for perfect comparison, multiplication, or division.

Acting upon the opinion that the laws of physical nature operate uniformly, and that the heavenly bodies are governed by fixed rules alike applicable to all matter, while Sir Isaac Newton was Master of the Mint, in the reign of George I., the vibration of a pendulum in the latitude of London, on a level with the sea, was measured, and the length made to serve as the standard of the imperial yard of Great Britain. Weights have been based upon a standard arising from a quantity of distilled water at a certain temperature, and having a certain cubic content. Upon the advice of the House of Commons, and afterward of a committee of the Royal Society, addressed to the Prince Regent, it was determined, under George IV., that the standard made by Bird in 1760 should be the legal standard of length in Great Britain; that the pound Troy should be still continued; and that 7000 grains should be the pound *avoirdupois* in the British empire.

By act of Congress in 1828 it was determined that the Troy pound procured by the minister in London in 1827 should be the standard, in the United States, to regulate the coinage. Yet there were three standards still in use in the United States coinage—the standard for quantities from Great Britain, the standard for purity from France, and the standard for proportion from Spain.

In the United States system many changes had been effected in the system in force at the Mint. The Troy ounce was divided decimally, and the other proportions were discarded. The French *gramme* used for silver, and the half *gramme* used for gold, with their thousandth parts, had replaced the old carat grains; and the proportion was based upon the dollar—a credited but erroneous ounce of silver, the sixteenth part of a pound *avoirdupois*, divided decimally for account. The act of 1772, which established the United States Mint, was founded on the report of the first Secretary; and notwithstanding many changes in the United States, the system there was still subject to the same objections as that of England, being copied from erroneous models, and not founded with scientific accuracy on systematic, uniform, and intelligible views, such as are required for the purposes of coinage, of commerce, of the arts and professions of life, as well in Great Britain as for her colonies, and by the United States.—*See WEIGHTS.*

Truck System, or Store Account, a name given to a practice that has prevailed, particularly in the mining and manufacturing districts, of paying the wages of workmen in goods instead of money. The plan has been for the masters to establish warehouses or shops; and the workmen in their employment have either got their wages accounted for to them by supplies of goods from such *depôts*, without receiving any money, or they have got the money, with a tacit or express understanding that they were to resort to the warehouses or shops of their master for such articles as they were furnished with.

Truffles, a sort of vegetable production, like a mushroom, formed under ground. A few have been found in Northamptonshire; they are pretty abundant in Italy, the south of France, and several other countries. They are reckoned a great delicacy. The *pâtés au truffes d'Angoulême* are highly esteemed, and are sent as presents to very distant places.—*REES' Cyclopædia.*

Trust and Trustee. A trustee is he who undertakes to discharge a trust, and a *cestui qui trust* is the person who is entitled to the benefit of a trust. A *trust*, which is, in fact, a new name given to a use, is defined by Lord Coke to be "a confidence reposed in some other, not issuing out of the land, but as a thing collateral, annexed in privity to the estate of the land, and to the person touching the land, for which *cestui que use* has no remedy but by subpoena in Chancery."

Tschaik (*Turkish ship*), is a light galley used on the Danube, and provided with a sail and rudder. The *tschaik* generally carries from two to twelve guns, and from ten to one hundred men.

Tulips. They came to England from Vienna, A.D. 1578, and have always been among our most esteemed flowers. They became an object of commerce in the 16th century; and it is recorded in the register of the city of Alcmæer, in Holland, that in the year 1639, 120 tulips, with the offsets, sold for 90,000 florins; and in particular, that one of them, called the *viceroi*, sold for 4203 guilders! The states at last put a stop to this extravagant and ruinous passion for flowers. The tulip-tree (*Liriodendron tulipifera*) was carried to England from America, about 1663.—*HAYDN.*

Tulip-tree (*Liriodendron tulipifera*), one of the most remarkable of our North American forest trees. In most parts of the United States the tree is known under the name of poplar-tree. The wood is of a light color, with a greater specific gravity than white pine, and is found in most of the States and Territories. The

qualities are a moderate resistance to decay, and easy manipulation. The principal defect is the liability to shrink and warp. The wood is in common use, on account of its abundance and cheapness, for the manufacture of common furniture, shingles, and dry lumber.

Tunis. The state of Tunis possesses nearly the same natural advantages of soil and climate as Morocco. In ancient times it was one of the granaries of Rome, supplying wheat, maize, barley, olives, grapes, dates, and other fruits. Tobacco, cotton, and indigo have recently been introduced as articles of culture, and small quantities of saffron and opium are also raised. The principal manufactures of Tunis are of red caps, exported to all parts of the Mediterranean; of soap, at Susa chiefly; and of woolen, silk, and linen fabrics, and morocco leather. The chief imports by sea are cochineal, raw silk, coffee, sugar, Spanish wool (to make *tarbouches*, or red caps), wines, specie, etc. Caravans arrive annually from Central Africa, bringing slaves, senna, ostrich feathers, gold dust, gum, and ivory, which are bartered for manufactured goods, spices, and gunpowder; while others, from Constantinople, bring wax, dried skins, cattle, and sheep, in return for muslins and other woven fabrics, Tunis mantles, colonial produce, essences, etc.

There are no official or reliable data from which the value of the general foreign export trade of Tunis can at the present time be gathered. The following statement of the average annual exports is based upon an estimate made by the French consul, and found in *MACGREGOR'S Commercial Regulations*:

	Francs.
Olive-oil	4,000,000
Wool	1,500,000
Red caps (<i>tarbouches</i>)	1,800,000
Other woollens	509,000
Wheat and pulse	280,000
Nuts, dates, etc.	90,000
Cattle	100,000
Sponges	200,000
Wax	40,000
Hides	280,000
Senna	50,000
Soap	60,000
Elephants' teeth and gold dust	400,000

Total average of exports 9,259,000 francs, or nearly \$2,000,000. The principal port is Tunis, situated on a salt lake, communicating with the sea by a canal or strait. Large ships anchor in the road or bay. The other chief ports are Biserta, Farina, Hammamet, Sfax, and Gerbis. The commercial relations between the United States and Tunis are regulated by treaty of February 24, 1824.—*See TREATIES, COMMERCIAL.* No official data are at hand upon which to base an estimate of the character or value of the trade between the United States and this regency. There is no direct trade, it is believed, between the United States and Tunis, commercial movements passing mainly by way of Malta and Marseilles. Macgregor gives a statement of the imports into and exports from Tunis in 1839, of which the following is a summary:

Imports	8,089,000 piastres = 25 cents each.
Exports	5,376,000 "
Total	13,465,000 " = \$3,366,250

In this total the United States figured for:

Imports from Tunis	238,000 piastres.
Exports to Tunis	268,000 "
Total	506,000 " = \$126,500

In 1842 there entered 341 vessels, with an aggregate of 33,321 tons; and there cleared 331 vessels, measuring an aggregate of 33,425 tons. The trade is conducted chiefly under the British, Maltese, French, Neapolitan, Sardinian, Tunisian, and Austrian flags. These import wine, spirits, iron, sugar, coffee, cotton, beans, and manufactured goods; and carry back wool, hides, wax, barilla, sponge, oil, almonds, salted fish, nuts, bones, dates, corn and meal, wax, soap, tissues of wool, etc., and leeches.

* The present value of the piastre is about 12½ cents.

The authority cited gives the navigation duties in the different ports of Tunis as follows:

Duties.	Tunis.	Susa-Monastier.	Sfax and Gerbis.
Anchorage duties ..	\$2 62½	\$1 06½	\$1 06½
Captain of port tax ..	25	25	31½
Water tax	1 25	12½	....
Odabushi tax	65	....	....
Total	\$4 52½	\$1 43½	\$1 38½

Besides these fixed charges, there are also incidental expenses peculiar to Tunis, viz.: 1st. All vessels which enter the Goletta Canal for repairs, or for any other purpose, pay an entrance and departure duty of \$5, and \$1 25 besides, daily, if the vessel is above 50 tons; 2d. A vessel taking in ballast from the land is taxed \$375; 3d. On every vessel which finds itself unsafe in the roadstead, on account of the bad quality of its cable, or from any other reason, and wishes to get under the shelter of the mole of the Goletta, a duty of 12 caroubes (18½ cents) per ton is imposed so long as it remains there, renewable every six months. Besides this duty, the captain of the port receives 75 cents. In addition to the foregoing, the following information is condensed from official returns communicated to this Department: The total port charges on entering the Goletta (the harbor of Tunis) amount to \$6 50 for lights, anchorage, health officer, etc., for vessels of over 30 tons; under 30 tons, one half that charge. These charges apply alike to all vessels, either Tunisian or foreign.

Export duties—inconsiderable, however—are levied upon oil, wool, and soap.

The import duties on goods and merchandise are regulated by treaty, and amount to 3 per cent. The articles from the United States which usually find a good market in Tunis are rum, tobacco, small freights of flour, cheap cotton fabrics, provisions, cheese, salt beef, dried beef, hams, pickles, and biscuit; but it would not be advisable to risk large cargoes of these articles. The coasting trade is permitted to all foreign vessels, without paying any other duty than those named in the tariff. The quarantine regulations are: Quarantine of observation, fixed at 10 days, is only required 7 or 8 days, though the vessel pays for 10; and when coming from any port in the Mediterranean, she pays \$1 25 per day. Besides this tax others are levied, amounting in the whole to \$25 62½. On vessels from the Levant, these taxes, according to Macgregor, are levied for 20 days, and amount to 202 p. 8 c. (\$50 52). These are the rates at the port of Tunis. At the other ports the quarantine of observation is usually 10 days; expenses nearly the same.—*Comp. Rel. U. S.*

With the exception of certain privileges granted to Great Britain and Spain, no privileges permitted to the commerce of foreign nations are denied to the United States. By treaty, Great Britain obtained the privilege of exporting annually for the support of the garrison of Gibraltar, on payment of a duty of \$5 per ox (though the fixed duty is \$10), 2000 oxen. Spain, when formidable, obtained by treaty the following privileges, viz.: the exportation of oxen on paying a duty of \$3 per ox, instead of \$10; fowls at 15 cents per dozen instead of \$1; pulse at 30 cents per 1½ bushel instead of 90 cents; and a proportionate reduction on all other eatables. These privileges, however, are at present disregarded. No restrictions are imposed on the commerce of other nations nor on that of the United States.

The port charges and dues levied on vessels of the United States are simply the anchorage dues, which are exacted according to the tonnage of the vessel. The U. S. Consul says, "I am led to think that the restrictions which obstruct a direct trade with the United States are the high duties levied in the United States on produce in general of this country. If such duties were reduced to a trifling amount, as they are in Great Britain, a powerful and salutary influence would be the result. Take, for example, the coarse wool of this

country, which enters so largely into our manufactures. Remove entirely, when imported from Morocco in American bottoms, the duty from this one article, and that direct trade which twenty-four years ago existed will again spring up. The great market for the wool of Morocco is even now the United States; but our ship-owners derive no benefit from the demand. It finds its way to the United States through Marseilles and Gibraltar, and French and English vessels make a monopoly of the carrying trade. If, with the extra expenses of transshipment, the additional transportation, the extra commissions, insurance, etc., our manufacturers now find it to their interest to purchase largely of the wool of this country, how much greater will be the demand, and consequently the employment, of American vessels, if a direct trade between the United States and Morocco is brought about? It is true, the export duties of this country are liable to sudden fluctuations; but contracts for certain periods can be made with the sultan, which exempt the contracting parties from being affected by those fluctuations."—*Consular Returns U. S. 1854-'55.*

Tunis, the capital of the regency of the same name, on the northern coast of Africa, the Goletta fort being in lat. $36^{\circ} 48' 30''$ N., long. $10^{\circ} 25' 46''$ E. The Bay of Tunis is somewhat in the form of a horseshoe. Its western extremity, Cape Carthage, is situated about four miles northeast from the Goletta; and its eastern extremity, Cape Zafran, bears from Cape Carthage east by south, distant about 13 miles. The bay is about 16 miles deep, and has good anchorage all over, in from 10 to 4 fathoms water. It is exposed to the north and northeast gales; but they seldom occasion any damage. Tunis lies on the west side of the bay, being separated from it by a large lagoon, having, where deepest, about 7 feet water. The port is at the Goletta, or channel, passing through the narrow belt of land separating the lagoon from the sea; the entrance to it is by a canal, in which there is at all times 15 feet water; and ships may use it on paying a fee of three dollars a day. It is not, however, much resorted to—all vessels of considerable burden loading and unloading from their moorings in the bay by means of lighters. The population of Tunis has been variously estimated; and may probably amount to 100,000, being the most populous of any African city after Cairo. The streets are narrow, unpaved, and filthy. The buildings, though of stone, are mean and poor; and the inhabitants present the picture of poverty and oppression. There is a fort at the Goletta of considerable strength.

Trade.—Notwithstanding the various drawbacks arising out of the nature of the government, and the ignorance and prejudices of the people, commerce and industry are in a more advanced state in Tunis than in any other part of Northern Africa, Egypt excepted. Though subject to droughts, the climate is, on the whole, excellent. The soil still preserves that exuberant fertility for which it was famous in antiquity.

Non quicquid Libycis terit
Fervens arca messibus.—(SENEC. in *Thyest.*)

It seldom receives any other manure than that of sometimes burning the weeds and stubble; and yet, in despite of its slovenly culture, the crops are luxuriant; and there is generally a considerable excess of wheat and barley for exportation. Corn is principally shipped at the Biserta, about 50 miles west of Tunis. Olive-oil is one of the principal articles of export. It is of various qualities; some good, and some very indifferent. Susa is said to be the best place for its shipment. Soap of an excellent quality is largely manufactured in the regency. It may be had either soft or in wedges. The soft is made of barilla and pure oil, and is much esteemed. The hard soap is made from the lees of oil, and is reckoned very strong. The principal soap-works are at Susa. Little, however, is prepared on a speculative anticipation of a demand for exportation; but any quantity may be had by contracting for it a few

months before the period when it is wanted. A sort of woolen skull-caps are largely exported. They are in extensive demand all over the Levant, and are nowhere made in such perfection as here. Ivory and gold dust, hides, wax, morocco leather, sponge, barilla, coral, dates, ostrich feathers, etc., are among the articles of export. The imports from Europe consist of woollens, coarse German and Irish linens, cotton stuffs, hardware, sugar, coffee, spices, tin plates, lead, alum, dye-stuffs, wine, silk, Spanish wool, etc. There is very little direct trade between Tunis and England; but a good deal is indirectly carried on, through the intervention of Malta and Gibraltar. Marseilles has probably the largest share of the trade with the regency. In 1880 there entered the different ports of Tunis 194 ships, of the burden of 20,747 tons, exclusive of those engaged in the trade with the other African states and Turkey. Exclusive of the trade by sea, a considerable trade is carried on between Tunis and the interior of Africa, by means of caravans. These import slaves, gold dust, ivory, feathers, drugs, etc. They carry back cotton stuffs, linens, hardware, spices, cochineal, etc. Naval and military stores imported into Tunis pay no duty. Other articles pay a duty of 3 per cent. *ad valorem* on a rated tariff. Obstructions arising out of monopolies, etc., are occasionally thrown in the way of exportation; and in general it is necessary, before proceeding to ship, to obtain a *tiskery*, or license to that effect, from the bey. That, however, may be, for the most part, procured without much difficulty.

Tunnels. The earliest tunnel for the purpose of internal navigation was executed by M. Riguet, in the reign of Louis XIV., at Beziers, in France. The first in England was by Mr. Brindley, in the Duke of Bridgewater's navigation, near Manchester, about 1760. Era of the Gravesend Tunnel, 1800—the report upon it, 1801. The Thames Tunnel projected by Mr. Brunel in 1823. This last wonderful undertaking was completed and opened for foot passengers March 25, 1843.—HAYDN. See *Thames Tunnel*. The principal railroad tunnels in the United States are: 1. On the Dayton Railroad, at Cincinnati, 10,080 feet in length. 2. Kingwood Tunnel, on the Baltimore and Ohio Railroad, 5000 feet. 3. Blue Ridge Tunnel, on the Virginia Central Railroad, about 5000 feet. 4. The Hoosac Tunnel, through a granite formation, western portion of Massachusetts (now in progress). 5. On the Kentucky Central Railroad, between Cincinnati and Lexington, about 3500 feet. 6. The Bergen Tunnel, on the New York and Erie Railroad, near Jersey City, about 5000 feet (now in progress).

Thames Tunnel.—Projected by Mr. Brunel, to form a communication between the two sides of the river, at Rotherhithe and Wapping, the most extraordinary construction of ancient or modern times. The shaft was begun in 1825. At a distance of 544 feet from the shaft the first irruption took place, May 18, 1827. The second irruption, by which six workmen perished, January 12, 1828. The length of the tunnel is 1300 feet; its width is 35 feet; height 20 feet; clear width of each archway, including foot-path, about 14 feet; thickness of earth beneath the crown of the tunnel and the bed of the river, about 15 feet. The tunnel was opened throughout for foot passengers March 25, 1843.

Turban, the head-dress of many of the Eastern nations, consisting of two parts, a cap and a sash, the latter artfully wreathed about the head. The sash of the Turk's turban is white linen; that of the Persians, red woolen. These are the distinguishing marks of their different religions. Lophi, King of Persia, being of the sect of Ali, was the first who assumed the red color, to distinguish himself from the Turks, who are of the sect of Omar.—HAYDN.

Turbith, or **Turpeth**, the cortical part of the root of a species of *Convolvulus*, brought from different parts of the East Indies. It is a longish root about the thickness of the finger, resinous, heavy, of a brownish hue

without and whitish within. It is imported cloven in the middle, lengthwise, and the heart or woody matter taken out. The best is ponderous, not wrinkled, easy to break, and discovers to the eye a large quantity of resinous matter. At first it makes an impression of sweetness on the taste; but, when chewed for some time, betrays a nauseous acrimony. It is used in medicine, but only to a small extent.—*Lewis's Mat. Medica*.

Turbith (mineral), the name given by chemists to the sub-sulphate of mercury.

Turbot (*Pleuronectes maximus*), a well-known and highly esteemed species of fish. Considerable quantities of turbot are now taken on various parts of the coasts of Great Britain, from the Orkneys to the Land's End, yet a preference is given in the London markets to those caught by the Dutch. The latter are said to have sometimes drawn as much as £80,000 in a single year for turbots sold in London.

Turkey. The countries included under the above general designation of Turkey, the Levant, etc., are Turkey (European and Asiatic), the pachalic or vice-royalty of Egypt, the kingdom of Greece, and the republic of the Ionian Islands—a group in the Mediterranean, off the west coast of Greece and Epirus, consisting of seven principal and several smaller islands.

The Ottoman empire includes Turkey in Europe, Asia Minor, Syria, Egypt, and the other tributary states in Africa and Asia. Prior to the Greek revolution, Turkey in Europe possessed an extensive maritime frontier (nearly two-thirds of her boundary), having many excellent sea-ports. The dismemberment of Greece, and other subsequent political changes, and the cession of Bessarabia and a part of Moldavia to Russia, have considerably reduced the limits of the dominions of Turkey in Europe. In Africa her power is almost annihilated, and even in Asia her authority is considerably weakened. Algeria has been wrested from her by France; Egypt merely acknowledges her sovereignty by the payment of an annual tribute; and the Arabians scarcely recognize the sultan as the head of their religion. The limits and area of the Turkish empire are not exactly defined, and, consequently, very different estimates have been formed of the extent and population both of European and Asiatic Turkey. The most recent authority estimates the area of Turkey in Europe at 210,000 square miles, and its population at about 15,000,000; and that of Turkey in Asia at 437,000 square miles, with a population of about 16,000,000. Turkey in Europe possesses a soil remarkably fertile, and a climate highly favorable to the production of the vine, olive, maize, wheat, and rice, vegetables of every description, fruits, tobacco, hemp, flax, the mulberry, various trees from which the most valuable gums are extracted; and in the southern part the sugar-cane and the cotton-tree. To these add the rich pasturages for horses, cattle, and sheep, every variety of game and fish, with a great abundance of mineral riches, together with the geographical position and excellent harbors of European Turkey, and a general idea may be formed of her great natural resources. The principal species of grain cultivated in European Turkey is Indian corn. Rice is cultivated along the banks of the Maritza and other marshy tracts in the southern provinces, but not in sufficient quantities for consumption. The deficiency is supplied by Egypt and Asia Minor.

Turkey in Asia possesses almost every natural element of industrial and commercial greatness; but agriculture is wholly neglected, and productive industry is altogether unknown.

About nine-tenths of the extensive surface of Egypt is sterile and unproductive. The remaining one-tenth, being irrigated by the overflowings of the Nile, yields the richest and most luxuriant crops, which, with the various commodities that pass through Egypt from Arabia, India, and Nubia, form the elements of a large

export trade. The crops of Egypt are wheat, Indian corn, maize, rice, flax, hemp, clover, cotton, indigo, sugar-cane, tobacco, oranges, and the most delicious fruits.

The sea-ports of Turkey in Europe are as follows: Constantinople, one of the safest ports in the world, and capable of affording shelter to 1200 of the largest class ships; Salonica, at the bottom of the gulf of that name, an excellent roadstead, and much frequented; and Enos, the port of Adrianople, on the Maritza. Gallipoli and Rodosto, on the Sea of Marmora; Varna, on the Black Sea; and Ibrahimlow, Taultcha, Galatz, and Jassaktschi, on the Danube, are ports of considerable commercial activity.

On the island of Candia there are two ports, Candia and Canea, but their harbors are neither commodious nor safe. Besides these, there are several other ports, which afford excellent shelter, and in the possession of a more industrious and commercial people than the Turks would attract considerable trade.

The sea-ports of Turkey in Asia are Ereklî; Scutari, opposite Constantinople; some indifferent ports on the Sea of Marmora; and Smyrna, the principal port of Asia Minor, and the most important in foreign commerce.

In Egypt the sea-ports are Alexandria, Rosetta, Damietta, and Cairo, at the mouths of the Nile; and Suez and Kosseir, on the Red Sea.

The principal exports of Turkey are wool, goats' hair, cattle, horses, hides, hare-skins, wheat, raw cotton and silk, tobacco, raisins, figs, almonds, mastic and other gums, gall-nuts, vallonea, leeches, honey, wax, saffron, madder, anise seed, linseed, turpentine, safflower, orpiment, meerschaum pipes, whetstones, carpets, silk and cotton fabrics, leather, copper, and metallic wares, with Arabian, Persian, Indian, and Chinese goods.

Next to Constantinople, Adrianople and Salonica are the chief centres of trade; the former, being a principal dépôt for goods brought to Constantinople from England, France, and Italy, supplies all the fairs throughout Roumelia and Bulgaria.

Next to Smyrna, Aleppo is the chief seat of commercial movements in Asia. Caravans bring to this mart pearls, shawls, Indian and Chinese goods, from Bussorah and Bagdad; camels from Arabia; cotton stuffs and thread, morocco leather, goats' hair, and galls, from the pachalics of Mosul, Diarbekir, Orfa, Aintab, etc.; furs, goats' hair, wax, gum-ammoniac, etc., from Asia Minor; silk, Mocha coffee, soap, scented woods, ambergris, drugs, and pearls, from Syria and Arabia; rice, coffee, and Egyptian produce, from Latakia; silk manufactures from Brusa and Damascus; European and United States cotton stuffs, woollens, printed muslins, hardware, watches, wrought amber, and fur, from Smyrna and Constantinople.

The treaty of Adrianople opened the Black Sea to the commerce of the world, and the passage of the Bosphorus and Hellespont is free to the flags of all nations. The importation of all articles of foreign commerce is admitted at extremely moderate duties. These are only 5 per cent., viz.: 3 per cent. on goods when landed, and 2 per cent. on their being admitted to consumption. The duties on exports of native production are 12 per cent., of which 9 per cent. is paid when the goods arrive at the port whence they are to be exported, and 3 per cent. on their being shipped. This is a very liberal tariff; though a reduction of the export duty, even should the import duty of 5 per cent. be raised to 10 or 12, would result most favorably to the commerce of Turkey with foreign countries.

Constantinople.—The harbor of Constantinople is deep, well sheltered, and sufficiently capacious to afford safe anchorage for 1200 of the largest-sized ships. Scutari, on the opposite shore of the Bosphorus, one mile distant from Constantinople, is the place of rendezvous for caravans from Persia, Armenia, and other

places in Asia that trade with European Turkey. It is also the seat of extensive silk, woolen, and cotton manufactures.

The only European countries with which the United States could successfully compete in the trade of this port are England and Austria. The vessels of the former import iron, colonial produce, cotton and woolen tissues; and from Trieste, Austria sends also colonial produce, such as cotton, sugar, molasses, rum, rice, tobacco, etc., and the various manufactures which are always found in abundance in the extensive warehouses of that port. The number of vessels which entered Constantinople in 1852 were: sailing vessels, 9220; steam vessels, 599; total, 9819. Of these there were from Austria 459 sailing vessels; from Great Britain, 584; from France, 244; from Brazil, 16; and from the United States, 5. The share assigned to these countries respectively, in carrying the trade of Constantinople during 1852, is thus given: Under the British flag there entered during the year 1687 sailing vessels, and 66 steam vessels; under the French flag, 236 sailing, and 55 steam vessels; and under the Austrian flag, 1280 sailing, and 213 steam vessels. Under the flag of the United States there arrived five sailing vessels, and one propelled by steam. It is estimated that Constantinople requires annually, for consumption alone, about 6,500,000 lbs. of coffee, 1,200,000 lbs. of sugar, 300,000 lbs. of pepper and spice, 2000 puncheons of rum, and large quantities of cheap cotton goods. These are supplied chiefly from the markets of Western Europe, Alexandria, and North and South America.

Salonica.—Next to Constantinople, Salonica (situated at the bottom of the Gulf of Salonica), the capital of Macedonia, is the most important port of Turkey in Europe. In 1850 its maritime commerce reached upward of \$3,500,000, viz.: about \$2,000,000 for imports, and \$1,500,000 for exports. The foreign trade of this port is chiefly engrossed by the British and French flags. The imports consist chiefly of cheap cotton and woolen cloths, and various other manufactures. Its exports are wheat, barley, maize, timber, wool, sponge, raw silk, wine, sesamum seed, tobacco, and staves. Colonial produce and manufactured goods are supplied to this port—the former from second and third hands—by England and Austria. There is nothing to prevent the United States from participating in the trade in this species of merchandise. Neither Austria nor England could compete with this country in supplying the vast quantities of colonial produce, and the cheap white and printed cottons, which are required for consumption in this market. In addition to the supplies needed to meet the daily wants of its 100,000 inhabitants, Salonica furnishes large quantities of colonial and manufactured goods for the yearly fairs of Parlepi, Lucca, and Seres, where the sales are always made for cash. The high price of French cotton and woolen cloths will always preclude the merchants of France from successful competition in this branch of trade; and the heavy expenses attending the circuitous trade through Marseilles, Smyrna, Constantinople, Trieste, and Venice, would necessarily favor direct exportations from the United States. The prices at Salonica are always from 10 to 12 per cent. higher than at Constantinople or Smyrna.

The navigation returns for the year 1853-'4 exhibit the following results:

	Inward.	Outward.
In 1853.....	118,498 tons.	111,767 tons.
In 1854.....	79,345 "	81,192 "

This decrease has been principally under Turkish and Greek flags, though there has also been a decrease under British, French, and Sardinian flags, but not in the same proportion.

The gross returns of trade at the port of Salonica, for the year ending December 31, 1854, show a considerable increase in the import trade, viz.: Value of

imports in 1854, \$3,770,295; and in 1853, \$2,857,765. But the returns exhibit a still more considerable increase in the value of the outward trade, viz.: Value of exports in 1854, \$5,492,980; and in 1853, \$3,476,050. This large increase, both in the inward and outward trade with the port of Salonica, may be regarded as an evidence of the improving state of the country.

Galatz, a town of Moldavia, Turkey, on the left bank of the Danube, in latitude 45° 25' N., longitude 28° E. Though at some distance inland, Galatz may be said to be the port of the Danube. Of the three principal mouths of the river, the Soulineh (or middle) mouth, in latitude 45° 10' 30" N., and longitude 29° 41' 20" E., is the only one accessible by vessels of large burden. The depth of water at its entrance varies from 10 to 14 feet; from the bar up to Galatz there is nowhere less than 18 feet. Lighters are stationed without the bar to partially unload large vessels. Vessels of 300 tons burden can lie at the quays.

COMMERCE OF MOLDAVIA IN 1855.

	Imports.	Exports.
Port of Galatz.....	1,377,683	126,451,025
By Austria.....	42,277,577	57,014,262
Total (piastres).....	43,655,315	163,465,288

Smyrna.—This port, the chief commercial emporium of Turkey in Asia, has an excellent harbor, and ships of large burden can load and discharge close to the quays. Its principal foreign trade is conducted with Great Britain, Austria, France, and the United States. Its exports consist of silk, raw cotton, carpets, copper, opium, hides, madder, wool, besides goats' hair and skins, vallonea, olive-oil, drugs, gums, sponge, figs, raisins, and nut-galls. Imports comprise coffee (upward of 6,000,000 lbs. annually); woolen, cotton, and silk fabrics; metals, raw and manufactured; sugar, indigo, spirits, cochineal, and spices. The following statement shows the quantities and values of wool imported into the United States from Turkey during the five years ending June 30, 1855, together with the aggregate quantities and values of the same from all countries during the same period:

Years.	From Turkey.		From all Countries.	
	Quantities.	Values.	Quantities.	Values.
1851.....	5,238,292	\$479,355	32,543,491	\$3,533,157
1852.....	3,355,320	281,656	18,341,28	1,930,711
1853.....	4,351,251	372,012	21,595,079	2,667,719
1854.....	4,360,326	460,285	20,200,110	2,322,185
1855.....	4,676,747	416,222	18,534,415	2,072,189
Aggregate.....	21,981,944	\$2,017,530	111,219,388	\$13,327,910
Annual aver.	4,396,389	403,506	22,243,878	2,045,582

From the Argentine republic the United States receives one-third of its raw wool. Next to this country ranks Turkey, in this regard; and the third place is due to Chili. In 1855, of the entire quantity imported, amounting to 18,534,415 lbs., valued at \$2,072,189, there came from Turkey 4,676,747 lbs., valued at \$416,222; of which Turkey in Asia supplied 4,261,250 lbs., valued at \$386,305. The principal imports into Smyrna, in vessels of the United States, are coffee, sugar, rum, coarse cottons, spices, and dye-stuffs; for which they carry home, in return, cargoes of wool, opium, copper, fruit, oil of roses, and wine. The navigation of Smyrna is steadily increasing. In 1840 there entered 969 vessels of all nations, measuring 107,596 tons; of which number there were 23 American vessels, measuring 4304 tons.—See SMYRNA.

The commerce of this port during 1851 amounted to nearly eleven millions of dollars. This trade was thus distributed:

Great Britain.....	31,396,563 francs.
Austria.....	13,856,808 "
France.....	7,954,177 "
United States.....	6,475,945 "
Russia.....	2,557,906 "
Holland.....	911,103 "
Sardinia.....	627,596 "
Tuscany.....	466,295 "
Belgium.....	184,763 "

Beyrout.—Beyrout is the sea-port of Damascus, and

the chief centre of the trade of Syria. Its imports consist of muslins, cottons, tin, hardware, cloths, and various kinds of manufactures. Its exports are silk, galls, madder, gums, wine, and oils. The imports at this port in 1851 amounted to about \$4,000,000, and its exports to \$8,000,000. During the same year there entered and cleared 2354 vessels, measuring an aggregate of 219,277 tons. The commercial movements of the port of Beyrout and its dependent trading towns, Tripoli, Caiffa, and Latakia, amounted in 1853 to a total of 45,689,142 francs, or an increase over 1852 of 4,500,000 francs. The following summary for these years is taken from French official authorities :

	Imports.	Exports.	Total.
In 1853.....	francs 23,848,740	21,840,402	45,689,142
In 1852.....	" 20,863,881	20,266,800	41,130,741

The tonnage employed in the trade of Beyrout the same years was : In 1853, 209,861 tons ; and in 1852, 241,978 tons. This decrease is owing to a falling off in the coasting trade, especially in cereals, occasioned by the short crops of 1853.

In the general import movement, England holds the first rank—tissues, cotton yarn, and cotton goods generally, being the chief imports from Great Britain into Syria. France occupies the second rank ; the imports from that country into Beyrout in 1853 amounting in value to 3,674,726 francs. Next to France comes Austria. The returns show a value of 6,714,242 francs assigned to imports under the Austrian flag ; but these figures include the value of all the merchandise imported in the Austrian steamers that ply between Constantinople and Smyrna. The actual imports from Austria into Beyrout amount to about one half of this sum. Trieste furnishes but little for the consumption of Syria. The imports into Syria from that entrepôt do not exceed 150,000 francs, and consist of colonial wares, and German tissues purchased in the warehouses of that city. Egypt supplies Syria, through the port of Beyrout, with grains, especially rice, to a value of about 2,467,950 francs. During the past few years mercantile houses of Boston, New York, and Philadelphia have established direct relations with Syria. The washed and unwashed wool of that country forms the basis of their operations. In 1854 the first cargo of refined sugar from Boston arrived at Beyrout. The success which has attended this enterprise will most probably lead to an important trade in this description of merchandise, in exchange for wool and other Syrian products. The chief obstacle to an immediate expansion of this trade appears to be the duty of 30 per cent. with which the raw wool is burdened in the United States, leaving but a small margin for profit on the importation of this leading product. How important this trade with Syria, as well as with Turkey generally, and other wool-producing countries might become, may be inferred from the following statement of facts. In 1855 there was imported into the United States, as already stated, 18,534,415 lbs. of wool. The annual production of wool in the United States, assuming that the quantity returned for 1850, as per United States census, affords a fair average—amounts to 52,516,959 lbs. This, added to the quantity imported, gives 71,051,374 lbs. The quantity annually exported reduces this figure, say, in round numbers, to 70,000,000 lbs. for consumption in the different and numerous manufactories in the United States. How much of this is consumed in the manufacture of carpets there is no means at hand of determining with any accuracy ; but it is stated in a publication of high authority—the *Scientific American*—that in the village of

Thompsonville, Connecticut, alone, there is used annually in the manufacture of Brussels, Axminster, and other costly qualities of carpeting, 10,000,000 lbs. of wool, or more than one half the whole quantity imported, and one-seventh part of the aggregate quantity imported and grown in the United States.

The value of the foregoing statement of facts will be better understood when it is added that the United States import annually—taking the importations of 1855 as an average—woolen manufactures of various descriptions to the value of \$27,000,000, of which England furnishes nearly two-thirds. The total number of woolen manufactories in the United States in 1850 was 1559 ; capital invested, \$28,118,650 ; lbs. of wool consumed, 70,862,829 ; value of raw material, \$25,755,991 ; hands employed, males, 22,678 ; females, 16,574 ; value of products, \$43,207,545—in which are included 82,206,652 yards of cloth, and 4,294,336 lbs. of yarn, besides blankets, hats, etc. Were the raw material supplied in sufficient quantities, the census of 1860 would probably add 100 per cent. to the preceding figures. The foreign trade of Beyrout is carried on principally by large class steamers, under the Austrian, French, and British flags, which visit this port regularly, and find always abundant freight, consisting of the products of Syria and the vast region which lies between Skaneroom and the rivers Euphrates and Tigris. The prosperity of Beyrout and the surrounding country is indicated by the fact, that while the population was only 8000 in the year 1844, it is now estimated at between 50,000 and 60,000. The steamers of the Austrian Lloyds Company, in March, 1856, are said to have numbered 59, with 10,000 horse-power, and a measurement of nearly 30,000 tons. The United States consul at that port, writing under date of October 5, 1855, says : " I learn, upon the best authority, that the people of this country consider the cloth manufactured in the United States superior in quality to that of England ; but since the pieces of American goods do not uniformly contain the same number of yards like the English pieces, they are slow to purchase, owing to the power of old ideas and habits. It would be of great service to the manufacturers if they understood this fact, and would regard it."

Candia.—The commerce of this island is conducted through the ports of Retino, Canea, and Candia. Its exports consist chiefly of olive-oil, barley, wheat, wine, raisins, cotton, flax-seed, almonds, Indian corn, and soap. The agricultural productions of Candia are estimated at a value of 18,500,000 francs per annum. Its manufactures amount in value to about 6,000,000 francs, of which soap appropriates 4,000,000, and coarse cloths for consumption 2,000,000 francs. There are on the island 47 soap factories, which yield annually about 13,000,000 lbs. of soap, and 3000 oil-presses in active operation. About 40,000 lbs. of silk are produced annually on this island, of a quality equal to that of Adrianople.

The imports and exports during a period of four consecutive years were :

	Imports.	Exports.
In 1848.....	\$1,050,195	\$812,666
In 1849.....	1,078,030	1,237,400
In 1850.....	1,154,215	2,007,845
In 1851.....	618,630	879,174

Total number of vessels arriving in the ports of Candia in 1853, 1178, measuring an aggregate of 50,747 tons. The imports during the same year reached \$1,028,212, and the exports \$1,972,713. The navigation and commerce of Candia for 1854 and 1855 are shown in the subjoined statement :

Ports.	Importations.			Exportations.		
	No. of Vessels.	Tons.	Value.	No. of Vessels.	Tons.	Value.
Canea.....	667	31,429	\$1,111,756 80	645	28,417	\$773,580 96
Retino.....	135	5,148	207,448 80	139	5,657	257,655 20
Candia.....	217	10,924	378,480 00	225	10,164	599,280 00
Total for 1855.....	1019	47,501	\$1,697,685 60	1009	44,438	\$1,730,516 16
Total for 1854.....	831	41,122	1,070,971 00	801	40,063	1,097,669 00

PRINCIPAL IMPORTS INTO CANDIA FOR 1835.

Articles.	Quantities.	Values.
Butter	1647	\$31,040
Dried codfish	4318	23,320
Hides and leather .....	...	65,640
Hardware .....	...	7,660
Furniture .....	...	11,200
Herrings and sardines	5870	27,088
Rice .....	...	10,040
Rum .....	...	3,316
Soda ash .....	...	48,192
Tobacco .....	...	10,500
Cotton yarn .....	...	22,000
Brown cottons .....	...	9,000
Sundry manufactures .....	...	441,939

PRINCIPAL EXPORTS FROM CANDIA.

Articles.	Quantities.	Values.
Olive-oil	1,269	\$242,261 00
Soap	68,845	475,525 84
Sheep skins	13,352	1,784 48
Raw silk	8,525	22,320 00
Cheese	362	3,100 00
Oranges and lemons	5,000,000	1,800 00
Chestnuts	2,000	4,000 00

Candia abounds in produce adapted to the American market; but the direct trade between the United States and that island is as yet unimportant. So long, indeed, as the present duties of 30 and 40 per cent. are levied on their staple exports of coarse wool, olive-oil, soap, etc., it can scarcely be expected that this trade will increase to any considerable extent. It is stated, in a consular return from Candia, that a reduction of these duties, as well as of the duty on raw silk, would tend to establish a highly respectable and direct American intercourse with the ports of Candia, sufficient, probably, to compete with that of Great Britain and France. In consequence of the almost nominal duty upon the leading productions of the island in Great Britain, the commercial intercourse with England is fast increasing.

General Remarks on Turkey.—The treaty between the United States and the Ottoman Porte dates as far back as May 7, 1830. Its preamble, however, declares that it is "not limited as to duration," and it consequently regulates the intercourse between the countries at the present time. Its principal commercial features are—that the merchants of either country, in the provinces, ports, etc., of the other, shall pay the same duties and other imposts that are paid by the merchants of the most friendly or favored nation; and that merchant vessels of the United States shall have liberty to pass the canal of the imperial residence, and go and come in the Black Sea, in like manner as vessels of the most favored nation. The tariff of duties is based on an *ad valorem* system, viz.: Imports 5 per cent., and exports 12 per cent., including, as to both, internal duties. The value of merchandise may be revised every four or five years by commissioners on the part of the different governments, conjointly with agents appointed for that purpose by the Turkish government. The United States have hitherto appointed no commissioners for this adjustment of valuation; and it has been represented to the Department that the existing valuation on British merchandise, especially cotton goods and rum, subjects to heavy discriminations similar articles of the United States, owing chiefly to the difference in weight and prices. Since the return of peace, many improvements, tending to facilitate and improve the commercial intercourse of Turkey with foreign nations, have been completed or projected. Among others, the light-house system has undergone extensive improvements, and uniform light-dues established for the Bosphorus and Dardanelles, viz.: 50 piastres (between \$2 and \$2 50) for every 100 tons each strait, or 100 piastres per 100 tons for both, entering, and the same returning. At Constantinople there are, properly speaking, no port charges; but a small fee is required on vessels passing through the Golden Gate to discharge their cargoes.

The idea of connecting the Mediterranean with the

Red Sea by means of a ship canal across the isthmus of Suez has long been entertained. The level of the latter sea is known to be higher than that of the former by thirty-two feet, and the isthmus was at one time submerged. The levelings, with a view to a canal, which were prosecuted with care during the occupation of the French army, have been followed up by the Viceroy of Egypt, and a plan of the work has recently been settled by a European commission of engineers assembled in Paris to discuss the details. This commission has rejected all plans involving indirect routes across Egypt, and has adopted the principle of a direct cutting from Suez to the Mediterranean. The entrance into the Mediterranean, to be called Port Said, will have an inner basin, and the channel will be 1312 feet in breadth. The entrance at the Red Sea, the port of Suez, will also have an inner basin, and the channel will have a breadth of 984 feet. Capital sufficient for the accomplishment of this work is said to have been subscribed, and the work actually commenced. Another canal, which has long been contemplated, but opposed by Russia, as menacing the prosperity of Odessa and her trade in the Black Sea and the Levant, is now considered in a fair way of accomplishment. This canal will be about fifty miles in length, connecting the Danube with the Black Sea, and shortening the distance from Constantinople to Vienna some 500 miles, besides obviating the difficult navigation and the pestilential miasma near the mouths of that river. A charter has been granted, and a company of capitalists organized.—*Com. Rel. U. S.*

Consular Officers in Turkey.—In Mohammedan and pagan countries each Christian state asserts for its subjects more or less of exemption from the authority of the local sovereign. Thus, at the present time, throughout Christendom, the general rule prevails that foreigners are subject in all criminal and in most civil matters to the local jurisdiction; but in all Mohammedan and pagan states a different rule prevails.

The treaty between the United States and Turkey provides that "if litigations and disputes should arise between the subjects of the Sublime Porte and citizens of the United States, the parties shall not be heard, nor shall judgment be pronounced, unless the American dragoman be present. Causes in which the sum may exceed five hundred piastres shall be submitted to the Sublime Porte, to be decided according to the laws of equity and justice. Citizens of the United States of America, quietly pursuing their commerce, and not being charged or convicted of any crime or offense, shall not be molested; and even when they may have committed some offense, they shall not be arrested and put in prison by the local authorities, but they shall be tried by their minister or consul, and punished according to their offense, following in this respect the usage observed toward other Franks." Under the existing treaty between the United States and Turkey, our commerce is placed on the footing of the most favored nations; thus securing to our merchant vessels the privilege of trading to all the points of Turkey in Europe, Asia, and Africa, on the same conditions as those granted to the most favored nations. Thus our vessels may now trade to the ports of Egypt and Asia Minor, to the Turkish islands of the Archipelago, and to the Ottoman ports of Europe, and on the Asiatic shore of the Black Sea. This is at once an immense field for the enterprise of our merchants and seamen. Many facilities are thus offered for the extension of our commerce with the nations of the East; and consular officers may render important services to their countrymen by collecting all the information in their power in regard to the productions and commerce of these countries, and transmitting it to the State Department, by which it will be published from time to time for the general advantage of American citizens.—*See articles* CONSTANTINOPLE, BEYROUT, GALATZ, and SMYRNA.

COMMERCE OF THE UNITED STATES WITH TURKEY, THE LEVANT, ETC., FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	\$30,883	\$406,997	\$437,880	\$395,680	.....	\$91,378	1,593	....
1822.....	6,124	405,197	411,321	364,677	\$157,006	13,870	1,418	....
1823.....	4,877	559,788	564,660	703,761	68,000	79,381	1,876	....
1824.....	25,171	884,267	909,438	471,238	.....	43,530	2,153	....
1825.....	34,373	364,591	398,964	840,799	.....	22,600	1,817	....
1826.....	46,897	271,438	318,335	421,952	.....	4,901	1,323	....
1827.....	181,734	470,325	652,059	733,128	50,000	11,587	3,109	....
1828.....	78,374	124,867	203,241	498,533	.....	11,405	603	....
1829.....	27,600	47,384	74,984	293,237	.....	488	687	....
1830.....	75,801	337,539	413,340	417,392	.....	45,018	2,887	....
Total...	\$461,834	\$3,372,073	\$3,833,912	\$5,190,377	\$275,006	\$329,153	17,266	....
Sept. 30, 1831.....	\$38,503	\$298,804	\$336,807	\$521,598	\$29,500	\$6,368	2,935	....
1832.....	64,722	681,886	746,608	623,629	2,100	4,319	4,805	....
1833.....	167,208	518,471	685,679	786,044	26,451	3,674	4,514	203
1834.....	62,458	321,221	383,679	569,511	26,840	321	2,246	....
1835.....	63,202	216,822	280,024	387,553	2,752	7,360	3,010	....
1836.....	99,085	534,949	634,034	975,371	23,000	.....	3,531	....
1837.....	36,659	74,653	111,312	693,161	.....	2,700	484	1759
1838.....	142,448	115,461	257,909	296,533	300	4,282	1,293	....
1839.....	83,320	266,054	349,374	629,190	.....	2,530	2,232	....
1840.....	119,745	156,873	276,618	563,476	1,928	.....	2,187	....
Total...	\$877,350	\$3,184,694	\$4,062,044	\$6,346,066	\$112,871	\$31,554	27,237	1962
Sept. 30, 1841.....	\$200,934	\$179,612	\$380,546	\$614,872	\$900	.....	2,819	....
1842.....	125,521	76,515	202,036	370,248	.....	.....	1,815	....
9 mos., 1843*.....	108,465	98,014	176,479	192,854	.....	\$2,800	1,533	....
June 30, 1844.....	186,139	97,245	283,384	385,866	.....	23	2,773	....
1845.....	115,553	49,546	165,099	731,571	.....	.....	1,397	....
1846.....	126,193	73,910	200,103	760,998	.....	.....	3,206	....
1847.....	61,570	65,672	127,242	577,710	.....	2,000	1,118	....
1848.....	114,330	110,321	225,151	406,028	35,275	.....	1,066	230
1849.....	193,376	85,120	278,996	374,064	.....	.....	1,912	300
1850.....	204,397	53,344	257,741	801,023	.....	.....	2,680	....
Total...	\$1,437,473	\$859,299	\$2,296,777	\$5,255,130	\$36,175	\$4,823	21,730	530
June 30, 1851.....	\$162,204	\$65,529	\$227,733	\$901,236	.....	.....	4,768	....
1852.....	205,825	50,371	316,196	556,100	.....	.....	3,909	322
1853.....	207,358	79,981	287,339	727,516	.....	.....	4,365	....
1854.....	219,496	105,702	325,198	803,114	.....	.....	3,948	569
1855.....	794,259	163,780	958,039	790,889	.....	.....	8,452	902
1856.....	1,404,768	106,657	1,511,425	741,871	.....	.....	13,409	1845
1857.....	527,431	78,165	605,646	731,850	.....	.....	7,651	....

* Nine months to June 30, and the fiscal year from this time begins July 1.

Turkey Red, a fine and durable red dyed upon calico and woolen cloth: the coloring matter used in its production is madder, but the process for producing it in perfection is tedious and complicated.—See BANCROFT on *Permanent Colors*.

Turmeric, the root of the *Curcuma longa*. It is externally grayish, and internally of a deep lively yellow or saffron color, very hard, and not unlike, either in figure or size, to ginger. That should be preferred which is large, new, resinous, difficult to break, and heavy. It is imported from Bengal, Java, China, etc. It has a somewhat aromatic and not very agreeable smell, and a bitterish, slightly acrid, but rather warm taste. It used to be in considerable estimation as a medicine; and is extensively used in India for culinary purposes, entering into the composition of curry powder and other articles: in Europe it is only used as a dye. It yields a beautiful bright yellow color, which, however, is extremely fugitive, and no means have hitherto been discovered of fixing it. It is sometimes employed to heighten the yellows made with weld, and to give an orange tint to scarlet; but the shade imparted by the turmeric soon disappears.—LEWIS'S *Mat. Med.*; BANCROFT on *Colors*.

Turpentine (Ger. *Turpentin*; Fr. *Térébenthine*; It. *Tremantina*; Russ. *Skipidar*; Pol. *Terpentina*). There are several species of turpentine, but all of them possess the same general and chemical properties.

1. *Common Turpentine* is a resinous juice which exudes from the Scotch fir or wild pine (*Pinus sylvestris*). The trees which are most exposed to the sun, and have the thickest barks, yield it in the greatest abundance. They begin to produce it when about forty years old. The bark of the tree is wounded and the turpentine flows out in drops, which fall into a hole, or sort of cup, previously dug at the foot of the tree, holding about 1½ pint. It is purified by being exposed to liquefy in

the sun's rays, in barrels perforated in the bottom, through which it filters. In the Southern States the collection of turpentine is chiefly confided to negroes, each of whom has the charge of from 3000 to 4000 trees. The process lasts all the year, although the incisions are not made in the trees till the middle of March, and the flow of the turpentine generally ceases about the end of October. The boxes are emptied five or six times during the year, and it is estimated that 250 boxes will produce a barrel weighing 320 lbs. Turpentine has a strong, somewhat fragrant odor, and a bitter, disagreeable taste: its consistence is greater than that of honey; its color dirty yellow; and it is more opaque than the other sorts.

2. *Venice Turpentine* is the produce of the larch (*Pinus larix*). It is obtained by boring a hole into the heart of the tree about two feet from the ground, and fitting into it a small tube through which the turpentine flows into vessels prepared for its reception. It is purified by straining through cloths or hair sieves. It is more fluid, having the consistence of new honey, a yellowish color, and is less unpleasant to the smell and taste than the common turpentine. Genuine Venetian turpentine is principally obtained from the forests of Baye, in Provence; but much of that to be found in the shops comes from America, and is, perhaps, obtained from a different species of fir.

3. *Canadian Balsam*, or *Turpentine*, is obtained from incisions in the bark of the *Pinus balsamea*, a native of the coldest regions of North America. It is imported in casks, each containing about 1 cwt. It has a strong, not disagreeable odor, and a bitterish taste; is transparent, whitish, and has the consistence of copalva balsam.

4. *Chian*, or *Cyprus Turpentine*, is obtained from the *Pistacia terebinthus*, a native of the north of Africa and the south of Europe, and cultivated in Chios and

Cyprus. It flows out of incisions made in the bark of the tree in the month of July, and is subsequently strained and purified. It has a fragrant odor, a moderately warm taste, devoid of acrimony or bitterness, and a white or very pale yellow color; it is about as consistent as thick honey, is clear, transparent, and tenacious. From its comparative high price, Chian turpentine is seldom procured genuine, being for the most part adulterated either with Venetian or common turpentine. The different species of turpentine may be dissolved in rectified spirit, or pure alcohol; and by distillation they all give similar oils, which, from their being distilled (and not from any resemblance to alcohol), are termed spirit of turpentine. If the distillation be performed with water, the produce is an essential oil, the common spirit of turpentine; and if the distillation be carried on in a *retort* without water, the product is more volatile and pungent—a concentrated oil, as it were—and is called the ethereal spirit of turpentine. The residuum that is left in both cases is a brownish, resinous mass, brittle, capable of being melted, highly inflammable, insoluble in water, but mixing freely with oils: it is the common rosin of commerce.—*Library of Entertaining Knowledge, Vegetable Substances; Thomson's Dispensatory.*

EXPORTS OF SPIRITS OF TURPENTINE FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1887.

Whither exported.	Gallons.	Value.
Prussia	7,000	\$3,545
Sweden and Norway	1,405	638
Danish West Indies	1,013	535
Hamburg	197,853	92,728
Bremen	47,502	23,268
Holland	159,818	64,488
Dutch Guiana	30	22
Dutch East Indies	1,381	862
Belgium	52,039	23,456
England	749,874	367,794
Scotland	33,308	15,219
Gibraltar	2,000	870
Malta	1,000	625
Canada	17,043	11,588
Other British North A. Possessions.	3,513	1,955
British West Indies	9,009	2,996
British Honduras	282	215
British Guiana	7,708	3,869
British Possessions in Africa	3,945	2,782
British Australia	6,050	3,535
British East Indies	25,589	15,821
France on the Atlantic	6,000	3,000
France on the Mediterranean	13,076	5,119
French North American Possessions	84	49
French West Indies	967	439
Spain on the Atlantic	1,655	871
Spain on the Mediterranean	1,240	564
Philippine Islands	1,592	1,000
Cuba	26,359	13,590
Porto Rico	1,689	804
Portugal	4,520	2,333
Madeira	200	76
Sardinia	5,251	2,597
Turkey in Asia	2,720	1,395
Ports in Africa	1,160	716
Hayti	1,208	795
Mexico	1,421	660
Central Republic	125	60
New Granada	557	307
Venezuela	1,590	777
Brazil	32,801	18,096
Uruguay, or Cisplatine Republic	10,036	5,770
Argentine Republic	19,721	10,318
Chili	53,084	27,887
Peru	2,300	1,485
Ecuador	520	330
Sandwich Islands	2,765	1,386
Other islands in the Pacific	75	60
China	1,920	1,519
Whale-fisheries	3	2
Total	1,522,177	\$741,846

The manufacture of spirits of turpentine in the State of Alabama was commenced within the last eight years, and, although upon a very limited scale at first, the annual product has now reached upward of 1,600,000 gallons, and that of rosin to above 130,000 barrels. In North Carolina, where the business has been carried on for a much longer time, it is estimated that the annual product of spirits amounts to 800,000 barrels,

and this would give a residue of about 3,200,000 barrels rosin. Upon this estimate the value of the spirits of turpentine annually produced in the State of North Carolina is upward of \$14,000,000—nearly equal to the value of the annual agricultural product of the State of Maryland. Add to this the value of rosin when converted into oil, which at the present market value would be \$19,200,000, and we find a resource in this natural product of over \$33,000,000 in the State of North Carolina alone; and this estimate does not include the tar, pitch, and naphtha, which are necessary and merchantable articles, and would largely increase the amount.

EXPORTS OF ROSIN AND TURPENTINE FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1887.

Whither exported.	Barrels.	Value.
Russia on the Baltic and North Seas	804	\$1,196
Prussia	11,404	21,690
Sweden and Norway	103	175
Denmark	2,995	9,581
Danish West Indies	45	97
Hamburg	47,695	102,803
Bremen	28,239	51,856
Holland	52,457	102,759
Dutch West Indies	10	59
Dutch Guiana	20	43
Dutch East Indies	175	343
Belgium	70,154	125,957
England	271,434	792,044
Scotland	32,427	77,828
Ireland	4,528	7,682
Gibraltar	3,445	5,994
Malta	3,059	6,246
Canada	10,620	45,183
Other British North A. Possessions.	2,493	8,739
British West Indies	432	693
British Guiana	5	8
British Possessions in Africa	420	802
British Australia	6,355	11,695
British East Indies	6,361	12,570
France on the Atlantic	39,477	67,330
France on the Mediterranean	4,723	7,721
French North American Possessions	10	25
French West Indies	155	200
French Guiana	11	22
Spain on the Atlantic	1,060	2,243
Spain on the Mediterranean	1,298	2,336
Canary Islands	75	135
Cuba	1,107	3,603
Porto Rico	12	21
Portugal	3,107	8,369
Madeira	215	387
Sardinia	3,243	5,738
Two Sicilies	1,358	2,443
Austria	3,940	7,554
Austrian Possessions in Italy	2,245	4,424
Turkey in Europe	1,300	2,512
Turkey in Asia	1,525	3,005
Ports in Africa	675	1,381
Hayti	35	71
Mexico	184	492
New Granada	5	11
Venezuela	1,027	3,515
Brazil	13,946	25,314
Uruguay, or Cisplatine Republic	1,180	1,959
Argentine Republic	970	1,840
Chili	2,109	4,516
Peru	650	1,328
Sandwich Islands	4	5
Other islands in the Pacific	6	30
China	25	56
Total, 1856-'57	641,517	\$1,544,572

Oil of Turpentine is the essential oil drawn from turpentine by distillation. There are two sorts of this oil: the best, red; and the second, white. It is very extensively used by house painters, and in the manufacture of varnish, etc. The distillers have been charged with using it in the preparation of gin. Oil of turpentine is very often adulterated.

Turpeth Mineral (from its yellow color, which resembles the powdered root of the *Convolvulus turpethum*), the yellow sub-persulphate of mercury.

Turquoise (Ger. *Türkiss*; Fr. *Turquoise*; It. *Turchina*; Sp. *Turquesa*), a precious stone in considerable estimation. Its color, which is its principal recommendation, is a beautiful celestial blue, which migrates into pale blue, and is sometimes tinged with green. Specific gravity, 8.127. It is destitute of lustre, opaque, and does not admit of a high polish. It is

much worn in necklaces, and every part of ornamental jewelry, from the size of a pin's head to that of an almond; it contrasts beautifully with brilliants or pearls set in fine gold.—*MAWE on Diamonds*. Real turquoises are exclusively furnished by Persia. The mines whence they are obtained are situated near Nishapore. They are the property of the crown, and are farmed to the highest bidder. They bring a rent of from £2000 to £2700 a year.—*FRASER'S Travels on the Shores of the Caspian*.

Turtle. This word is used to signify a species of dove (*Columba turtur*), and also a genus of Chelonian reptiles (*Chelone*, Brongn).

Tuscany. The Grand Duchy of Tuscany comprises an area of 8586 square miles, and contained in 1854 a population of 1,815,686 inhabitants. Its chief port is Leghorn, situated on the Mediterranean, and possessing extensive artificial facilities for commercial enterprise; indeed, the harbor is entirely artificial. Strictly speaking, Tuscany is an agricultural country—the valley of the Arno being generally considered the most fertile in Europe. The system of culture is, however, imperfect; and the consequence is, that the grain raised is insufficient for home consumption. Tuscany has long been celebrated for its mineral productions. Iron abounds in the island of Elba; copper, argenteriferous lead, sulphur, mercury, alum, coal, marble, and alabaster are found in different parts of the Grand Duchy; and borax is supplied in great abundance from the borax lagoons of Volterra.

The manufactures of Tuscany are in a highly flourishing condition. These consist of straw-plating and the manufacture of straw hats, and manufactures of silk; the principal seat of this latter branch of industry being at Florence, in which city alone there are upward of 4000 looms. There are also manufactures of wool, especially of woollen cloths and carpets; manufactures of linen, of paper, alabaster, marble, porcelain, hardwares, and of metal. The internal taxes levied on every branch of productive industry throughout the Tuscan territories have long fettered the commercial activity of the country. Furniture, machinery, books, live stock—in fact, every article in daily use, has to bear enormous duties. Every walled city has its own system of taxation, so that the manufactures of one town are burdened with oppressive duties (*octroi*) before they can be admitted for sale into another. Such a system necessarily results injuriously to the commercial enterprise of Tuscany; and its effects are perceptible in the stagnant condition of the foreign commerce of that country. The chief exports

of Tuscany are olive-oil, hides, straw hats, borax, rags, wool, hemp, potash, coral, marble, tallow, cork, building-timber, and paper; and the chief imports, colonial produce, salt fish, and British, German, Swiss, and French manufactures. The usual exports of the United States to Tuscany are naval stores: value thereof in 1854, \$3073, and in 1855, \$2930; spirits from molasses: value in 1854, \$6958, and in 1855, \$42,238; manufactures not enumerated, to the amount of between \$2000 and \$3000. In 1855 the exports of cotton from the United States to Tuscany amounted in value to \$4804, and of tobacco to \$171,621. The imports of the United States from Tuscany are chiefly silk, piece goods, olive-oil, almonds, figs, soap, small quantities of opium, and rags; this latter article averaging annually some six million pounds.

There is no commercial treaty between the United States and Tuscany; but American vessels enjoy perfect equality, as respects navigation and import duties, with the Tuscan flag—similar privileges having been granted to the Tuscan flag in the ports of the United States, per President's proclamation, Sept. 1, 1836.

The general foreign trade of Leghorn in 1851 was, in imports, \$14,442,900; and in exports, \$10,308,120. This is a falling off from the general trade of the preceding year of \$933,720. This diminution in the foreign trade of Leghorn, which is every year becoming more and more perceptible, is accounted for by the fact that a large portion of the extensive trade with Lombardy, Parma, Modena, and the Pontifical states, heretofore the principal source of the commercial prosperity of this port, has passed from Leghorn, and is now carried on through the ports of Genoa, Trieste, and Ancona. Besides, the port of Leghorn has of late years been much neglected, and offers neither inducements nor proper facilities to foreign flags. Ships of heavy draught can not enter the harbor, especially if laden; and there are no suitable warehouses, not even for the marble of Carrara, one of the leading exports to the United States. To these causes of the decline of the trade of Leghorn is to be added a tax of 3 francs 36 centimes for every person who goes ashore, should he remain but an hour. The merchant marine of Tuscany in 1851 comprised 700 vessels, measuring 27,000 tons—averaging less than 40 tons to the vessel. In the year 1849 there entered the port of Leghorn 1282 vessels (exclusive of 457 steamers), of which 26 were American; and there cleared 1139 (exclusive of 454 steamers), of which 24 were American. In 1851 the arrivals were 3418 vessels, of which 23 were American.

COMMERCE BETWEEN THE UNITED STATES AND TUSCANY, EXHIBITING THE VALUE OF EXPORTS TO AND IMPORTS FROM EACH COUNTRY, AND THE TONNAGE OF AMERICAN AND FOREIGN VESSELS.

Years.	Value of Exports from United States.			Value of Imports from Tuscany.	American Tonnage.		Foreign Tonnage.	
	Domestic Produce.	Foreign Produce.	Total.		Entered the United States.	Cleared from the U. States.	Entered the United States.	Cleared from the U. States.
1846.....	.....	.....	.....	.....	3,387	343	1,412	255
1847.....	.....	.....	.....	.....	5,415	1,956	500	375
1848.....	\$5,197	.....	\$5,197	.....	5,323	2,553	1,636	.....
1849.....	30,076	.....	30,076	.....	7,599	1,586	3,364	666
1850.....	45,064	\$23,468	69,132	.....	6,701	2,587	7,871	1,600
1851.....	.....	.....	.....	.....	5,210	1,513	4,710	455
1852.....	17,697	.....	17,697	\$210,559	11,068	1,302	4,150	235
1853.....	16,173	22,640	37,813	856,617	16,696	2,192	1,226	224
1854.....	11,735	37,032	48,767	1,162,717	12,466	2,386	4,519	387
1855.....	226,917	42,669	269,586	1,703,504	16,819	2,898	7,012	237
1856.....	425,595	5,583	431,178	1,596,801	.....	.....	1,963	381
1857.....	337,400	.....	337,400	1,750,000	.....	.....	2,667	.....

Quarantine.—The quarantine regulations of Leghorn are the most rigorous of any other port in the Mediterranean. Ships approaching Leghorn are visited by two guards sent from the health office, one of whom always acts as pilot. The most recent authority in the possession of the Department on this subject thus sums up the quarantine regulations of this port, so far as they relate to vessels arriving from American ports:

Days of Quarantine.—According to cases of suspicion for arrivals from America.

Clean Bills—Days of Observation.—First division:

from the equator to the tropic of Cancer; from 1st December to February inclusive, seven days; from 1st March to November inclusive, ten days; vessels of war two days less than merchant vessels. Second division: from the tropic of Cancer to Charleston inclusively, and from the equator to all South America, five days, from 1st December to February inclusive; seven days, from 1st March to November inclusive. Third division: from the United States between Charleston and Canada.

Doubtful Bills of Health—Days of Quarantine.—Laz-

aretto of St. Roch, all seasons, and wherever from, from 1st December to February inclusive, eighteen days; from 1st March to November inclusive, eighteen days; vessels of war, ten days; without susceptible commodities, rigid, fourteen days, from 1st December to February inclusive; eighteen days, from 1st March to November inclusive.

Foul Bills of Health—Days of Quarantine.—Lazaretto of St. Roch, all seasons, and wherever from, twenty-five days; without susceptible commodities, from 1st December to February inclusive, eighteen days; from 1st March to November inclusive, twenty-five days; susceptible commodities, days not given, but time supposed to be arbitrary, and dependent on the continuance of suspicious circumstances.

These regulations are still more rigid when vessels arrive from countries in which the plague has been known to exist. These include the Turkish Levant, Egypt, and Barbary. When vessels are subjected to a long quarantine, three medical visits are generally made; and when merely under inspection, two. In extraordinary cases a guard-boat is stationed near the vessel, and paid for at the rate of 64 cents per day. In all cases of assistance from sanitary officers, the commandant of the port determines the amount of compensation. The vessels of all nations, whether Tuscan or foreign, pay the same quarantine dues. These dues are, for each sanitary visit 80 cents, and \$1 08 for the boat conveying the health officer. For each guard, per day, 58 cents; or 48 cents if food is supplied. The tonnage duties amount to \$11 20 on a square-rigged vessel of 200 tons, with an additional charge of \$1 60 for every twenty-five tons over that capacity.—C. D.

Parma embraces an area of 2766 square miles, containing a population in 1854 of 508,784 inhabitants. The chief productions are maize, wheat, fruit, tobacco, and silk. The principal manufactures are silk fabrics, iron wares, glass, earthen-ware, paper, straw hats, and gunpowder. Commercially, Parma possesses but little interest, her importations being exclusively by land, and limited to small quantities of sugar, coffee, and a few articles of luxury, principally of dress and ornament. Her exports are cattle, hogs, sausages, and cheese.

Modena.—This state is of less extent than Parma, and its productions scarcely suffice for the subsistence of the inhabitants. It derives some commercial importance from the marble quarries at Carrara, which seem to be inexhaustible. The trade of both these states being inland, and but poorly supplied with any basis for commercial exchanges, is, of course, very inconsiderable. By treaty of December 4, 1849, the two states of Parma and Modena adopted the tariff of Austria, and duties are consequently levied at the same rates and in the same manner as those of that empire.

Lucca.—This little state was annexed to Tuscany October 11, 1847. This took place in virtue of provisions of the Congress of Vienna, when, upon the decease of the Archduchess Maria Louisa, the Duke of Lucca became ruler of Parma. The soil is exceedingly fertile, and the culture of oil and silk is acquiring some importance—the former being generally esteemed the best in Italy, and the latter of fair quality. The imports of Lucca, when an independent state, consisted chiefly of sugar, coffee, spices, wine and spirits, salt fish, hemp, flax, cotton, wool, and various manufactures. Salt and tobacco were government monopolies, and their importation on private account was prohibited. The exports were olive-oil, to an annual value of about \$160,000, and fresh fish, of \$50,000—the latter sent chiefly to Leghorn from the small port of Viareggio. In manufacturing industry Lucca is said to surpass both Parma and Modena. Silk is the most important manufacture; and next rank common woollens and cottons, giving employment, in all, it is estimated, to about 6000 persons, chiefly in the city of Lucca.

San Marino.—Rural industry and the manufacture of silk constitute the chief occupation of this little republic.

Monaco.—This small principality, under the protection of Sardinia, by the treaty of November 20, 1815, enjoys a fine climate, and produces oranges, lemons, and olives in abundance. It has also rich pasturages and productive fisheries. It need only be added respecting these small states, that such articles of their own produce and manufacture, or of the United States, as are interchanged, are so blended with the trade of other countries, that any attempt to specify the quantities or values of each respectively would prove abortive, even were the amounts sufficiently large to warrant the effort.—See articles AUSTRIA and TRIESTE.

Tutenag, the name given in *Commercial language* to the zinc or spelter of China.—See ZINC. This commodity used to be smuggled from China (the exportation of unwrought metals from that empire being prohibited) to Hindostan, the Malay Archipelago, and neighboring countries, to the amount, it is supposed, of about 50,000 cwt. a year. In 1820 the British free-traders introduced German spelter or zinc for the first time into the Indian market. In 1826 the importation of tutenag from China into Calcutta ceased; and it has now been totally superseded throughout India by spelter. Of this latter commodity there were exported from Great Britain, in 1850, to the East India Company's territories and Ceylon, 11,628 cwt., besides the quantities furnished by Hamburg, Rotterdam, Antwerp, and other Continental ports.

Typhoon, the name given to a violent tornado or hurricane in the Chinese seas.—See STORMS.

Tyre, the principal city of Phœnicia, and the most celebrated emporium of the ancient world. This famous city was situated on the southeast coast of the Mediterranean, where the inconsiderable town of Tsour now stands, in lat. 33° 17' N., long. 35° 14' 35" E. The trade that is at present carried on at Tsour is too trifling to deserve notice; but as this work is intended to give some account, however imperfect, of the revolutions in the channels of commercial enterprise, we may, perhaps, be excused for submitting a few statements with respect to the commerce carried on by so renowned a people as the Tyrians. Tyre was founded by a colony from Sidon, the most ancient of the Phœnician cities. The date of this event is not certainly known, but Larcher supposes it to have been 1690 years before the Christian era.—*Chronologie d'Hérodote*. It is singular, that while Homer mentions Sidon, he takes no notice of Tyre, whose glory speedily eclipsed that of the mother city; but this is no conclusive proof that the latter was not then a considerable emporium. The prophets Isaiah, Jeremiah, and Ezekiel, who flourished from 700 to 600 years before Christ, represent Tyre as a city of unrivaled wealth, whose "merchants were princes, and her traffickers the honorable of the earth." Originally, the city was built on the main land; but having been besieged for a lengthened period by the Babylonian monarch Nebuchadnezzar, the inhabitants conveyed themselves and their goods to an island at a little distance, where a new city was founded, which enjoyed an increased degree of celebrity and commercial prosperity. The old city was, on that account, entitled Palætyre, and the other simply Tyre. The new city continued to flourish, extending its colonies and its commerce on all sides, till it was attacked by Alexander the Great. The resistance made by the Tyrians to that conqueror showed that they had not been enervated by luxury, and that their martial virtues were nowise inferior to their commercial skill and enterprise. The overthrow of the Persian empire was effected with less difficulty than the capture of this single city. The victor had not magnanimity to treat the vanquished as their heroic conduct deserved. In despite, however, of the cruelties inflicted on the city, she rose again to considerable eminence. But the

foundation of Alexandria, by diverting the commerce that had formerly centred at Tyre into a new channel, gave her an irreparable blow; and she gradually declined, till, consistently with the denunciation of the prophet, her palaces have been leveled with the dust, and she has become "a place for the spreading of nets in the midst of the sea."

Commerce.—Phœnicia was one of the smallest countries of antiquity. It occupied that part of the Syrian coast which stretches from Aradus (the modern Rouad) on the north to a little below Tyre on the south, a distance of about 50 leagues. Its breadth was much less considerable, being for the most part bounded by Mount Libanus to the east, and Mount Carmel on the south. The surface of this narrow tract was generally rugged and mountainous; and the soil in the valleys, though moderately fertile, did not afford sufficient supplies of food to feed the population. Libanus and its dependent ridges were, however, covered with timber suitable for ship-building; and besides Tyre and Sidon, Phœnicia possessed the ports of Tripoli, Byblos, Berytus, etc. In this situation, occupying a country unable to supply them with sufficient quantities of corn, hemmed in by mountains, and by powerful and warlike neighbors on the one hand, and having on the other the wide expanse of the Mediterranean, studded with islands, and surrounded by fertile countries, to invite the enterprise of her citizens, they were naturally led to engage in maritime and commercial adventures; and became the boldest and most experienced mariners, and the greatest discoverers, of ancient times.

From the remotest antiquity, a considerable trade seems to have been carried on between the Eastern and Western worlds. The spices, drugs, precious stones, and other valuable products of Arabia and India, have always been highly esteemed in Europe, and have been exchanged for the gold and silver, the tin, wines, etc., of the latter. At the first dawn of authentic history, we find Phœnicia the principal centre of this commerce. Her inhabitants are designated in the early sacred writings by the name of Canaanites—a term which, in the language of the East, means merchants. The products of Arabia, India, Persia, etc., were originally conveyed to her by companies of traveling merchants or caravans, which seem to have been constituted in the same way, and to have performed exactly the same part in the commerce of the East, in the days of Jacob, that they do at present.—*Gen.* xxxvii. 25, etc. At a later period, however, in the reigns of David and Solomon, the Phœnicians, having formed an alliance with the Hebrews, acquired the ports of Elath and Ezion-geber, at the northeast extremity of the Red Sea. Here they fitted out fleets, which traded with the ports on that sea, and probably with those of Southern Arabia, the west coast of India, and Ethiopia. The ships are said to have visited Ophir; and a great deal of erudition has been expended in attempting to determine the exact situation of that emporium or country. We agree, however, with Heeren, in thinking that it was not the name of any particular place, but that it was a sort of general designation given to the coasts of Arabia, India, and Af-

rica, bordering on the Indian Ocean; somewhat in the same loose way as we now use the terms East and West Indies.

The distance of the Red Sea from Tyre being very considerable, the conveyance of goods from the one to the other by land must have been tedious and expensive. To lessen this inconvenience, the Tyrians, shortly after they got possession of Elath and Ezion-geber, seized upon Rhinocnura, the port in the Mediterranean nearest to the Red Sea. The products of Arabia, India, etc., being carried hither by the most compendious route, were then put on board ships, and conveyed by a brief and easy voyage to Tyre. If we except the transit by Egypt, this was the shortest and most direct, and for that reason, no doubt, the cheapest channel by which the commerce between Southern Asia and Europe could then be conducted. But it is not believed that the Phœnicians possessed any permanent footing on the Red Sea after the death of Solomon. The want of it does not, however, seem to have sensibly affected their trade; and Tyre continued, till the foundation of Alexandria, to be the grand emporium for Eastern products, with which it was abundantly supplied by caravans from Arabia, the bottom of the Persian Gulf, and from Babylon, by way of Palmyra.

The commerce of the Phœnicians with the countries bordering on the Mediterranean was still more extensive and valuable. At an early period they established settlements in Cyprus and Rhodes. The former was a very valuable acquisition, from its proximity, the number of its ports, its fertility, and the variety of its vegetable and mineral productions. Having passed successively into Greece, Italy, and Sardinia, they proceeded to explore the southern shores of France and Spain, and the northern shores of Africa. They afterward adventured upon the Atlantic, and were the first people whose flag was displayed beyond the Pillars of Hercules.

The commerce and navigation of Tyre probably attained their maximum from 650 to 550 years before Christ. At that period the Tyrians were the factors and merchants of the civilized world, and they enjoyed an undisputed pre-eminence in maritime affairs. The prophet Ezekiel (chap. xxvii.) has described in magnificent terms the glory of Tyre, and has enumerated several of the most valuable productions found in her markets, and the countries whence they were brought. The fir-trees of Senir (Hermon), the cedars of Lebanon, the oaks of Bashan (the country to the east of Galilee), the ivory of the Indies, the fine linen of Egypt, and the purple and hyacinth of the isles of Elishah (Peloponnesus), are specified among the articles used for her ships. The inhabitants of Sidon, Arvad (Aradus), Gebel (Byblos), served her as mariners and carpenters. Gold, silver, lead, tin, iron, and vessels of brass; slaves, horses, mules, sheep, and goats; pearls, precious stones, and coral; wheat, balm, honey, oil, spices, and gums; wine, wool, and silk, are mentioned as being brought into the port of Tyre by sea, or to its markets by land, from Syria, Arabia, Damascus, Greece, Tarshish, and other places, the exact site of which it is difficult to determine.—See M'CULLOCH's *Com. Dict.*

U.

Ultramarine (Ger. *Ultramarin*; Fr. *Bleu d'outre-mer*; It. *Oltramarino*; Sp. *Ultramar*; Russ. *Ultramarin*), a very fine blue powder made from the blue parts of *Lapis lazuli*. It has the valuable property of neither fading nor becoming tarnished on exposure to the air or a moderate heat, and on this account is highly prized by painters. Owing to its great price, it is very apt to be adulterated. It was introduced about the end of the 15th century.

Umbrella. Described in early dictionaries as "a portable pent-house to carry in a person's hand, to screen him from violent rain or heat." Umbrellas are very ancient. It appears, by the carvings at Persepolis, that umbrellas were used at very remote periods by the Eastern princes. Niebuhr, who visited the southern part of Arabia, informs us that he saw a great prince of that country returning from a mosque preceded by some hundreds of soldiers, and that he and each of the princes of his numerous family caused a large umbrella to be carried by his side. The old china-ware in pantries and cupboards shows the Chinese shaded by an umbrella. It is said that the first person who used an umbrella in the streets of London was the benevolent Jonas Hanway, who died in 1786.—HAYDN. Of late years the manufacture of umbrellas has been improved by the use of steel ribs instead of whalebone. The coverings are mainly confined to cotton, silk, gingham, and alpaca.

EXPORTS OF UMBRELLAS AND PARASOLS OF DOMESTIC MANUFACTURE FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

	Value.
Whither exported.....	
Gibraltar.....	\$98
Canada.....	931
British North American Colonies.....	4328
British West Indies.....	268
Africa.....	188
Haiti.....	30
Mexico.....	341
Central Republic.....	65
New Granada.....	523
Sandwich Islands.....	74
Total.....	\$6846

The exports of umbrellas and parasols of foreign manufacture for the same period were,

To Mexico.....	\$1012
" Whale-fisheries.....	90
Total.....	\$1102

IMPORTS OF UMBRELLAS, PARASOLS, AND SUN-SHADES, OF SILK AND OTHER KINDS, INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

	Value.
Hamburg.....	\$45
Bremen.....	2,970
Belgium.....	321
England.....	5,591
Scotland.....	559
Canada.....	45
France on the Atlantic.....	53,265
Spain on the Mediterranean.....	60
New Granada.....	2,991
Total, year 1856-'57.....	\$65,360

United Kingdom, a general term by which Great Britain and Ireland are designated.—See *articles* ENGLAND, GREAT BRITAIN, IRELAND, and SCOTLAND.

United States of America. Lat. 25° 20' and 49° N., and long. 67° 47' and 124° 30' W. Length, east and west, about 2600 miles; and breadth, north and south, about 1700 miles. The United States occupy the middle zone of North America. The frontier of this vast country measures about 10,000 miles in periphery, and of this about 4000 miles are sea-coast and 1500 lake coast.

The seat of government was established as follows: At "Philadelphia," Pennsylvania, commencing 5th September, 1774, and 10th May, 1775; at "Baltimore," Maryland, 20th December, 1776; at "Philadelphia," Pennsylvania, 4th March, 1777; at "Lancaster," Penn-

sylvania, 27th September, 1777; at "York," Pennsylvania, 30th September, 1777; at "Philadelphia," Pennsylvania, 2d July, 1778; at "Princeton," New Jersey, 30th June, 1783; at "Annapolis," Maryland, 26th November, 1783; at "Trenton," New Jersey, 1st November, 1784; and at "New York City," New York, 11th January, 1785; Washington City, district of Columbia, was first occupied in 1800.

Physical Features.—The United States are traversed by two ranges of mountains, the Alleghanies, and the great mountain mass of North America, the Rocky Mountains. These divide the country into three distinct geographical regions; the Atlantic slope, descending from the crest of the Alleghanies to the ocean on the southeast; the great Mississippi Valley, between the Alleghanies and the Rocky Mountains; and the western declivity, from the Rocky Mountains to the Pacific. The Alleghanies are a long plateau, crested with several mountain ridges, and groups separated from each other by wide and elevated valleys. They commence in Northern Alabama and Georgia, and reach their culminating point in North Carolina, where they attain an elevation of 6476 feet; thence passing northeasterly in parallel ridges, varying in height from 2000 feet to 6000 feet, and a breadth of from 20 to 100 miles, through Virginia, Pennsylvania, New Jersey, New York, Massachusetts, Vermont, New Hampshire, and Eastern Canada, where they terminate in the bold headland of Cape Gaspé. In New York they reach their highest elevations in the spur branching off northwesterly, known as the Catskill Mountains and the Adirondack group. In Massachusetts, at Mount Washington. In Vermont it attains its highest elevation in the Green Mountains, known as the Mansfield Mountain and the Camel's Hump. In New Hampshire, in the White Mountains; and in Canada, at Mount Logan.

The Rocky Mountains take a much greater breadth, and the culminating points reach the region of eternal snows, rising in the portion passing through the United States to the height of 14,000 feet. This is the great mountain range of the continent, traversing it from Cape Horn to the Arctic Ocean, forming the longest continuous mountain mass on the face of the globe. Between this range and the Pacific coast are some minor mountain ridges, whose culminations in several places rise far above the snow line, and furnish some active volcanoes.

The Mississippi River has its entire course in the territory of the republic, and the valley drained by it, and its numerous tributaries, is one of the most fertile tracts on the earth's surface. The most noted feature of the United States is the slightly inclined plain, which extends along the entire Atlantic coast, with a breadth of from 50 to 100 miles in width; beyond this plain commences the hilly country extending to the foot of the Alleghany ridge. The soil of the Atlantic plain is sandy, but in many places highly productive; and the hilly portion has a strong, fertile soil, capable of supporting a dense population. The Pacific section is traversed by several extensive rivers, and presents a much diversified surface, with varied and picturesque scenery; but some portions are mere desert wastes. Such is said to be the case with the great California basin, the water courses of which are lost in the sands and volcanic regions, or enter lakes with no visible outlet.

Lakes.—All the great lakes, with the exception of Michigan and Champlain, lie partly in Canada, the division line passing centrally through them, and their connecting streams, for a distance of about 1500 miles. The first (the most extensive sheet of fresh water on the earth's surface) in the series is Lake Superior, the surplus waters of which, descending through the Strait of St. Marys into Lake Huron, which, with the accu-

mulated waters from Michigan, pass through the St. Clair Strait and Lake, and the Detroit into Lake Erie; whence, passing over the precipice of Niagara, and through Niagara Straits, enter Ontario; Lake Ontario has its outlet by the magnificent St. Lawrence, through Canadian territory, into the Atlantic Ocean. The following is a tabular statement of the extent of these fresh-water seas, with their depth and elevation:

Lakes.	Mean Length.	Mean Breadth.	Area.	Mean Depth.	Elevation above Sea.
	Miles.	Miles.	Sq. Miles.	Feet.	Feet.
Superior....	400	80	52,000	900	598
Michigan...	320	70	22,400	1000	578
Green Bay...	100	20	2,000	1000	578
Huron.....	240	80	20,400	1000	578
St. Clair....	20	14	360	20	570
Erie.....	240	40	9,600	84	565
Ontario.....	180	35	6,300	500	232

Lake Champlain, lying between New York and Vermont, is 128 miles long, and from 1 to 16 wide, and discharges its waters through the Sorel into the St. Lawrence. It is computed that these lakes contain 14,000 cubic miles of water—a quantity more than five-sevenths of all the fresh water of the earth. The extent of the country drained by them from the northwest angle of Lake Superior to the St. Lawrence, including also the area of the lakes themselves, is estimated at 385,515 square miles.—*See LAKES, Commerce of.*

Rivers.—The water courses of the United States are on an extensive scale, and afford, with the great artificial connecting links, a system of inland navigation unsurpassed. First in order are those of the Atlantic slope, the waters of which enter directly into the ocean; the principal of these are the Penobscot, the Kennebec, the Merrimac, the Connecticut, the Hudson, the Delaware, the Susquehanna, the Potomac, the James, the Cape Fear, the Great Pedee, the Savannah, the Altamaha, and St. Johns, etc. These are all navigable streams, some for a great distance inland. Second, the rivers entering the Gulf of Mexico or Sea of Cortez. The Appalachicola, the Mobile, the immense Mississippi, the Sabine, the Trinity, the Brazos, the Colorado, and the Rio Grande. The rivers entering the Pacific are the Columbia, the Sacramento and San Joaquin, the Colorado, and Gila, the latter two discharging their waters into the Gulf of California. There are many rivers entering the great lakes, and also the St. Lawrence, the great artery of Canada.—*See rivers under proper names.*

A remarkable analogy exists in the structure of the land in the United States and Central and Northern Europe. Gneiss, mica, schist, and granite, prevail over wide areas in the Alleghanies; and on the Atlantic slope, and in the high and middle latitudes of the continent, silurian strata extend over 2000 miles. The Rocky Mountains, also, are mostly silurian, except the east ridge, which is of stratified crystalline rocks, amygdaloid, and ancient volcanic productions. The coast range has the same characteristics, with immense tracts of volcanic rocks, both ancient and modern, chiefly obsidian. In North America volcanic action is entirely confined to the coast and highlands along the Pacific; but within the United States at the present day this action is dormant (with the exception of Mount St. Helens), although its activity is very apparent both to the north and south—to the north in Mount St. Elias, and to the south in the Mexican volcanoes. The principal minerals produced in the United States are iron, coal, copper, lead, and gold, with a great number of less importance. Since 1848 the great field of gold gathering has been California, where large quantities have been obtained with little labor, and both silver and quicksilver abound in the same state. Silver, however, is mostly obtained from the lead and copper mines of the Upper Mississippi and Lake Superior countries, where it is found in combination with these metals. The principal deposits of gold, otherwise than those of California, occur in the

primary rocks between the River Rappahannock, in Virginia, and the Coosa, in Alabama; but it has been found in smaller quantities as far north as Maine. Gold and silver abound also in New Mexico and Western Texas, and probably in the Mesilla territory. The coal-fields of the States are of prodigious extent. Nearly one-fourth of the country between the Alleghanies and the Mississippi is composed of coal-beds; and in Pennsylvania, Maryland, Ohio, Indiana, and Illinois, coal-mining has become of vast importance to general industry. The ascertained areas of the coal formation in the under-mentioned States are as follows: In Alabama, 8400 square miles; Georgia, 150; Tennessee, 4300; Kentucky, 13,500; Virginia, 21,195; Maryland, 550; Ohio, 11,900; Indiana, 7700; Illinois, 44,000; Pennsylvania, 15,437; Michigan, 5000; and Missouri, 6000; total, 133,132 square miles. Coal has also been found on the Pacific slope—in California, Oregon, and Washington—and the mineral will no doubt be found in Texas and the adjoining country. As a general remark, it may be stated that the coal east of the highest Alleghanies takes the form of anthracite, while west, and in the valleys of the great central rivers, it is bituminous. Iron is equally abundant with coal, and is usually found in juxtaposition with it. The principal seats of iron mining are Pennsylvania, New Jersey, Ohio, Missouri, Kentucky, and Northern Michigan; and it is also extensively mined in Northern New York. Pennsylvania, however, is pre-eminent in this industry, and produces at least one half the iron mined in the United States. Copper is mined chiefly in Northern Michigan, but to a less extent in Connecticut, New York, Tennessee, North Carolina, etc.; and rich copper mines exist also in New Mexico, near the head of the Gila River. Lead is worked chiefly in Illinois, Wisconsin, and Iowa; on the Mississippi, and for many miles around the territory, in which are included Dubuque, Galena, and Mineral Point; and in these regions upward of 30,000 tons are annually produced. (With respect to other mineral products refer to the STATES severally.)

Historical Summary.—Eighteen new States have been admitted into the Union since the confederation of the original thirteen colonies, as follows:

1. *Vermont*, which formed a part of the territory of New York and New Hampshire, was admitted on the 4th March, 1791.
2. *Kentucky*, which was formerly a part of Virginia, was admitted on the 1st June, 1792.
3. *Tennessee*, formed from the territory ceded to the United States by North Carolina, and which afterward was known as the "Territory south of the Ohio River," was admitted on the 1st June, 1796.
4. *Ohio*, the first State formed from the "Territory northwest of the Ohio River"—a territory which had been ceded to the United States by Virginia and other claimants, and which was erected into a government as early as 1787, was admitted on the 29th November, 1802.
5. *Louisiana*, a part of the vast territory of the same name purchased of France by the United States in 1803, and subsequently known as the Territory of Orleans, was admitted on the 8th April, 1812.
6. *Indiana*, the second State formed to the northwest of Ohio, was admitted within its present limits on the 11th December, 1816.
7. *Mississippi*, which was formed from the territory ceded to the United States by South Carolina and Georgia, was admitted on the 10th December, 1817.
8. *Illinois*, the third of the Northwestern States, was admitted on the 8d December, 1818.
9. *Alabama*, the second State formed from the South Carolina and Georgia cessions, was admitted on the 14th December, 1819.
10. *Maine*, originally a province of Massachusetts, but having been permitted to frame a State government by that State, was admitted on the 15th March, 1820.

11. *Missouri*, the second State formed from the French purchase, was admitted on the 10th August, 1821.

12. *Arkansas*, the third State formed from the Louisiana cession, was admitted on the 15th June, 1836.

13. *Michigan*, the fourth State formed from the territory northwest of the Ohio River, was admitted on the 26th June, 1837.

14. *Florida*, which has the same limits as when ceded by Spain, was admitted on the 3d March, 1845.

15. *Texas*, which had been an independent republic for the ten preceding years, was admitted by a joint resolution of both Houses of Congress on the 29th December, 1845.

16. *Iowa*, the fourth State formed from the Territory of Louisiana, was admitted on the 28th December, 1846.

17. *Wisconsin*, the fifth State formed from the territory northwest of the Ohio River, was admitted on the 29th May, 1848.

And, 18. *California*, having been governed as a State for upward of a year, was admitted on the 9th December, 1850; and though the last, it is by no means the least important of the members of the great confederation.

Besides these thirty-one States, which send representatives to Congress, in number according to their population, there are several local and dependent governments, which are styled "Territories of the United States." Such are the Territories of Oregon, Washington, Utah, New Mexico, and Minnesota. The Territory of Nebraska is not yet organized, nor has the vast territory set apart for the Indians any aggregate existence, but each Indian nation, within its own limits, is governed by its own laws.

1. *Oregon* was erected into a Territory on the 14th August, 1848;

2. *Minnesota* on the 3d March, 1849;

3. *Utah*; and,

4. *New Mexico*, on the 9th September, 1850; and,

5. *Washington*, originally a part of Oregon, was formed into a separate Territory at the session of Congress 1852-53.

The only Territory now remaining without local government is that portion of the United States embraced in the Nebraska country, and the vast domain extending beyond Minnesota and Iowa westward to the Rocky Mountains, and north of the 43d parallel of north latitude. The tide of immigration, however, has already reached to the edge of the wilderness, and but a few years will elapse before settlement has progressed sufficiently to justify the organization of new governments within these immense solitudes.

The *District of Columbia*, or Federal District, is under the immediate authority of Congress, and is not represented in that body. It is the seat of the General Government.

Area of the United States.—The limits of the United States when their independence was achieved (1783) did not exceed 820,680 square miles. Louisiana, purchased from France in 1803, and Florida from Spain in 1819, added respectively an extent of 899,579 and 66,900 square miles. In 1842 and 1846 the Northern boundary was settled by treaties with Great Britain, confirming the rights of the United States to 308,052 square miles, included in the Territory of Oregon, etc. In 1846 Texas was annexed, with an area of 318,000 square miles, and by a treaty soon afterward with Mexico an area of 522,955 additional square miles was incorporated. Thus did the territory of the United States double itself in the first twenty years of its existence, and thus has it increased over three-fold in less than sixty years. The figures are given upon the authority of a statement prepared at the Topographical Bureau for the Census office, and annexed.

TERRITORIAL INCREASE OF THE UNITED STATES.

Territory.....	Square Miles.
Area of the United States at the peace of 1783	820,680*
The purchase of Louisiana added (about).....	899,579*
(The limits were indefinite; those here assumed are the boundaries of the treaty of 1819, with the exception of Florida and parts of Mississippi and Alabama.)	
The acquisition of Florida (treaty of 1819), added	66,900
Admission of Texas (Emory's map of 1844).....	318,000
Oregon treaty	308,052
Treaty with Mexico.....	522,955
Second treaty with Mexico	27,500
Total.....	2,963,666

The territorial extent of the republic is, therefore, nearly ten times as large as that of Great Britain and France combined; three times as large as the whole of France, Britain, Austria, Prussia, Spain, Portugal, Belgium, Holland, and Denmark, together; one and a half times as large as the Russian empire in Europe; one-sixth less only than the area covered by the fifty-nine or sixty empires, states, and republics of Europe; of equal extent with the Roman empire, or that of Alexander, neither of which is said to have exceeded 3,000,000 square miles.—VOLTAIRE, *Histoire de Russie*.

Considered in lesser divisions, the calculations of the Topographical Bureau show the existence of an interior valley drained by the waters of the Mississippi and its tributaries, nearly as large as the slopes of the Pacific and Atlantic proper together, and one-third larger than the whole domain of the republic upon the adoption of the present Constitution (1789).

AREA OF EACH SLOPE AND RATIO TO THE TOTAL AREA OF THE UNITED STATES.

Territory.	Area in Square Miles.	Ratio of Area of each Slope to total Area of United States.
Pacific slope	766,002	26.09
Atlantic slope proper.....	514,416	17.52
Northern Lake region	112,649	3.83
Gulf region	325,537	11.09
Atlantic, Lake, and Gulf east and west of the Mississippi	952,602	32.44
Mississippi valley, drained by the Mississippi and its tributaries	1,217,562	41.47
Atlantic, including Northern Lake	627,065	21.35
Mississippi valley and Gulf, or Middle region	1,543,999	52.55
By second treaty with Mexico	27,500	
Aggregate.....	2,963,666	

Thus over two-fifths of the national territory is drained by the Mississippi and its tributaries, and more than one half is embraced in what may be called its *Middle Region*. One-fourth of this total area belongs to the Pacific, one-sixth to the Atlantic proper, one-twenty-sixth to the Lakes, one-ninth to the Gulf, or one-third to the Atlantic, including the Lakes and the Gulf.

From the charts prepared some years ago by Colonel Gilpin, of Missouri, it will be perceived that a circle described from the forks of the Kansas River, west of Missouri, will touch New Orleans and Galveston, or the Gulf frontier, and the 49th parallel of latitude, our

northern boundary, making these points equidistant from the centre. On a larger circle, with the same centre, the points of equidistance will be San Francisco,

* These estimates are lower than those usually made. Morse, in his *Gazetteer*, estimates the area of the Union in 1783 at 1,000,000 square miles; and Major Stoddard, who took possession of Louisiana under the treaty and prepared a very valuable history of it, considers the area to be 1,507,260. These, of course, were but vague estimates, subject to after correction. Again, Oregon has generally been estimated at 341,463; Texas, 402,907; California, 448,691.—Dr Bow's *Industrial Resources*, vol. iii.

† The Mesilla valley is included in the computation.

in California, Fort Vancouver on the Columbia, in Oregon, Quebec and Boston upon the Atlantic, Hudson's Bay on the extreme north, and Havana, Vera Cruz, and the city of Mexico, on the extreme south. The various great basins, declivities, and table-lands on the continent he estimates as follows: Mississippi basin, 1,123,100 square miles; St. Lawrence, 475,400; Hudson's Bay, 1,077,200; Mackenzie basin, 898,500; Pacific declivity, 420,000; Atlantic declivity, 270,700 square miles.

Mr. Darby, in his *Geographical Dictionary*, gives the following aggregates: Valley of the Ohio, 200,000 square miles; Valley of the Mississippi proper, 180,000; Valley of the Missouri, 500,000; and the Valley of the Lower Mississippi, 330,000. Total, 1,210,000 square miles.

Lieutenant Maury compares the basins of the Old World with those which are drained into the Gulf of Mexico and Caribbean seas.

Mediterranean in Europe	1,160,000
Nile	520,000
Euphrates	196,000
Indus	312,000
Ganges	432,000
Irrawaddy	331,000
Others of India	173,000
Of Western Europe, Rhine, etc.	730,000

Total of Mediterranean India and W. Europe... 3,854,000

Basin of Mississippi	982,000
Basins in Florida and Texas	529,000
Mexico and Central America	300,000
Amazon	1,796,000
Orinoco and all others of the Caribbean Sea	700,000

Total of Gulf and Caribbean Sea... 4,298,000

Difference in square miles... 444,000

Lieutenant Maury remarks, "The area of all the valleys which are drained by the rivers of Europe which empty into the Atlantic, all the valleys that are drained by the rivers of Asia which empty into the Indian Ocean, and of all the valleys that are drained by the rivers of Africa and Europe which empty into the Mediterranean, does not cover an extent of territory as great as that included in the valleys drained by the American rivers alone, which discharge themselves into one central sea."

Dr. Patterson, of Philadelphia, made the centre of *representative population* of the Union in 1840 in the northwestern extremity of Virginia, and states that it had traveled westward since 1790, when it was in Baltimore county, Maryland, 182 miles in very nearly the same parallel of latitude.

The following table will show the area included within the several geographical divisions which are named:

AREA OF THE SEVERAL GREAT DIVISIONS OF THE UNITED STATES.

Area included in	Square Miles.	Per Cent. of total Area.
The States	1,464,106	49-86
The Territories	1,472,061	50-14
Non-slaveholding States not Territories	612,597	20-86
Slaveholding States not Territories	851,508	29-00
New England States	85,088	2-21
Middle States	114,624	3-90
Southern States	258,700	8-81
Southwestern States	474,435	16-15
Northwestern States	395,319	13-46
East of the Mississippi	865,576	29-48
Between the Mississippi and Rocky Mountains	1,200,381	40-88
West of the Mississippi	2,070,500	70-52
North of latitude 36° 30'	1,970,677	67-10
South of latitude 36° 30'	966,083	32-90
West of the Rocky Mountains	870,209	29-64
East of the Rocky Mountains	2,065,357	70-36

The United States consist at the present time (1858) of thirty-one independent States and nine Territories, including the District of Columbia, whose areas will be found in the table annexed, prepared at the Topographical Bureau. It is the only official statement. There were in 1850 sixteen hundred and twenty coun-

ty divisions included within the organized States and Territories, but it is impossible to give any satisfactory statement of their areas. By reference to the statistical tables of these counties in the United States Census Report, it will be found how liable they are to changes, and also what changes were actually effected between 1840 and 1850.

AREA OF THE STATES AND TERRITORIES OF THE UNITED STATES.

State or Territory.	Area in Square Miles.	Per Cent. of total Area.	Rank of States, etc. Territorially.
Alabama	50,729	1-73	20
Arkansas	52,198	1-78	18
California	155,980	5-32	7
Columbia, District of	60	...	40
Connecticut	4,674	0-15	37
Delaware	2,120	0-07	38
Florida	59,268	2-02	13
Georgia	58,000	1-98	14
Illinois	55,405	1-89	16
Indiana	33,509	1-15	29
Indian Ter. (S. of Kansas)	71,127	2-42	10
Iowa	50,914	1-73	19
Kansas	114,798	3-91	9
Kentucky	37,680	1-25	28
Louisiana	41,255	1-40	26
Maine	31,760	1-08	30
Maryland	11,124	0-38	32
Massachusetts	7,800	0-26	36
Michigan	56,243	1-91	15
Minnesota Territory	166,025	5-65	6
Mississippi	47,156	1-61	22
Missouri	67,880	2-29	11
Nebraska Territory	535,882	11-44	1
New Hampshire	9,280	0-32	34
New Mexico Territory	207,007	7-05	4
New York	47,000	1-60	23
New Jersey	8,320	0-28	35
North Carolina	50,704	1-73	21
Ohio	39,964	1-36	27
Oregon Territory	185,030	6-30	5
Pennsylvania	46,000	1-57	24
Rhode Island	1,306	0-04	39
South Carolina	29,885	1-01	31
Tennessee	45,600	1-55	25
Texas	237,504	8-00	2
Utah Territory	269,170	9-17	3
Virginia	61,352	2-10	12
Vermont	10,212	0-35	33
Washington Territory	123,092	4-19	8
Wisconsin	53,924	1-84	17
Area obtained by treaty with Mexico	27,500	...	...
Aggregate	2,993,666	...	...

The Territory of Nebraska constitutes one-ninth, Utah one-eleventh, Texas one-twelfth, New Mexico one-fourteenth, Oregon one-sixteenth, Missouri and Virginia a little more than one-fiftieth each, South Carolina one-hundredth, Massachusetts one-three hundred and eightieth, and Rhode Island one-two thousand three hundredth part of the national area.

In addition to the above States, it is proposed to add to the Union the States of Minnesota (the bill for the admission having already passed the Senate), Kansas, Oregon (and, when this territory shall be more developed, a further division of Oregon will take place, adding one or more States), Ontonagon (including the northwestern part of Michigan, and embracing territory as large in extent as New York State), Nebraska, and Washington. It is also proposed, when Texas shall increase sufficiently in population to make a division of that State advisable, to divide it into one or two more States. Ratios of representations for Congress, 1790 and 1800, 1 to 33,000; 1810, 35,000; 1820, 40,000; 1830, 47,700; 1840, 70,680; 1850, 93,420. Act of 1850 fixes the number of members at 233, to which afterward was added 1 for California; Massachusetts, Rhode Island, Connecticut, Pennsylvania, Maryland, Alabama, Tennessee, Kentucky, Missouri, Indiana, Texas, South Carolina, and Georgia, 1 member each for largest fractions. Future ratios of apportionment to be determined by the Secretary of Interior, by dividing the number 233 into whole *representative population*, giving States with largest fractions members to make up the total. Members from new States admitted shall be in addition to the 233 until the next census.

POPULATION, POPULATION TO SQUARE MILE, CAPITALS, AND POPULATION OF CAPITALS OF THE STATES AND TERRITORIES OF THE UNITED STATES IN THE YEAR 1850.

States and Territories.	Population, 1850.				Population to Square Mile.	Capitals.	Population of Capitals.
	Whites.	Free Colored.	Slaves.	Total.			
Alabama.....	426,514	2,265	342,844	771,623	15-2	Montgomery.....	8,728
Arkansas.....	162,189	608	47,100	209,897	4-0	Little Rock.....	2,167
California.....	91,635	962	.....	92,597	0-5	Sacramento.....	6,820
Carolina, North.....	553,028	27,463	288,584	869,039	19-1	Raleigh.....	4,518
Carolina, South.....	274,563	8,960	584,984	668,507	23-8	Columbia.....	6,060
Columbia, District of.....	87,941	10,059	3,687	51,687	1033-7	WASHINGTON CITY.....	40,001
Connecticut.....	268,099	7,693	.....	370,792	78-1	Hartford.....	13,555
Delaware.....	71,169	18,073	2,290	91,536	43-2	Dover.....	4,207
Florida.....	47,203	932	89,310	87,445	1-5	Tallahassee.....	1,391
Georgia.....	521,572	2,931	381,682	906,185	15-6	Columbus.....	5,942
Illinois.....	846,034	5,436	.....	851,470	15-4	Springfield.....	4,533
Indiana.....	977,154	11,262	.....	988,416	29-2	Indianapolis.....	8,091
Indian Territory.....	(Inhabited by about 110,000 Indians.)					.....
Iowa.....	191,881	333	192,214	.....	8-8	Iowa City.....	1,583
Kansas Territory.....	(No white inhabitants in 1850.)					.....
Kentucky.....	761,413	10,011	210,981	982,405	26-1	Frankfort.....	3,308
Louisiana.....	265,491	17,142	244,809	517,762	12-5	Baton Rouge.....	3,905
Maine.....	581,813	1,356	.....	583,169	16-7	Augusta.....	11,753
Maryland.....	417,943	74,723	90,363	583,034	53-0	Annapolis.....	3,011
Massachusetts.....	985,450	9,064	.....	994,514	137-2	Boston.....	136,881
Mesilla Territory.....	(The population can not exceed 10,000, chiefly Indians.)					.....
Michigan.....	395,071	2,583	.....	397,654	7-1	Lansing.....	1,229
Minnesota Territory.....	6,038	39	.....	6,077	0-0	St. Paul.....	1,338
Mississippi.....	295,718	930	309,873	606,526	12-8	Jackson.....	1,881
Missouri.....	592,004	2,618	87,422	682,044	10-5	Jefferson City.....	3,000
Nebraska Territory.....	(No white inhabitants in 1850.)					.....
New Hampshire.....	317,456	520	.....	317,976	39-6	Concord.....	8,576
New Mexico Territory.....	61,525	22	.....	61,547	0-3	Santa Fé.....	4,346
New York.....	3,048,325	49,069	.....	3,097,394	67-3	Albany.....	50,763
New Jersey.....	465,509	23,810	236	489,555	71-4	Trenton.....	6,461
Ohio.....	1,955,050	25,279	.....	1,980,329	49-5	Columbus.....	17,882
Oregon Territory.....	12,098	55	.....	12,093	0-0	Salem.....	600
Pennsylvania.....	2,258,160	53,626	.....	2,311,786	49-2	Harrisburg.....	7,834
Rhode Island.....	143,875	3,670	.....	147,545	122-9	Providence.....	41,513
Tennessee.....	756,836	6,422	239,459	1,002,717	22-8	Nashville.....	11,493
Texas.....	154,034	397	53,160	212,592	0-6	Austin.....	629
Utah Territory.....	11,330	24	26	11,380	0-1	Fillmore City.....	200
Virginia.....	894,800	54,333	472,528	1,421,661	23-2	Richmond.....	27,570
Vermont.....	313,402	718	.....	314,120	39-2	Montpelier.....	2,310
Washington Territory.....	1,049	152	.....	1,201	0-0	Olympia.....	200
Wisconsin.....	304,756	635	.....	305,391	5-6	Madison.....	1,871
Total.....	19,553,068	434,495	3,204,313	23,191,876	7-0	.....	.....

AGGREGATE POPULATION AND DENSITY OF THE STATES AND TERRITORIES OF THE UNITED STATES.

States and Territories	Population.							Density.	
	1790.	1800.	1810.	1820.	1830.	1840.	1850.	1840.	1850.
Alabama.....	.....	.....	.....	127,901	309,527	590,756	771,623	11-65	15-21
Arkansas.....	.....	.....	.....	14,273	30,338	97,574	209,897	1-87	4-02
California.....	.....	.....	.....	.....	.....	92,597	.....	.....	0-59
Columbia, District of.....	.....	14,093	24,023	33,039	39,834	43,712	51,687	437-12	861-45
Connecticut.....	238,141	251,002	262,042	275,202	297,675	309,978	370,792	66-32	79-33
Delaware.....	59,096	64,273	72,674	72,749	76,748	73,035	91,532	36-33	43-18
Florida.....	.....	.....	.....	.....	34,730	54,477	87,445	0-92	1-48
Georgia.....	82,548	162,101	252,433	340,987	516,823	691,392	906,185	11-93	15-62
Illinois.....	.....	.....	12,282	55,211	157,445	476,183	851,470	8-59	15-37
Indiana.....	.....	4,875	24,520	147,178	343,081	685,866	988,416	20-28	29-24
Iowa.....	.....	.....	.....	.....	.....	43,112	192,214	0-85	3-78
Kentucky.....	73,077	220,955	406,511	564,317	687,917	779,828	982,405	20-70	26-07
Louisiana.....	.....	.....	76,556	153,407	215,739	352,411	517,762	8-54	12-55
Maine.....	96,540	151,719	223,705	298,335	399,455	501,793	583,169	15-80	18-36
Maryland.....	319,728	341,543	380,546	407,350	447,400	470,019	538,034	42-25	52-41
Massachusetts.....	378,717	423,245	472,040	523,287	610,408	737,699	994,514	94-58	127-50
Michigan.....	.....	.....	4,762	8,896	31,639	212,267	397,654	3-77	7-07
Mississippi.....	.....	8,850	40,352	75,448	136,621	375,051	606,526	7-97	12-86
Missouri.....	.....	.....	20,345	66,586	140,455	383,703	682,044	5-69	10-12
New Hampshire.....	141,899	183,762	214,360	244,161	269,328	284,574	317,976	30-67	34-26
New Jersey.....	184,139	211,949	245,555	277,575	320,823	373,306	489,555	44-87	58-94
New York.....	340,120	556,756	959,049	1,372,812	1,918,603	2,428,921	3,097,394	51-65	65-90
North Carolina.....	393,751	478,103	555,500	638,829	737,987	753,419	869,039	14-86	17-14
Ohio.....	.....	45,365	230,760	581,434	937,903	1,519,467	1,980,329	38-02	49-55
Pennsylvania.....	434,373	602,361	810,091	1,049,458	1,348,233	1,724,033	2,311,786	37-48	50-26
Rhode Island.....	69,110	69,122	77,031	83,059	97,199	108,830	147,545	33-33	112-97
South Carolina.....	249,073	345,591	415,115	502,741	581,185	594,398	668,507	20-23	22-75
Tennessee.....	35,791	105,602	261,727	422,813	631,034	823,210	1,002,717	15-18	21-99
Texas.....	.....	.....	.....	.....	.....	.....	212,592	.....	0-89
Vermont.....	85,416	154,465	217,713	235,764	280,652	291,948	314,120	28-59	30-76
Virginia.....	743,308	880,200	974,622	1,065,379	1,211,405	1,239,797	1,421,661	20-21	23-17
Wisconsin.....	.....	.....	.....	.....	.....	305,391	.....	0-57	5-66
Minnesota Territory.....	.....	.....	.....	.....	.....	.....	6,077	.....	0-74
New Mexico Territory.....	.....	.....	.....	.....	.....	.....	61,547	.....	0-30
Oregon Territory.....	.....	.....	.....	.....	.....	.....	13,294	.....	0-07
Utah Territory.....	.....	.....	.....	.....	.....	.....	11,380	.....	0-04
Total.....	8,929,827	5,305,937 Less 12	7,239,814	9,638,191 Less 60	12,866,020	17,069,453	23,191,876	9-55	7-90

DENSITY OF POPULATION TO SQUARE MILE IN THE UNITED STATES.

Years.	Density.	Years.	Density.	Years.	Density.
1790.....	4-79	1820.....	5-39	1850.....	7-90
1800.....	6-47	1830.....	7-20		
1810.....	4-21	1840.....	9-55		

For an explanation of the principle upon which the following table may be constructed, see Professor TUCKER'S *Progress of the United States*, p. 107. By starting with the population of 1790 as a basis, which was 3,929,827, and adding three per cent. for every

year, making 4,047,721 for 1791, 4,169,152 for 1792, and so on for every year until 1850, Mr. Darby, the well-known geographer, arrived at results which, when compared with the particular census years, showed as follows:

Years.	Estimated.	Census.
1800	5,381,468	5,305,925
1810	7,035,964	7,239,814
1820	9,635,182	9,635,182
1830	12,811,118	12,866,020
1840	17,217,706	17,069,453
1850	23,138,004	23,191,876

AGGREGATE POPULATION OF THE UNITED STATES FOR EACH YEAR FROM 1790 TO 1860.—(THE RATE FROM 1840 TO 1850 IS ASSUMED AS DATA FOR THE NEXT DECADE.)

Years.	Aggregate.	Years.	Aggregate.	Years.	Aggregate.
1790...	3,929,827	1814...	8,117,710	1838...	16,131,087
1791...	4,049,600	1815...	8,353,338	1839...	16,593,630
1792...	4,173,024	1816...	8,505,896	1840...	17,069,453
1793...	4,300,210	1817...	8,845,312	1841...	17,700,752
1794...	4,431,272	1818...	9,102,060	1842...	18,148,589
1795...	4,566,329	1819...	9,306,261	1843...	18,713,479
1796...	4,705,504	1820...	9,635,181	1844...	19,205,971
1797...	4,849,919	1821...	9,920,600	1845...	19,896,574
1798...	4,996,705	1822...	10,211,348	1846...	20,515,871
1799...	5,148,994	1823...	10,510,618	1847...	21,154,444
1800...	5,305,925	1824...	10,818,659	1848...	21,812,893
1801...	5,473,407	1825...	11,135,727	1849...	22,491,305
1802...	5,646,176	1826...	11,462,088	1850...	23,191,876
1803...	5,824,393	1827...	11,778,013	1851...	23,873,717
1804...	6,008,246	1828...	12,143,753	1852...	24,575,604
1805...	6,197,897	1829...	12,499,687	1853...	25,298,126
1806...	6,393,534	1830...	12,856,020	1854...	26,041,890
1807...	6,595,346	1831...	13,234,931	1855...	26,807,521
1808...	6,808,528	1832...	13,614,420	1856...	27,595,662
1809...	7,018,282	1833...	14,004,759	1857...	28,406,974
1810...	7,239,814	1834...	14,406,350	1858...	29,242,139
1811...	7,449,960	1835...	14,819,425	1859...	30,101,857
1812...	7,666,206	1836...	15,244,344	1860...	30,986,851
1813...	7,888,729	1837...	15,681,447		

The national census was conducted under the direction of the Secretary of State until the formation of the Department of the Interior (March 3, 1849), when it was made a subordinate branch of that office. The statistics were obtained by the marshals of the district courts prior to 1850, and special deputies appointed under them. Several months were usually devoted to the labor; and the returns thus obtained, being subject to the errors arising from changes and removals in the interim, consequently were not always reliable.

The following is an estimate of the progress of population from the year 1860 to the close of the century:

Years.	Aggregate.	Years.	Aggregate.	Years.	Aggregate.
1861...	32,023,400	1875...	47,067,052	1889...	71,235,122
1862...	32,981,252	1876...	48,499,663	1890...	73,382,185
1863...	33,973,928	1877...	49,954,652	1891...	75,573,639
1864...	34,998,825	1878...	51,453,291	1892...	77,840,948
1865...	35,989,281	1879...	52,996,589	1893...	80,176,063
1866...	36,089,377	1880...	54,586,795	1894...	82,551,344
1867...	37,170,958	1881...	56,224,399	1895...	85,058,784
1868...	38,226,086	1882...	57,911,130	1896...	87,435,718
1869...	39,434,668	1883...	59,648,468	1897...	90,228,863
1870...	40,617,703	1884...	61,447,916	1898...	92,935,718
1871...	41,836,239	1885...	63,291,353	1899...	95,723,799
1872...	43,091,532	1886...	65,190,192	1900...	98,595,512
1873...	44,384,064	1887...	67,145,917	1901...	101,553,377
1874...	45,715,585	1888...	69,160,294		

Agriculture.—The following table will show the relative number of farms, and quantity of acres in each in the several States and Territories of the United States, as well as the value of farms and implements. The unimproved land embraces such as is in occupancy and necessary to the enjoyment of the improved, though not itself reclaimed. Meadow-lands in all of the States, are therefore regarded improved.

FARMING LANDS AND IMPROVEMENTS OF THE UNITED STATES, 1850.

States and Territories.	Farms, Plantations, etc.	Acres of improved Land.	Acres of unimproved Land.	Average Number of Acres to each Farm.	Cash Value of Farms.	Value of Farming Implements and Machinery.	Average Value of Farms.	Average Value of Farming Implements and Machinery.	Average Value of Farms, Implements, and Machinery.
Alabama.....	41,964	4,485,614	7,702,067	289	\$64,323,224	\$5,125,063	\$1533	\$122	\$1655
Arkansas.....	17,758	781,530	1,816,084	146	15,265,245	1,601,296	860	90	1:50
California.....	872	32,454	3,861,531	4466	3,674,041	103,433	4443	118	4501
Columbia, District of.....	267	16,267	11,187	103	1,730,460	40,220	6481	151	6632
Connecticut.....	22,445	1,763,173	615,701	106	72,726,422	1,892,541	3240	84	3324
Delaware.....	6,063	580,582	375,282	153	18,830,031	510,279	3114	84	3198
Florida.....	4,304	349,049	1,246,240	371	3,328,109	658,795	1463	163	1622
Georgia.....	51,759	6,373,479	16,442,900	441	95,753,445	5,894,150	1860	114	1964
Illinois.....	76,208	5,039,545	6,997,867	159	96,133,290	6,405,561	1261	84	1345
Indiana.....	93,896	5,040,543	7,746,879	136	136,935,763	7,674,444	1453	71	1524
Iowa.....	14,805	324,282	1,911,382	185	16,657,667	1,172,869	1125	79	1204
Kentucky.....	74,777	5,365,270	10,961,478	227	155,021,262	5,169,037	2073	63	2142
Louisiana.....	13,432	1,500,925	3,399,018	97	75,814,398	11,576,938	5648	863	6511
Maine.....	46,760	2,799,516	2,515,797	97	54,861,743	2,284,557	1173	49	1222
Maryland.....	21,860	2,737,905	1,836,445	212	87,178,545	2,463,443	3185	113	4101
Massachusetts.....	34,069	2,135,436	1,222,576	99	109,076,347	3,209,534	3202	94	3296
Michigan.....	34,089	1,929,110	2,454,780	129	51,872,446	2,891,371	1521	85	1606
Mississippi.....	33,960	3,444,358	7,046,061	309	54,738,634	5,762,927	1612	170	1782
Missouri.....	54,458	2,938,425	6,794,245	179	63,225,543	3,931,525	1161	73	1234
New Hampshire.....	29,229	2,251,488	1,140,926	116	55,245,997	2,314,125	1890	79	1969
New Jersey.....	23,005	1,767,991	984,955	115	120,287,611	4,425,506	6030	185	5215
New York.....	170,621	12,408,964	6,710,120	113	554,546,642	22,084,926	3:50	129	3379
North Carolina.....	56,963	5,463,975	15,543,008	369	67,891,766	3,931,532	1192	69	1261
Ohio.....	143,807	9,851,493	8,146,000	125	358,758,003	12,750,885	2405	88	2533
Pennsylvania.....	127,577	8,623,619	6,294,728	117	407,876,099	14,722,541	3197	115	3312
Rhode Island.....	5,335	356,487	197,451	103	17,070,892	497,201	3170	92	3262
South Carolina.....	29,917	4,072,551	12,145,049	541	82,491,634	4,136,354	2751	138	2889
Tennessee.....	72,735	5,175,173	13,808,849	261	97,831,212	5,360,210	1345	74	1419
Texas.....	12,198	643,976	10,852,363	942	16,550,008	2,151,704	1367	176	1533
Vermont.....	29,763	2,601,409	1,524,413	139	63,367,217	2,739,282	2129	92	2221
Virginia.....	77,913	10,860,135	15,792,176	340	216,401,643	7,021,772	2810	91	2905
Wisconsin.....	20,177	1,045,499	1,931,159	148	28,528,638	1,641,568	1414	81	1405
Minnesota Territory.....	157	5,035	23,846	184	161,948	15,981	1081	102	1183
New Mexico Territory.....	3,750	166,201	124,370	77	1,853,922	77,960	441	21	462
Oregon Territory.....	1,164	132,857	299,951	372	2,840,170	183,423	2445	157	2605
Utah Territory.....	926	16,333	30,516	51	311,799	84,288	337	91	424
Total, 1850.....	1,449,075	113,032,614	180,528,000	203	\$3,271,575,426	\$151,587,638	\$258	\$105	\$2362

The average number of acres embraced in each farm in the United States is 203, valued at \$2258, and upon each farm there is an average of \$105 in implements and machinery. In Louisiana, so complicated is the sugar process, the average machinery is \$863 to the farm. By another table prepared by sections, it would seem that only about one-thirteenth of the whole area of the organized States and Territories is improved, and about one-eighth more is occupied and not

improved. In New England about twenty-six acres in the hundred are improved, in the South sixteen acres, in the Northwest twelve, and in the Southwest five. In the South the number of acres to the farm is largest, but the value per acre is most in the Middle States. The average value per acre for the Union, improved and unimproved, is \$11.14. The whole number of acres occupied is 293,560,614, or nearly one-sixth part of the national domain.—*Census Report of 1850.*

AGRICULTURAL RATIO TABLES OF THE STATES, 1850.

Sections.	Whole Area in Acres.	Land in use.		Proportion of Land in use to Area.		Number of Farms.	Average Value of Agricultural Implements to each Farm.	Average Number of Acres to each Farm.	Average Value per Acre.
		Improved.	Unimproved.	Improved, per Cent.	Unimproved, per Cent.				
New England.....	41,624,320	11,150,514	7,216,864	26.79	17.34	167,651	77.17	109.55	20.27
Middle States.....	73,357,360	26,200,008	16,212,717	35.72	22.10	350,293	126.31	121.08	28.07
Southern States.....	165,573,760	26,614,289	61,169,373	16.07	36.94	220,008	98.37	399.00	5.34
Southwestern States*	151,635,840	15,426,730	33,172,679	10.17	22.27	170,539	163.63	273.67	6.26
Northwestern States.....	253,043,160	32,043,567	46,965,790	12.90	18.56	512,217	79.49	155.41	11.39
California and organized Territories.....	629,255,680	252,880	4,340,214	.06	.69	6,589	67.71	683.23	1.89
Texas.....	152,002,560	643,946	10,852,963	.42	7.14	12,198	176.40	942.47	1.44
Total.....	1,466,455,610	113,032,614	180,523,000	7.71	12.31	1,449,075	104.61	202.59	11.14

* Exclusive of Texas and California.

LIVE STOCK UPON FARMS AND AGRICULTURAL PRODUCTIONS OF THE STATES AND TERRITORIES, 1840 AND 1850.

States and Territories.	Horses.	Asses and Mules.	Horses, Asses, and Mules.	Horses and Mules.	Milk Cows.	Working Oxen.	Other Cattle.	Total Neat Cattle.	Neat Cattle.	Sheep.
	1850.	1850.	1850.	1850.	1850.	1850.	1850.	1850.	1850.	1850.
Alabama.....	128,001	59,815	187,896	143,147	27,791	66,961	433,263	728,015	668,018	371,580
Arkansas.....	60,197	11,559	71,756	51,472	93,151	34,239	165,320	292,710	188,786	91,256
California.....	21,719	1,663	23,385	.....	4,280	4,780	253,599	262,659	.....	17,574
Columbia, District of.....	824	57	881	2,145	813	104	123	1,040	3,274	150
Connecticut.....	26,579	49	26,928	34,650	85,461	46,988	50,226	212,675	238,650	174,181
Delaware.....	13,852	791	14,643	14,421	19,248	9,797	24,166	53,211	53,883	27,503
Florida.....	10,845	5,002	15,850	12,043	72,876	5,704	182,415	261,085	418,081	23,811
Georgia.....	151,331	57,379	208,710	157,540	334,223	73,266	690,019	1,097,528	884,414	560,435
Illinois.....	267,653	10,573	278,226	199,237	204,671	76,166	541,200	912,036	626,274	894,043
Indiana.....	314,299	6,599	320,898	241,036	284,554	40,221	359,891	714,666	619,980	1,122,498
Iowa.....	38,536	754	39,290	10,794	45,704	21,892	69,035	136,621	38,049	149,960
Kentucky.....	315,682	65,600	381,291	395,853	247,475	62,274	442,768	752,512	737,098	1,102,091
Louisiana.....	89,514	44,849	134,368	99,888	105,576	54,908	41,798	575,342	381,248	110,333
Maine.....	41,721	55	41,776	59,208	133,566	83,989	15,890	343,339	327,255	451,577
Maryland.....	75,654	5,644	81,328	92,220	86,853	34,135	98,505	219,586	225,714	177,902
Massachusetts.....	42,216	34	42,259	61,484	131,099	46,611	83,284	259,994	282,574	188,651
Michigan.....	58,506	70	58,576	30,144	99,676	55,380	119,471	274,497	185,190	746,435
Mississippi.....	115,460	54,547	170,007	109,227	214,231	81,485	436,254	733,970	623,197	304,929
Missouri.....	225,319	41,667	266,986	196,032	230,169	112,168	449,173	791,510	433,875	762,511
New Hampshire.....	34,233	19	34,252	43,892	94,277	59,027	114,606	267,910	275,562	384,756
New Jersey.....	63,955	4,089	68,044	70,592	118,736	12,070	80,455	211,261	220,202	160,485
New York.....	447,014	963	447,977	474,543	931,324	178,909	767,406	1,877,639	1,911,244	3,453,241
North Carolina.....	143,693	25,259	173,952	166,618	221,799	37,309	434,402	673,510	617,371	5,524
Ohio.....	463,397	3,423	466,820	430,527	541,409	65,381	749,067	1,353,947	1,217,874	3,942,929
Pennsylvania.....	350,398	2,251	352,657	365,129	530,224	61,527	562,195	1,153,946	1,172,665	1,822,357
Rhode Island.....	6,168	1	6,169	8,024	18,698	8,139	9,375	36,261	36,891	44,296
South Carolina.....	97,171	37,453	134,654	129,921	193,244	20,507	563,935	777,686	572,608	255,551
Tennessee.....	270,636	75,303	345,939	341,409	250,456	56,255	414,051	750,762	822,851	811,591
Texas.....	70,150	12,463	82,223	.....	217,811	51,285	661,018	930,114	.....	100,530
Vermont.....	61,057	218	61,275	62,402	146,128	48,577	154,143	348,848	384,341	1,014,122
Virginia.....	272,403	21,483	293,886	326,438	317,619	217,811	55,616	930,114	1,024,145	1,310,004
Wisconsin.....	30,179	156	30,335	5,735	64,389	42,801	76,293	183,433	30,269	124,896
Minnesota Territory.....	860	14	874	.....	607	655	740	2,002	.....	80
New Mexico Territory.....	5,079	8,654	13,733	.....	10,635	12,257	10,085	32,977	.....	377,271
Oregon Territory.....	8,046	420	8,466	.....	9,427	8,114	24,188	41,729	.....	15,382
Utah Territory.....	2,429	325	2,754	.....	4,861	5,266	2,489	12,616	.....	3,262

LIVE STOCK UPON FARMS AND AGRICULTURAL PRODUCTIONS OF THE STATES AND TERRITORIES, 1840 AND 1850.

States and Territories.	Swine.		Value of Live Stock.	Value of Animals slaughtered.	Wheat, Bushels.		Rye, Bushels.		Oats, Bushels.	
	1850.	1840.			1850.	1840.	1850.	1840.	1850.	1840.
Alabama.....	1,904,540	1,423,373	\$21,670,112	\$4,823,485	204,044	338,052	17,261	51,008	2,965,696	2,065,696
Arkansas.....	836,727	393,053	6,647,961	1,163,313	199,639	105,878	8,047	6,219	656,133	.....
California.....	9,776	.....	3,351,059	107,178	17,228	.....	.....	.....	.....	.....
Columbia, District of.....	1,635	4,673	71,643	9,085	17,870	12,147	5,509	5,681	8,134	.....
Connecticut.....	76,472	131,961	7,467,490	2,202,266	41,762	87,009	600,893	737,424	1,258,738	.....
Delaware.....	56,261	74,285	1,849,281	373,665	482,511	315,165	8,066	33,546	604,518	.....
Florida.....	209,453	92,680	2,830,088	514,685	1,027	412	1,152	305	66,586	.....
Georgia.....	2,168,617	1,457,755	25,723,416	6,839,762	1,088,534	1,801,890	53,750	60,693	3,820,044	.....
Illinois.....	1,915,907	1,495,254	24,209,258	4,972,286	9,414,575	3,335,393	83,364	88,197	10,087,241	.....
Indiana.....	2,263,776	1,623,608	22,473,555	6,567,935	6,214,458	4,049,375	73,792	129,621	5,655,014	.....
Iowa.....	323,247	104,536	3,683,275	821,164	1,580,581	154,693	19,916	3,792	1,624,845	.....
Kentucky.....	2,891,163	2,310,533	20,661,436	6,462,508	2,142,822	4,803,152	415,073	1,321,873	8,201,311	.....
Louisiana.....	517,301	323,220	11,152,275	1,458,990	417	60	475	1,812	89,637	.....
Maine.....	54,518	117,386	9,705,726	1,646,773	296,255	848,166	137,941	2,131,037	.....	.....
Maryland.....	352,911	416,943	7,997,634	1,954,300	4,414,680	3,345,783	102,614	723,577	2,422,151	.....
Massachusetts.....	81,119	145,291	9,647,710	2,500,924	31,211	157,928	481,021	536,014	1,165,146	.....
Michigan.....	205,347	295,390	8,008,734	1,828,327	4,925,887	2,157,103	105,871	34,236	2,866,056	.....
Mississippi.....	1,532,734	1,001,207	19,493,662	3,636,582	137,990	196,620	9,606	11,444	1,503,289	.....
Missouri.....	1,702,625	1,271,161	19,857,500	3,367,106	2,981,652	1,037,886	44,268	68,608	5,278,079	.....
New Hampshire.....	63,457	121,671	8,871,901	1,522,373	185,655	422,124	133,117	309,143	973,381	.....
New Jersey.....	295,370	261,443	10,797,291	2,638,552	1,601,190	774,203	1,255,578	1,665,890	3,378,063	.....
New York.....	1,018,262	1,000,065	73,570,479	13,573,883	13,121,426	12,236,413	414,152	2,979,323	26,552,814	.....
North Carolina.....	1,812,813	1,649,716	17,717,647	5,767,866	2,130,102	1,960,855	299,563	213,971	4,052,078	.....
Ohio.....	1,964,770	2,099,746	44,121,741	7,439,243	14,487,551	16,571,661	425,918	814,205	13,472,742	.....
Pennsylvania.....	1,040,366	1,503,964	14,000,053	8,219,845	15,367,691	13,213,077	4,305,160	6,613,873	21,538,156	.....
Rhode Island.....	19,500	30,659	1,532,637	667,436	4	3,098	26,499	34,521	212,252	.....
South Carolina.....	1,065,503	878,532	15,060,015	3,502,637	1,066,277	968,354	43,790	44,738	2,326,135	.....
Tennessee.....	3,104,800	2,926,607	29,973,016	6,401,765	1,619,386	4,569,692	89,137	304,820	7,703,086	.....
Texas.....	692,022	.....	10,412,927	1,116,137	41,729	.....	3,108	.....	199,017	.....
Vermont.....	66,236	203,800	12,643,223	1,861,386	535,955	495,890	176,233	230,993	2,307,734	.....
Virginia.....	1,823,543	1,992,155	33,656,629	7,502,986	11,213,616	10,109,716	458,980	1,452,799	10,719,144	.....
Wisconsin.....	152,276	51,393	4,397,385	920,178	4,286,131	212,116	81,253	1,065	3,414,672	.....
Minnesota.....	734	.....	92,859	2,840	1,401	.....	125	.....	80,582	.....
New Mexico.....	7,314	.....	1,494,629	82,125	196,516	.....	.....	.....	61.5	.....
Oregon.....	80,235	.....	1,870,189	164,530	211,943	.....	106	.....	5,214	.....
Utah.....	914	.....	546,963	67,985	107,702	.....	210	.....	10,900	.....

The annexed tables embrace the returns of agricultural products according to the census of 1840 and 1850. The quantity of wheat in 1850 is believed to be understated, and the crop was also short. Rough rice is returned for 1850, and clean rice for 1840. Corrections have been made in the cotton and sugar returns since the publication of the Quarto Census, pounds having been intended by the enumerators in many cases where they returned bales or hogsheads. It is impossible to reconcile the hemp and flax returns of 1840 and 1850. No doubt in both cases tons and pounds have often been confounded. In a few of the States, such as Indiana and Illinois, the returns of 1850

were rejected altogether for insufficiency. Letters from Kentucky entitled to high credit state the water-rotted hemp for that year to be not a third as much as the census gives, and the dew-rotted to be about 22,000 tons. In this case the whole hemp crop of 1850 may have reached 35,000 or 40,000 tons, and that of 1840 25,000 to 30,000 tons. By the manufacturing schedules it appears that 18,276 tons hemp were consumed by the manufacturers of Kentucky and Missouri, and by the receipts at the cities of St. Louis, Cincinnati, and New Orleans, with proper deductions, that fourteen or fifteen thousand tons hemp were exported in the rough to other States.

AGRICULTURAL PRODUCTIONS OF THE STATES AND TERRITORIES, 1840 AND 1850.

States and Territories.	Oats, Bushels.	Indian Corn, Bushels.	Irish and Sweet Potatoes, Bushels.				Barley, Bushels.
			Irish.			Irish and Sweet.	
			Irish.	Sweet.	Total.		
	1840.	1850.	1840.	1850.	1850.	1840.	1850.
Alabama	1,406,353	28,754,048	20,947,004	246,001	5,475,204	5,721,205	1,708,358
Arkansas	189,553	8,893,939	4,846,632	193,832	788,149	981,981	298,608
California		12,236		9,292	1,000	10,292	9,712
Columbia, District of		65,280	30,485	88,292	3,497	81,789	12,035
Connecticut	1,453,262	1,935,043	1,500,441	2,689,725	80	2,689,805	3,414,298
Delaware	927,405	3,145,542	2,099,359	240,542	65,443	306,985	200,712
Florida	13,529	1,996,809	898,974	7,828	757,226	765,054	264,617
Georgia	1,610,030	30,080,099	20,905,122	227,379	6,986,428	7,213,807	1,291,366
Illinois	4,988,008	57,046,984	22,654,211	2,614,861	157,438	2,672,294	2,025,520
Indiana	5,981,605	52,964,363	23,155,887	2,053,387	201,711	2,255,048	1,526,794
Iowa	216,385	8,656,799	1,406,241	276,120	6,243	282,363	234,063
Kentucky	7,153,974	58,672,591	39,847,120	1,492,487	998,179	2,490,666	1,065,085
Louisiana	107,355	10,266,873	5,952,912	95,682	1,428,453	1,524,085	834,341
Maine	1,076,409	1,750,056	950,528	3,436,040		3,436,040	10,392,280
Maryland	3,534,211	10,749,858	8,233,056	764,939	208,993	973,932	1,036,433
Massachusetts	1,319,630	2,345,490	1,809,192	3,585,384		3,585,384	5,385,652
Michigan	2,114,055	5,641,420	2,277,039	2,353,997	1,177	2,361,074	2,109,205
Mississippi	668,624	22,440,552	13,161,237	261,482	4,741,796	5,003,277	1,630,100
Missouri	2,234,947	36,214,577	17,332,524	939,006	336,505	1,274,511	788,768
New Hampshire	1,296,114	1,573,670	1,162,572	4,304,919		4,304,919	6,206,606
New Jersey	3,083,524	8,759,704	4,361,975	3,207,256	508,015	3,715,251	2,072,069
New York	20,675,547	17,588,490	10,972,256	15,398,368	5,629	15,403,997	30,123,614
North Carolina	3,193,947	27,941,051	23,893,763	620,318	5,095,709	5,716,027	2,609,289
Ohio	14,593,103	50,078,695	33,668,144	5,057,769	187,991	5,245,760	5,805,021
Pennsylvania	20,641,819	19,835,214	14,240,022	5,980,732	52,172	6,032,904	9,536,663
Rhode Island	171,517	539,201	450,498	651,029		651,029	911,973
South Carolina	1,486,208	16,271,454	14,722,805	136,494	4,337,469	4,473,960	2,698,313
Tennessee	7,035,675	52,276,323	44,966,188	1,067,844	2,777,716	3,845,560	1,904,370
Texas		6,028,876		94,645	1,332,158	1,426,803	4,776
Vermont	2,222,584	2,032,396	1,119,678	4,951,014		4,951,014	8,869,751
Virginia	13,451,063	35,254,819	24,677,591	1,316,933	1,813,634	3,130,567	2,944,660
Wisconsin	406,514	1,988,979	379,359	1,402,077	879	1,402,956	141,098
Minnesota		16,725	....	21,145	200	21,345	....
New Mexico		865,411	....	3	....	■	....
Oregon		2,918	....	91,326	....	91,326	....
Utah		9,529	....	43,968	60	44,028	....

States and Territories.	Barley, Bushels.	Buckwheat, Bushels.		Hay, Tons.		Hops, Pounds.		Clover-seed.	Other Grass Seeds.
	1840.	1850.	1840.	1850.	1840.	1850.	1840.	1850.	1850.
Alabama.....	7,692		58	32,685	12,718	276	825	138	547
Arkansas.....	760	175	88	3,976	586	157	....	90	426
California.....	....	....	....	2,038	....	....	....	....	....
Columbia, District of.....	294	378	273	2,279	1,331	15	98	■	....
Connecticut.....	33,795	299,297	303,043	516,131	426,704	554	4,573	13,841	16,628
Delaware.....	5,260	8,615	11,299	30,159	22,483	348	740	2,525	1,403
Florida.....	30	55	....	2,510	1,197	14	....	....	2
Georgia.....	12,979	259	141	23,449	16,970	261	773	132	428
Illinois.....	82,251	184,504	57,884	601,932	164,932	3,551	17,743	3,427	14,380
Indiana.....	28,015	149,740	49,019	403,290	178,029	92,796	38,591	18,330	11,951
Iowa.....	728	52,516	6,213	89,055	17,953	8,242	83	342	2,096
Kentucky.....	17,491	16,097	8,169	113,747	88,306	4,309	749	3,250	21,481
Louisiana.....	....	8	....	25,753	24,651	125	115	2	97
Maine.....	355,161	104,523	51,543	755,889	691,358	40,120	36,940	9,097	9,214
Maryland.....	3,594	103,671	73,606	157,956	106,687	1,370	2,357	15,217	2,561
Massachusetts.....	165,319	106,895	87,000	651,807	569,395	121,595	254,796	1,002	5,085
Michigan.....	127,802	472,917	113,532	404,954	130,805	10,663	11,381	16,989	9,285
Mississippi.....	1,654	1,121	61	12,504	171	154	84	533	....
Missouri.....	9,801	23,641	15,318	116,925	49,093	4,130	789	619	4,346
New Hampshire.....	121,899	65,265	105,103	598,354	496,107	257,174	243,425	829	8,071
New Jersey.....	12,501	878,934	856,117	435,950	334,861	2,133	4,531	28,250	63,051
New York.....	2,530,068	3,183,885	2,287,885	3,728,797	3,127,047	2,536,299	447,256	88,222	96,493
North Carolina.....	3,574	16,704	15,391	145,653	101,869	9,246	1,063	576	1,275
Ohio.....	212,440	638,060	633,139	1,443,142	1,022,037	63,731	62,195	103,197	37,310
Pennsylvania.....	209,938	2,193,692	2,113,742	1,842,970	1,311,643	22,088	49,481	125,030	53,913
Rhode Island.....	66,490	1,245	2,979	74,418	68,449	277	113	1,328	3,708
South Carolina.....	3,967	283	72	20,925	24,618	25	93	376	50
Tennessee.....	4,809	19,427	17,118	74,091	31,223	1,032	850	5,096	9,118
Texas.....	....	59	....	8,354	....	7	....	10	....
Vermont.....	54,781	200,819	228,416	866,153	836,739	288,023	48,137	760	14,986
Virginia.....	87,430	214,828	243,822	369,098	364,708	11,506	10,597	29,727	23,428
Wisconsin.....	11,092	79,578	10,654	275,662	30,938	15,930	133	483	5,003
Minnesota.....	....	515	....	2,019	....	....	....	....	....
New Mexico.....	....	100	....	....	....	....	....	....	....
Oregon.....	....	....	....	373	....	5	....	4	■
Utah.....	....	832	....	4,905	....	59	....	2	....

States and Territories.	Value of Orchard Products.	Beeswax and Honey, Pounds of.	Wax, Pounds of.	Value of Poultry.	Home-made Manufactures.	Cords of Wood sold.	Flax-seed, Bush. of.	Flax, Pounds of.	Dew-rotted Hemp, Tons.	Water-rot Hemp, Tons.
	1840.	1850.	1840.	1840.	1850.	1840.	1850.	1850.	1850.	1850.
Alabama	\$55,249	897,021	25,286	\$404,994	\$1,934,120	60,955	69	3,921	.....	.....
Arkansas	10,680	192,838	7,079	109,468	638,217	78,606	321	12,291	.....	15
California	.....	.....	.....	.....	7,000	.....	.....	.....	.....	.....
Columbia, District of	3,507	550	44	3,092	2,075	1,287	.....	.....	.....	.....
Connecticut	296,232	93,304	3,807	176,629	102,252	159,062	703	17,928	.....	.....
Delaware	28,211	41,243	1,088	47,265	38,121	67,864	904	11,174	.....	.....
Florida	1,035	18,971	75	61,007	75,532	9,943	.....	50	.....	.....
Georgia	156,122	732,514	19,799	44,623	1,888,968	57,459	622	5,387	.....	.....
Illinois	126,756	861,444	29,173	309,204	1,165,902	134,549	10,787	160,063	.....	.....
Indiana	110,055	935,329	30,647	357,594	1,631,039	183,172	36,888	584,469	.....	.....
Iowa	50	321,711	2,132	16,529	221,292	7,304	1,953	2,600	.....	.....
Kentucky	434,935	1,168,019	33,445	536,439	2,450,128	264,222	75,801	12,116	16,432	1355
Louisiana	11,769	96,701	1,012	283,550	189,232	202,867	.....	.....	.....	.....
Maine	149,384	189,618	3,793	128,171	513,599	205,011	580	17,031	.....	.....
Maryland	105,740	74,802	3,674	218,765	111,828	178,181	2,446	35,686	63	.....
Massachusetts	389,177	59,508	1,196	178,157	203,335	278,069	72	1,162	.....	.....
Michigan	16,075	353,232	4,533	82,730	349,947	54,498	519	7,152	.....	.....
Mississippi	14,459	397,460	6,885	369,492	1,164,020	118,423	26	665	7	.....
Missouri	90,578	328,972	56,491	270,647	1,674,705	81,981	13,696	627,160	15,968	60
New Hampshire	239,979	117,140	1,345	107,092	393,455	116,266	189	7,652	.....	.....
New Jersey	464,006	158,674	10,061	336,953	112,781	240,602	16,525	182,965	.....	.....
New York	1,701,935	1,755,380	52,795	1,153,413	1,280,333	1,058,923	57,968	940,577	1	3
North Carolina	386,006	512,289	118,923	544,125	2,086,522	40,034	38,196	503,796	36	.....
Ohio	475,271	804,375	38,950	551,193	1,712,196	272,527	138,880	446,932	100	.....
Pennsylvania	618,179	839,509	33,107	685,301	749,132	269,516	41,728	530,307	44	.....
Rhode Island	32,998	6,347	165	61,702	26,495	48,666	.....	85	.....	.....
South Carolina	52,275	216,281	15,857	396,364	909,525	171,451	55	333	.....	.....
Tennessee	367,105	1,036,572	50,907	606,969	3,137,790	104,014	18,904	368,131	454	141
Texas	.....	380,325	.....	.....	266,984	.....	26	1,048	.....	.....
Vermont	213,944	249,422	4,660	131,578	267,710	96,890	939	20,852	.....	.....
Virginia	705,765	880,767	65,020	754,698	2,156,312	403,590	52,318	1,000,450	88	51
Wisconsin	37	131,005	1,474	16,167	43,624	22,910	1,191	68,393	.....	.....
Territ's.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Minnesota	.....	80	.....	.....	.....	.....	.....	.....	.....	.....
New Mexico	.....	.....	.....	.....	6,033	.....	.....	.....	.....	.....
Oregon	.....	.....	.....	.....	.....	.....	.....	640	.....	.....
Utah	.....	10	.....	.....	1,392	.....	5	550	.....	.....

States and Territories.	Butter and Cheese, Pounds.			States and Territories.	Butter and Cheese, Pounds.		
	Butter.	Cheese.	Total.		Butter.	Cheese.	Total.
Alabama	1850.	1850.	1850.	Missouri	1850.	1850.	1850.
Arkansas	4,008,311	31,412	4,040,223	New Hampshire	7,834,359	203,572	8,037,931
California	1,854,239	30,098	1,884,327	New Jersey	6,977,056	3,196,563	10,173,619
Columbia, District of	705	150	855	New York	9,487,310	365,756	9,853,066
Connecticut	14,872	1,500	16,372	North Carolina	79,766,004	49,741,413	129,507,507
Delaware	6,498,119	5,363,377	11,861,396	Ohio	4,146,290	95,991	4,242,211
Florida	1,055,308	3,137	1,058,495	Pennsylvania	34,449,379	20,819,542	55,268,921
Georgia	371,478	18,015	389,513	Rhode Island	39,878,418	2,505,084	42,383,452
Illinois	4,640,539	46,976	4,687,535	South Carolina	996,670	316,508	1,312,178
Indiana	12,526,453	1,373,325	13,904,768	Tennessee	2,981,580	4,970	2,986,590
Iowa	12,831,535	624,564	13,506,099	Texas	8,139,585	177,661	8,317,266
Kentucky	2,171,188	209,840	2,381,028	Vermont	2,344,900	95,299	2,440,199
Louisiana	9,947,523	219,954	10,161,477	Virginia	12,137,990	8,720,384	20,858,374
Maine	683,060	1,957	685,026	Wisconsin	11,089,359	436,292	11,525,651
Maryland	9,243,811	2,434,454	11,678,265	Utah	3,638,750	400,283	4,038,033
Massachusetts	3,806,160	9,975	3,816,135	Territ's.	.....	.....	.....
Michigan	8,071,370	7,098,142	15,169,512	Minnesota	1,100	.....	1,100
Mississippi	7,065,878	1,011,493	8,077,370	New Mexico	111	5,848	5,959
Missouri	4,346,234	21,191	4,367,425	Oregon	211,464	36,980	248,444
				Utah	83,309	30,998	114,307

States and Territories.	Dew and water-rotted Hemp, Tons.	Hemp and Flax, Tons.	Maple-sugar, Pounds.	Cane-sugar, Hogsheads of 100 Lbs.	Molasses, Gallons of.	Sugar, Pounds made.	Ginned Cotton, Bales of 400 Pounds.	Cotton, Pounds of.	Rough Rice, Pounds.
	1850.	1840.	1850.	1850.	1850.	1840.	1850.	1840.	1850.
Alabama	.....	5	643	87	83,428	10,143	564,420	117,138,823	2,312,262
Arkansas	15	1,039	9,330	.....	18	1,542	65,544	6,028,642	63,179
Connecticut	.....	41	50,796	.....	665	51,764	.....	.....	.....
Delaware	.....	52	.....	.....	50	.....	.....	334	.....
Florida	.....	2	.....	2,750	352,593	275,317	45,181	12,110,533	1,075,090
Georgia	.....	10	50	846	216,245	339,744	490,091	163,392,396	38,950,691
Illinois	.....	1,976	248,904	.....	8,354	899,813	.....	200,947	.....
Indiana	.....	8,005	2,921,192	.....	190,325	3,727,795	14	180	.....
Iowa	.....	313	78,407	.....	3,162	41,450	.....	.....	.....
Kentucky	17,787	9,992	437,405	10	30,079	1,377,535	758	691,456	5,688
Louisiana	.....	.....	255	226,001	10,931,177	119,947,720	173,737	152,555,368	4,425,349
Maine	.....	38	93,542	.....	3,167	257,464	.....	.....	.....
Maryland	63	488	47,740	.....	1,430	36,266	.....	5,673	.....
Massachusetts	.....	24	795,525	.....	4,693	579,227	.....	.....	.....
Michigan	.....	755	2,439,794	.....	19,828	1,329,784	.....	.....	.....
Mississippi	7	16	.....	8	18,318	77	484,392	193,401,577	2,719,856
Missouri	16,028	18,103	178,910	.....	5,636	274,853	.....	121,122	700
New Hampshire	.....	26	1,298,363	.....	9,811	1,162,368	.....	.....	.....
New Jersey	.....	2,165	2,197	.....	954	56	.....	.....	.....
New York	4	1,130	10,357,484	.....	56,539	10,048,109	.....	.....	.....
North Carolina	30	9,379	27,932	.....	704	7,163	50,545	51,926,190	5,465,868
Ohio	150	9,080	4,588,209	.....	197,308	6,363,386	.....	.....	.....
Pennsylvania	44	2,649	2,326,525	.....	50,652	2,265,755	.....	.....	.....
Rhode Island	.....	.....	20	.....	4	59	.....	.....	.....
South Carolina	.....	.....	298	77	15,904	30,000	300,901	61,710,274	159,930,613
Tennessee	535	3,344	153,557	3	7,223	253,073	194,532	27,701,277	263,854
Texas	.....	.....	.....	7,351	441,918	.....	55,072	.....	88,203
Vermont	.....	29	6,349,357	.....	5,997	4,647,934	.....	.....	.....
Virginia	130	25,594	1,227,665	.....	40,322	1,541,383	3,947	3,494,483	17,154
Wisconsin	.....	2	610,976	.....	9,874	135,288	.....	.....	.....
Territ's.	.....	.....	2,960	.....	.....	.....	.....	.....	.....
Minnesota	.....	.....	.....	.....	4,236	.....	.....	.....	.....
New Mexico	.....	.....	.....	.....	24	.....	.....	.....	.....
Oregon	.....	.....	.....	.....	.....	.....	.....	.....	.....
Utah	.....	.....	.....	.....	58	.....	.....	.....	.....

AGRICULTURAL PRODUCTIONS OF THE STATES AND TERRITORIES OF THE U. S., 1840 AND 1850.

States and Territories.	Rice, Pounds.		Tobacco, Pounds.		Wool, Pounds.		Silk Cocoons, Pounds.		Wine, Gallons.		Value of Family Goods.
	1840.	1850.	1840.	1850.	1840.	1850.	1840.	1850.	1840.	1850.	
Alabama	149,019	104,990	273,302	657,118	220,353	167	1,592	220	177	1,656	\$1,119
Arkansas	5,454	218,936	148,439	182,535	64,943	38	95	35	....	480	750
California .....	....	1,000	....	5,520	....	....	....	53,055	....	....	....
Columbia, District of .....	....	7,800	55,550	525	707	....	651	803	25	1,500	....
Connecticut .....	....	1,267,624	471,057	497,454	899,870	328	17,528	4,260	2,666	226,163	....
Delaware .....	....	....	272	57,769	64,404	....	1,453	145	322	62,116	....
Florida	481,420	908,614	75,274	23,247	7,285	6	124	10	....	20,205	....
Georgia	12,834,732	423,924	162,894	990,019	371,303	813	2,992	796	8,647	1,407,630	....
Illinois	460	841,304	564,326	2,150,113	650,007	47	1,150	2,907	474	993,567	....
Indiana .....	....	1,044,620	1,820,306	2,610,237	1,237,919	387	379	14,055	10,265	1,289,802	....
Iowa .....	....	6,041	8,076	373,898	23,039	246	....	420	....	25,966	....
Kentucky	16,376	55,501,196	53,436,909	2,297,433	1,786,847	1281	737	8,093	2,209	2,622,462	....
Louisiana	3,604,534	26,878	119,824	109,897	49,283	29	317	15	2,884	65,190	....
Maine .....	....	....	30	1,364,034	1,465,551	252	211	724	2,336	804,397	....
Maryland .....	....	21,407,497	24,816,012	477,438	488,201	39	2,290	1,431	7,585	176,050	....
Massachusetts .....	....	138,246	64,955	585,136	941,906	7	1,741	4,688	193	231,942	....
Michigan .....	....	1,245	1,602	2,043,283	153,375	108	266	1,654	....	113,955	....
Mississippi	777,195	49,960	58,471	559,619	175,196	8	91	407	12	682,945	....
Missouri	50	17,113,784	9,067,913	1,637,164	562,265	186	70	10,563	22	1,149,544	....
New Hampshire .....	....	50	115	1,108,476	1,260,517	191	419	344	94	538,303	....
New Jersey .....	....	310	1,922	375,396	397,207	23	1,966	1,811	9,416	201,625	....
New York .....	....	83,189	744	10,071,301	9,845,205	1774	1,735	9,172	6,799	4,636,547	....
North Carolina	2,820,388	11,984,786	16,772,350	970,738	625,044	299	3,014	11,058	28,752	1,413,242	....
Ohio .....	....	10,454,449	5,943,275	10,196,371	3,685,315	1552	4,317	48,207	11,524	1,353,937	....
Pennsylvania .....	....	912,651	325,018	4,481,570	3,048,564	285	7,362	25,590	14,328	1,808,093	....
Rhode Island .....	....	....	317	129,632	183,830	....	458	1,013	803	51,180	....
South Carolina	60,590,861	74,285	51,519	437,233	299,170	123	2,090	5,880	643	930,703	....
Tennessee	7,977	30,143,932	29,550,432	1,364,378	1,060,332	1923	1,217	92	653	2,886,661	....
Texas .....	....	66,897	....	131,917	....	22	....	99	....	....	....
Vermont .....	....	....	555	3,400,717	3,699,235	268	4,286	650	94	674,548	....
Virginia	2,956	56,803,237	75,347,106	2,860,765	2,538,374	517	3,191	5,408	13,911	2,441,672	....
Wisconsin .....	....	1,268	115	253,963	6,777	....	....	113	....	12,567	....
Territories .....	....	....	....	85	....	....	....	....	....	....	....
{ Minnesota .....	....	....	....	....	....	....	....	....	....	....	....
{ New Mexico .....	....	8,467	....	32,901	....	....	....	2,363	....	....	....
{ Oregon .....	....	325	....	29,636	....	....	....	....	....	....	....
{ Utah .....	....	70	....	9,223	....	....	....	....	....	....	....

ACTUAL CROPS PER ACRE, ON THE AVERAGE, AS RETURNED BY THE CENSUS MARSHALS OF THE U. S. FOR 1849-'50.

States.	Wheat, Bush.	Rye, Bush.	Indian Corn, Bush.	Oats, Bush.	Rice, Pounds.	Tobacco, Pounds.	Seed Cotton, Pounds.	Peanut Beans, Bush.	Irish Potatoes, Bush.	Sweet Potatoes, Bush.	Barley, Bush.	Buckwheat, Bush.	Hay, Tons.	Hops, Lbs.	Hemp, dew-retted.	Cane-sugar, Pounds.
Alabama	5	..	15	12	....	....	525	12	60	200	..	..	..	..	..	..
Arkansas	10	..	22	18	....	....	700	....	..	100	..	..	..	..	..	..
Connecticut .....	..	..	40	21	....	....	....	....	85	....	..	20	..	..	..	..
Delaware	11	..	20	20	....	....	....	....	..	..	..	10	..	..	..	..
Florida	15	..	..	..	1850	....	250	....	175	....	..	..	..	..	..	750
Georgia	5	7	16	18	....	....	500	5	125	400	..	..	..	..	..	..
Illinois	11	14	33	29	....	....	....	....	115	..	40	15	1	..	..	..
Indiana	12	18	33	20	....	....	....	....	100	..	25	25	1	..	..	..
Iowa	14	..	32	36	....	....	....	....	100	..	..	..	..	..	..	..
Kentucky	8	11	24	18	....	575	....	....	130	65	..	..	1	..	650	..
Louisiana .....	..	..	16	..	1400	....	550	....	..	175	..	..	..	..	..	1000
Maine	10	11	27	20	....	....	....	....	120	..	20	..	..	..	..	..
Maryland	13	18	23	21	....	650	....	....	75	..	..	..	1	..	..	..
Massachusetts	16	13	31	26	....	....	....	....	170	..	21	..	1	..	..	..
Michigan	10	..	32	26	....	....	....	....	140	..	..	14	..	..	..	..
Mississippi	9	..	18	12	....	....	650	13	105	..	..	..	..	..	..	..
Missouri	11	..	34	26	....	775	....	....	110	..	..	..	1	..	775	..
N. Hampshire	11	14	30	30	....	....	....	....	220	..	22	..	1	..	..	..
New Jersey	11	8	33	26	....	....	....	....	75	..	18	16	..	..	..	..
New York	12	17	27	25	....	....	....	....	100	..	25	22	1	950	..	..
North Carolina	7	15	17	10	....	....	....	....	65	..	..	..	..	..	..	..
Ohio	12	25	36	21	....	730	....	....	75	..	30	20	1	..	..	..
Pennsylvania	15	14	20	..	....	....	....	....	75	..	..	..	1	..	..	..
Rhode Island .....	..	16	..	30	....	....	....	....	100	..	18	..	..	..	..	..
South Carolina	8	..	11	12	1750	....	320	18	70	..	..	..	..	..	..	..
Tennessee	7	7	21	19	....	750	300	....	120	..	..	..	..	..	..	..
Texas	15	..	20	..	....	....	750	....	250	45	..	..	..	..	..	..
Vermont	13	20	32	26	....	....	....	20	178	..	..	25	1	..	..	..
Virginia	7	5	18	13	....	660	....	..	75	..	..	7	1	..	..	..
Wisconsin	14	..	30	35	....	....	....	....	125	..	18	..	..	..	..	..

NUMBER OF COTTON, SUGAR, RICE, TOBACCO, AND HEMP PLANTATIONS IN THE UNITED STATES.

States.	No. of Cotton Plantations raising five Bales and over.	No. of Sugar Plantations.	No. of Rice Plantations, each raising 30,000 Lbs. and over.	No. of Tobacco Plantations, each raising 300 Lbs. and over.	No. of Hemp Plantations.
Alabama	16,300	....	....	....	....
Arkansas	2,175	....	....	....	....
Florida	900	959	....	....	....
Georgia	14,578	....	80	....	....
Kentucky	21	....	....	5,987	3520
Louisiana	4,205	1659	....	....	....
Maryland .....	....	....	....	1,726	....
Mississippi	15,110	....	....	....	....
Missouri .....	....	....	....	....	4807
North Carolina	2,827	....	25	....	....
South Carolina	11,523	....	446	....	....
Tennessee	4,043	....	....	2,215	....
Texas	2,262	105	....	....	....
Virginia	198	....	....	5,817	....
Total	74,031	2681	551	15,745	8327

There are in the Southern States 74,031 cotton plantations, including all producers of more than five bales; 2681 sugar planters, including the smallest; 551 estates making more than 20,000 pounds of rough rice each; 15,745 tobacco estates of 3000 pounds each and over, in Kentucky, Tennessee, and Virginia; 8327 hemp planters in Kentucky and Missouri. Only such States are taken as are considered crop States.

AGRICULTURAL PRODUCTIONS OF THE UNITED STATES AND THEIR ANNUAL VALUE, ACCORDING TO THE CENSUS OF 1850.

Articles.	Quantities.	Values.
Indian corn.....bush.	502,070,000	\$296,036,000
Wheat....."....."	100,435,000	100,486,000
Cotton.....".....bales	2,500,000	98,604,000
Hay.....".....tons	13,533,000	96,570,000
Oats.....".....bush.	146,000,000	43,976,000
Butter.....".....lbs.	313,345,000	50,136,000
Cheese....."....."	105,535,000	5,248,000
Potatoes, Irish.....bush.	65,797,000	26,319,000
Potatoes, sweet....."	38,268,000	19,135,000
Wool.....".....lbs.	52,500,000	15,756,000
Tobacco....."....."	200,000,000	13,833,000
Cane-sugar.....".....hnds.	237,000	12,378,000
Rye.....".....bush.	14,188,000	7,504,000
Orchard products....."		7,724,000
Buckwheat.....bush.	8,956,000	6,970,000
Peas and beans....."	9,219,000	5,763,000
Market garden products....."		5,280,000
Hemp.....".....tons	34,000	5,248,000
Rice.....".....lbs.	215,000,000	4,000,000
Barley.....".....bush.	5,167,000	3,618,000
Molasses.....".....galls.	12,700,000	2,540,000
Beeswax and honey....."	14,553,000	2,378,000
Clover-seed.....bush.	468,000	2,345,000
Maple-sugar.....bush.	34,253,000	1,713,000
Hops....."....."	3,497,000	1,224,000
Flax-seed.....bush.	562,000	844,000
Grass seed (besides clover)....."	416,000	834,000
Flax.....".....lbs.	7,709,000	772,000
Wine.....".....galls.	221,000	444,000
Silk cocoons.....".....lbs.	10,800	5,000
Live stock over one year old, annual product....."		175,000,000
Animals slaughtered....."		55,000,000
Poultry on the basis of 1840....."		13,000,000
Feathers....."....."		2,000,000
Milk (not included in butter and cheese)....."		7,000,000
Eggs....."....."		5,000,000
Cord-wood on the basis of 1840....."		20,000,000
Home-made manufactures, one half for agricultural part....."		13,746,000
Small crops, basis of Rhode Isl. and for onions, carrots, etc....."		5,000,000
Residuum of crops, not consumed by stock, corn fodder, cotton seed, straw, rice flour, and manure....."		100,000,000
Cattle, sheep, and pigs, under one year old....."		50,000,000
Add for orchard and garden products of cities, not included in above—milk, butter, poultry, horses, cows, etc., in cities and towns....."		15,000,000
Total agric. products, 1840-'50....."		\$1,299,197,000

LAND ACTUALLY CULTIVATED IN THE SEVERAL CROPS OF THE UNITED STATES, 1849-'50.

Products.	Acres.
Indian corn.....	31,000,000
Meadow or pasture lands—that proportion which is regarded improved, and exclusive of hay crop.....	20,000,000
Hay.....	13,000,000
Wheat.....	11,000,000
Oats.....	7,500,000
Cotton.....	5,000,000
Rye.....	1,200,000
Peas and beans.....	1,000,000
Irish potatoes.....	1,000,000
Sweet potatoes.....	750,000
Buckwheat.....	600,000
Tobacco.....	400,000
Sugar.....	400,000
Barley.....	300,000
Rice.....	175,000
Hemp.....	110,000
Flax.....	100,000
Orchards.....	500,000
Gardens.....	500,000
Vineyards.....	250,000
Other products.....	1,000,000
Improved, but not in actual cultivation.....	17,247,614
Total improved lands.....	113,032,614

We give the estimates of the agricultural products of the United States for the year 1855, as furnished in an official form from the Patent-office. They can not be regarded as strictly correct, but they are as nearly so as possible. It will be seen that the crop of Indian corn for the year is estimated in value at \$360,000,000, while the wheat crop is estimated at only \$247,500,000. The cotton crop is estimated at \$136,000,000, while the hay and fodder crop is estimated at \$160,000,000.

VEGETABLE PRODUCTS.

Indian corn.....bush.	600,000,000	at \$0 60..	\$360,000,000
Wheat....."....."	165,000,000	1 50..	247,500,000
Rye....."....."	14,000,000	1 00..	14,000,000
Barley....."....."	6,000,000	0 90..	5,940,000
Oats....."....."	170,000,000	0 49..	68,000,000
Buckwheat....."....."	10,000,000	0 50..	5,000,000
Potatoes, all sorts....."	110,000,000	0 37..	41,250,000
Flax-seed....."....."	58,000,000	1 25..	72,000,000
Beans and peas....."	9,500,000	2 00..	18,000,000
Clover and grass seed....."	1,000,000	3 00..	3,000,000
Rice.....".....lbs.	200,000,000	0 04..	10,000,000
Sugar (cane)....."....."	505,000,000	0 07..	35,350,000
Sugar (maple)....."....."	84,000,000	0 08..	2,000,000
Molasses....."....."	14,000,000	0 30..	4,200,000
Wine....."....."	2,500,000	1 00..	2,500,000
Hops....."....."	1,500,000	0 15..	525,000
Orchard product....."			25,000,000
Garden product....."			50,000,000
Tobacco.....".....lbs.	190,000,000	0 10..	19,000,000
Cotton....."....."	1,700,000,000	0 08..	136,000,000
Hemp.....".....tons	34,500	100 00..	3,450,000
Flax.....".....lbs.	800,000	0 10..	80,000
Hay and fodder, tons....."	16,000,000	20 00..	160,000,000
Pasturage....."			143,000,000
Total.....			\$1,355,550,000

DOMESTIC ANIMALS AND ANIMAL PRODUCTS.

	Valuation.	Total Value.
Horned cattle.....	21,000,000, at \$20 each	\$420,000,000
Horses, asses, and mules.....	5,100,000, at \$60 each	306,000,000
Sheep.....	38,500,000, at \$2 each	47,000,000
Swine.....	32,000,000, at \$5 each	160,000,000
Poultry.....		200,000,000
Slaughtered animals.....		200,000,000
Butter and cheese.....	500,000,000 lbs., at 15c.	75,000,000
Milk (exclusive of that used for butter and cheese).....	1,000,000,000 gals., at 10c.	100,000,000
Wool.....	60,000,000 lbs., at 35c.	21,000,000
Beeswax and honey.....	16,000,000 lbs., at 15c.	2,400,000
Silk cocoons.....	5,000, at \$1.....	5,000
Total.....		\$1,531,405,000

The aggregate for 1857 will, no doubt, prove much larger. It is quite apparent, from the foregoing, that this is an immense country, and that our resources are of vast extent and magnitude.

From official statements a comparison is made of the extent to which the various crops are raised in England and Wales and the United States. And from this it appears that England and Wales together have only 19 per cent. of the fallow culture of the United States, and only 33 per cent. of the improved land.

Articles.	England.	United States.
	Acres.	Acres.
Wheat.....	3,807,846	11,000,000
Oats.....	1,302,782	7,500,000
Rye.....	72,721	1,200,000
Irish potatoes.....	192,287	1,000,000
Peas and beans.....	773,188	1,000,000
Turnips.....	2,267,200	....
Carrots.....	192,287	....
Indian corn.....	....	31,000,000
Barley.....	2,667,776	300,000
Cotton.....	....	5,000,000
Sweet potatoes.....	....	750,000
Buckwheat.....	....	600,000
Marigolds.....	177,153	....
Vetches.....	218,551	....
Total.....	11,671,791	59,350,000
And the total number of improved lands in gross, etc.	37,324,915	113,032,614

From this comparison we can deduce that the United States has about five times as many acres in cultivation, and, if the same skill in cultivating and sowing were used, should be able to maintain five times the population, and that without having resource to any more wild lands.

STATEMENT OF THE RECEIPTS INTO THE NATIONAL TREASURY FROM CUSTOMS, INTERNAL REVENUE, DIRECT TAXES, AND SALES OF PUBLIC LANDS, TOGETHER WITH THE EXPENDITURES OF THE UNITED STATES, EXCLUSIVE OF PAYMENTS ON ACCOUNT OF THE PUBLIC DEBT, AND FROM TRUST FUNDS, FRACTIONS EXCLUDED.

Years.	Customs.	Internal and direct Taxes.	Sales of Land and Miscellaneous.	Aggregate of Receipts.	Civil List, Foreign Intercourse, and Miscellaneous.	Military Establishment.*	Naval Establishment.	Aggregate of Expenditures.	Debt.	Population.
1789-'91....	\$4,399,473	.....	.....	\$4,399,473	\$1,083,401	\$835,618	\$570	\$1,919,589	\$75,463,476	4,049,000
1792....	3,443,071	\$209,043	.....	3,652,114	654,257	1,293,594	53	1,777,904	77,227,924	4,173,024
1793....	4,255,306	337,706	.....	4,593,012	472,450	1,237,620	.....	1,810,070	80,352,634	4,300,210
1794....	4,801,065	274,090	.....	5,075,155	705,598	2,733,540	61,400	3,500,547	78,427,405	4,431,372
1795....	5,583,461	337,755	.....	5,926,216	1,367,037	2,573,059	410,562	4,300,658	80,747,557	4,560,322
1796....	6,567,988	475,290	\$4,836	7,048,114	772,435	1,474,661	274,784	5,251,980	83,762,172	4,705,504
1797....	7,549,650	575,491	85,541	8,208,682	1,246,904	1,194,055	382,682	2,823,501	82,064,479	4,848,919
1798....	7,106,062	644,358	11,963	7,762,383	1,111,038	2,130,837	1,381,348	4,633,223	79,228,529	4,996,705
1799....	6,610,449	770,136	.....	7,389,585	1,039,392	2,532,693	2,858,082	6,450,167	78,408,670	5,143,994
1800....	9,080,933	1,548,690	444	10,629,997	1,337,613	2,625,041	3,448,716	7,411,370	82,976,294	5,305,925
1801....	10,750,779	1,592,377	167,726	12,500,882	1,114,708	1,755,477	2,111,424	4,981,669	83,038,051	5,473,407
1802....	12,438,326	828,464	158,028	13,455,388	1,462,939	1,358,599	915,502	3,737,080	80,712,632	5,646,176
1803....	10,479,418	287,050	165,076	10,826,163	1,842,636	944,958	1,215,231	4,002,825	77,064,686	5,824,398
1804....	11,098,465	101,139	487,527	11,687,231	2,191,000	1,072,017	1,130,833	4,492,500	86,427,121	6,008,246
1805....	12,936,487	49,681	540,194	13,526,312	3,768,588	991,136	1,597,500	6,357,224	82,312,150	6,197,897
1806....	14,667,698	75,505	765,246	15,508,909	2,891,037	1,540,431	1,649,641	6,081,109	75,723,271	6,393,534
1807....	15,345,522	47,784	466,163	16,359,469	1,697,897	1,554,611	1,722,064	4,984,572	69,218,399	6,596,646
1808....	16,363,550	27,370	647,939	17,038,589	1,433,286	3,196,985	1,884,005	6,504,339	65,196,318	6,803,628
1809....	7,906,021	11,562	442,252	7,749,835	1,215,804	3,771,109	2,427,759	7,414,672	67,023,192	7,108,282
1810....	8,533,309	19,879	696,549	9,299,737	1,101,145	2,555,698	1,654,244	5,311,082	63,173,217	7,339,514
1811....	13,313,223	9,962	1,040,238	14,363,423	1,367,201	2,259,747	1,965,566	5,592,004	48,000,588	7,449,960
1812....	8,958,778	8,762	710,428	9,674,968	1,683,088	12,137,402	3,969,305	17,829,499	45,200,738	7,666,206
1813....	13,224,623	8,561	835,655	14,068,839	1,729,436	19,006,302	6,446,600	25,062,397	55,962,828	7,868,729
1814....	5,998,772	3,882,492	1,135,971	11,017,235	2,208,099	20,608,366	7,311,291	30,127,686	81,437,646	8,117,710
1815....	7,282,942	6,840,733	1,287,959	15,411,634	2,898,871	15,394,700	8,660,000	26,953,571	99,833,660	8,353,338
1816....	36,306,875	9,378,344	1,717,985	47,403,204	2,969,742	16,475,412	3,908,278	25,373,432	127,334,934	8,505,806
1817....	26,283,345	4,612,383	1,091,226	32,986,862	3,518,937	8,621,075	3,314,508	15,454,610	123,491,965	8,596,312
1818....	17,176,385	1,219,613	2,606,565	21,002,563	3,835,839	7,019,140	2,953,695	13,805,674	103,466,634	9,102,060
1819....	20,283,609	813,244	3,274,423	23,871,276	3,067,212	3,985,421	3,847,640	16,300,273	95,529,048	9,366,261
1820....	15,005,612	137,847	1,685,872	16,779,331	2,592,022	6,154,518	4,387,900	13,734,580	91,015,566	9,638,181
1821....	13,004,447	98,377	1,212,966	14,315,790	2,223,122	5,151,114	3,319,243	10,128,479	89,987,428	9,920,680
1822....	17,589,762	88,617	1,803,592	19,481,961	1,967,996	5,635,187	2,224,459	9,827,642	93,546,677	10,211,348
1823....	19,088,433	44,580	1,965,523	21,098,536	2,022,004	5,283,205	3,308,766	9,734,155	90,875,877	10,510,618
1824....	17,878,326	40,565	984,418	19,903,609	2,155,308	5,270,255	2,904,552	15,330,145	90,260,778	10,818,659
1825....	20,098,714	25,102	1,216,000	21,342,906	2,748,544	5,692,831	3,049,034	11,490,459	93,788,433	11,153,727
1826....	23,341,332	28,228	1,393,735	24,763,345	2,600,179	6,245,236	4,218,902	15,062,316	81,054,060	11,462,088
1827....	19,712,283	22,513	1,495,945	21,230,641	2,314,777	5,675,742	4,263,878	12,254,397	73,957,357	11,798,013
1828....	23,205,524	19,671	1,018,309	24,243,504	2,886,052	6,101,203	3,918,756	12,506,041	67,475,044	12,143,783
1829....	22,681,966	25,838	1,517,175	24,224,979	3,092,214	6,250,530	3,308,745	12,651,489	58,421,414	12,499,687
1830....	21,922,301	20,141	2,329,356	24,280,888	3,228,416	6,752,698	3,239,429	13,220,534	48,565,406	12,666,020
1831....	24,224,442	17,440	3,210,515	27,452,697	3,064,346	6,943,239	3,556,183	13,863,768	39,123,192	13,254,931
1832....	28,405,237	18,422	2,628,381	31,107,040	4,574,841	7,982,877	3,956,370	16,514,088	24,322,235	13,614,420
1833....	29,032,509	3,153	3,067,682	33,003,344	5,051,789	15,096,192	3,901,357	22,049,298	7,001,699	14,004,789
1834....	16,214,957	4,216	4,357,601	21,076,774	4,399,779	10,064,428	3,956,260	18,420,467	4,760,082	14,406,350
1835....	19,391,311	14,723	4,757,601	24,163,635	3,720,167	9,420,513	3,864,939	17,005,419	37,733	14,819,425
1836....	23,400,940	1,099	4,877,180	28,288,219	5,388,371	13,466,110	5,800,763	29,655,244	37,513	15,244,844
1837....	11,169,290	.....	5,658,556	16,828,846	5,524,258	19,417,274	6,552,060	31,793,557	1,878,224	15,681,447
1838....	16,158,800	.....	3,214,184	19,372,984	5,666,708	19,936,312	5,975,771	31,573,785	4,867,660	16,381,087
1839....	23,137,925	.....	7,261,118	30,399,043	4,994,562	14,263,981	6,225,008	25,488,547	11,983,738	16,598,630
1840....	13,409,502	.....	3,494,356	16,903,858	5,581,878	11,621,438	6,124,456	27,337,772	5,125,078	17,069,463
1841....	14,487,217	.....	1,470,295	15,957,512	6,490,891	15,704,882	6,001,077	26,196,840	6,727,398	17,600,752
1842....	18,187,900	.....	1,456,058	19,643,967	6,775,625	9,188,460	8,397,243	24,361,337	15,028,486	18,458,589
6 mos. of 1843	7,046,584	.....	1,018,482	8,065,066	2,867,289	4,158,384	3,673,718	10,698,391	26,898,963	19,713,479
1844....	26,183,571	.....	2,320,948	28,504,519	5,231,747	8,231,317	6,496,991	19,960,055	26,143,996	19,295,971
1845....	27,538,113	.....	2,241,021	29,769,134	5,608,207	9,535,203	6,225,639	21,370,049	16,801,647	19,896,574
1846....	26,712,068	.....	2,786,579	29,498,647	6,783,000	13,579,428	6,450,862	26,513,290	24,256,495	20,515,871
1847....	23,747,884	.....	2,598,926	26,346,790	6,715,854	21,281,606	7,931,633	29,451,177	45,659,650	21,154,444
1848....	31,757,070	.....	3,679,679	35,436,750	5,585,070	27,820,163	9,406,737	42,811,970	65,504,901	21,812,993
1849....	29,346,738	.....	2,727,608	32,074,347	14,017,640	17,390,936	9,869,815	57,631,667	64,704,693	22,491,805
1850....	39,608,656	.....	3,707,112	43,375,798	14,839,725	12,801,764	7,923,313	43,002,165	64,228,238	23,191,876
1851....	49,017,568	.....	3,295,412	52,312,979	17,872,967	11,811,793	8,987,798	45,005,879	62,500,395	23,873,717
1852....	47,389,326	.....	2,389,060	49,778,386	17,379,768	13,424,075	8,928,236	46,007,896	67,560,395	24,575,604
1853....	58,991,865	.....	2,405,709	61,397,574	17,175,797	15,476,826	10,891,640	43,543,263	56,336,157	25,308,126
1854....	64,224,190	.....	9,325,614	73,549,705	25,907,372	14,342,684	10,768,192	51,018,249	44,975,456	26,041,890
1855....	53,026,794	.....	11,978,136	65,005,930	24,183,487	18,900,565	13,281,341	56,365,393	39,969,731	26,907,521
1856....	64,022,863	.....	9,895,278	73,918,141	25,274,331	20,821,024	14,077,047	60,172,402	90,963,910	27,505,662
1857....	63,875,905	.....	4,755,608	68,631,513	27,531,922	24,620,049	12,726,856	64,878,827	29,060,386	28,406,974

* Including Department of the Interior for and since 1850. The above table does not include the receipts from Loans and Treasury Notes, nor the annual payments on account of the public debt. † For the year ending June 30.

STATEMENT SHOWING THE AMOUNT OF THE PUBLIC DEBT ON JULY 1, 1857, THE AMOUNT PAID AND REDEEMED SINCE, AND THE AMOUNT OUTSTANDING NOVEMBER 17, 1857.

Loans.	Public Debt July 1, 1857.	Redeemed since.	Outstanding Nov. 17, 1857.
	\$ Cts.	\$ Cts.	\$ Cts.
1842.....	3,497,634 93	614,270 82	2,883,364 11
1846.....	24,000 00	25,300 00	8,700 00
1847.....	11,172,500 00	1,759,950 00	9,412,700 00
1848.....	10,844,241 80	1,435,000 00	9,409,241 80
Texas indemnity	3,489,000 00	28,000 00	3,461,000 00
	28,537,376 73	3,863,420 82	24,674,105 91
Texas debt.....	800,629 99	31,661 57	268,968 42
Old funded and unfunded debt	114,118 54	.....	114,118 54
Treasury notes.....	108,261 64	150 00	107,961 64
Total Nov. 1857.	29,060,386 90	3,895,232 39	25,165,154 51

Commerce.—By the Constitution of the United States, it is provided that Congress shall have power,

1. To lay and collect taxes, duties, imposts, and excises, to pay the debts, and provide for the common defense and general welfare of the United States; but all duties, imposts, and excises shall be uniform throughout the United States; 2. To borrow money on the credit of the United States; 3. To regulate commerce with foreign nations, and among the several States, and with the Indian tribes; 4. To establish a uniform rule of naturalization, and uniform laws on the subject of bankruptcies, throughout the United States; 5. To coin money, regulate the value thereof, and of foreign coin, and fix the standard of weights and measures; 6. To provide for the punishment of counterfeiting the securities and current coin of the United States; 7. To establish post-offices and post-roads; 8. To promote the progress of science and useful arts, by securing, for limited times, to authors and inventors

the exclusive right to their respective writings and discoveries; 9. To constitute tribunals inferior to the Supreme Courts; 10. To define and punish piracies and felonies committed on the high seas, and offenses against the law of nations; 11. To declare war, grant letters of marque and reprisal, and make rules concerning captures on land and water; 12. To raise and support armies; but no appropriation of money to that use shall be for a longer term than two years; 13. To provide and maintain a navy; 14. To make rules for the government and regulation of the land and naval forces; 15. To provide for calling forth the militia to execute the laws of the Union, suppress insurrections, and repel invasions.

Constitutional Powers.—The power "to regulate foreign commerce" enabled the government at once to place the whole country upon an equality with foreign nations; to compel them to abandon their narrow and selfish policy toward us; and to protect our own commercial interests against their injurious competitions. The power to regulate commerce "among the several States," in like manner, annihilated the causes of domestic feuds and rivalries. It compelled every State to regard the interests of each as the interests of all;

and thus diffused over all the blessings of a free, active, and rapid exchange of commodities, upon the footing of perfect equality. The words being general, the sense must be general also, and embrace all subjects comprehended under them, unless there be some obvious mischief, or repugnance to other clauses, to limit them. In the case there is nothing to justify such a limitation. Commerce undoubtedly is traffic; but it is something more—it is intercourse. It describes the commercial intercourse between nations and parts of nations in all its branches, and is regulated by prescribing rules for carrying on that intercourse.

The mind can scarcely conceive a system for regulating commerce between nations which shall exclude all laws concerning navigation; which shall be silent on the admission of the vessels of one nation into the ports of another, and be confined to prescribing rules for the conduct of individuals in the actual employment of buying and selling or barter. It may, therefore, be safely affirmed that the terms of the Constitution have at all times been understood to include a power over navigation as well as over trade, over intercourse as well as over traffic.—*STORY'S Familiar Exposition of the Constitution of the United States.*

STATEMENT EXHIBITING THE VALUE OF IRON, MANUFACTURES OF IRON, AND IRON AND STEEL, STEEL, SUGAR, WINES, AND ALL FABRICS OF WHICH WOOL, COTTON, SILK, FLAX, OR HEMP, IS A COMPONENT PART, IMPORTED INTO THE UNITED STATES FOR THE YEARS 1847, '48, AND '49, AND BRANDIES FOR THE YEARS 1853 AND 1857.

Articles.	1847.		1848.		1849.		1853.		1857.	
	Value.	Duties.	Value.	Duties.	Value.	Duties.	Value.	Duties.	Value.	Duties.
Iron, manufactures of iron, and iron and steel.....	8,781,252	12,526,854	13,831,823	4,132,730	22,041,989	6,587,975	23,320,497	6,995,619		
Cast, shear, German, and other steel.....	1,136,458	1,234,937	1,227,138	104,688	2,538,338	422,746	2,633,614	437,958		
Manufactures of wool.....	10,998,933	15,240,883	13,704,606	3,780,863	31,961,793	8,835,366	31,286,118	8,633,566		
" cotton.....	15,192,875	18,421,589	15,754,841	3,911,677	25,917,999	6,333,740	28,685,726	8,035,194		
" silk.....	11,738,371	14,543,634	13,791,232	3,553,488	30,236,532	7,604,846	27,800,319	7,010,190		
" flax.....	5,154,387	6,624,648	5,907,242	1,184,665	11,189,463	2,288,384	11,441,642	3,288,999		
" hemp.....	684,880	668,075	519,774	103,954	253,730	50,740	519,682	103,916		
Brandy.....					2,859,342	2,639,342	2,627,262	2,627,262		
Wines.....	9,877,212	9,479,817	8,043,900	2,414,670	6,796,068	2,718,433	4,274,205	1,700,612		
Sugar.....					22,538,663	6,761,595	42,776,501	12,832,950		
Articles of which wool, cotton, silk, flax, or hemp, is a component part, but not classed with either, viz.:										
Silk and worsted goods.....	1,965,095	2,456,652	2,452,239	613,072						
Embroideries of wool, cotton, silk, and linen.....					1,335,247	333,811	1,530,246	395,061		
Clothing, ready-made, and articles of wear.....	676,404	653,222	587,500	176,277	4,664,363	1,399,305	4,443,175	1,332,952		
Laces, thread, and insertings.....	370,028	263,850	176,375	35,275	1,978,344	503,503	1,913,938	575,696		
" cotton insertings, trimmings, laces, braids, etc.....					410,591	82,118	321,961	64,392		
Cordage, untarred, tarred, and cables.....	398,514	716,552	663,991	165,997	1,191,019	297,754	1,129,754	282,438		
Twine and pack-thread.....	67,592	289,526	146,410	36,602	132,172	33,041	156,532	39,133		
Seines.....	54,809	45,575	34,378	10,313	53,821	16,146	59,957	17,987		
Total.....	446	502	182	54						
Total.....	68,884,657	54,590,334	78,667,928	21,040,756	166,089,379	47,163,860	184,875,979	54,282,931		

STATEMENT EXHIBITING A SUMMARY VIEW OF THE EXPORTS OF DOMESTIC PRODUCE, ETC., OF THE UNITED STATES DURING THE YEARS ENDING JUNE 30, 1847, '48, '49, '50, '51, '52, '53, '54, '55, '56, AND '57.

Years.	Product of						Raw Produce.	Specie and Bullion.	Total Value.
	The Sea.	The Forest.	Agriculture.	Tobacco.	Cotton.	Manufactures.			
1847.....	\$3,463,033	\$5,906,073	\$69,450,333	\$7,242,086	\$53,415,848	\$10,351,364	\$2,102,838	\$2,620	\$150,637,404
1848.....	1,980,963	7,059,094	87,781,446	7,551,122	61,998,294	12,774,480	1,053,320	2,700,412	152,904,121
1849.....	2,647,654	5,917,994	83,585,204	5,894,207	66,396,967	11,249,877	955,175	550,874	132,060,155
1850.....	2,224,313	7,442,038	26,547,153	9,951,023	71,984,616	15,196,451	953,064	2,045,079	130,946,512
1851.....	3,294,691	7,847,092	24,369,210	9,219,251	112,315,317	20,136,907	1,437,593	18,069,580	196,439,718
1852.....	2,292,242	7,864,290	26,378,872	10,131,283	87,965,732	18,869,981	1,545,767	37,437,897	192,368,984
1853.....	8,379,413	7,915,263	33,463,573	11,319,319	100,466,404	22,599,030	1,855,264	25,543,555	213,417,997
1854.....	3,064,069	11,761,135	61,104,592	10,016,046	93,856,280	26,847,411	2,704,731	38,234,596	253,590,570
1855.....	3,516,394	12,693,897	42,567,476	14,712,468	88,143,844	28,333,299	2,373,317	53,967,418	240,708,553
1856.....	3,356,797	10,694,184	77,686,455	12,221,843	128,382,351	30,970,292	3,125,429	44,143,279	310,586,330
1857.....	3,739,644	14,639,711	75,722,096	20,260,772	131,575,589	30,505,136	2,103,105	60,078,352	353,985,065

STATEMENT EXHIBITING THE VALUE OF CERTAIN ARTICLES IMPORTED DURING THE YEARS ENDING JUNE 30, 1854, 1855, 1856, AND 1857 (AFTER DEDUCTING THE RE-EXPORTATIONS), AND THE AMOUNT OF DUTY WHICH ACCRUED ON EACH DURING THE SAME PERIODS RESPECTIVELY.

Articles.	1854.		1855.		1856.		1857.	
	Value.	Duties.	Value.	Duties.	Value.	Duties.	Value.	Duties.
Woolens.....	31,119,654	8,629,180	22,076,448	6,088,157	30,705,161	8,478,552	30,343,620	8,504,131
Cottons.....	32,477,106	8,153,992	15,742,923	3,823,294	24,337,504	5,943,181	28,114,924	6,845,102
Hempen goods.....	51,824	11,631	289,593	47,919	328,735	46,747	504,214	100,243
Iron, and manufactures of.....	28,283,241	4,846,472	23,945,274	7,163,602	21,618,718	6,461,615	23,320,148	6,329,279
Sugar.....	11,604,656	3,481,397	13,284,663	3,985,399	21,295,154	6,338,546	41,596,235	12,478,871
Hemp, unmanufactured.....	335,632	100,689	55,453	16,637	3,427	1,028	411,662	123,499
Salt.....	1,290,975	283,195	1,692,587	398,517	1,954,317	390,868	2,991,365	598,273
Coal.....	585,926	175,777	893,925	268,147	997,094	119,418	769,486	230,846
Total.....	105,762,014	29,297,333	77,930,771	21,731,672	100,745,110	27,829,952	128,556,657	35,710,844

STATEMENT EXHIBITING THE VALUE OF MANUFACTURED ARTICLES OF DOMESTIC PRODUCE EXPORTED FROM THE UNITED STATES TO FOREIGN COUNTRIES, FROM JUNE 30, 1849, TO JUNE 30, 1857.

Articles.	1850.	1851.	1852.	1853.	1854.	1855.	1856.	1857.
Wax.....	113,055	122,835	91,429	113,602	87,149	69,905	74,005	91,083
Refined sugar.....	285,068	219,538	149,921	375,780	370,458	526,463	360,444	369,200
Chocolate.....	2,260	3,255	3,267	10,230	12,257	2,771	1,476	1,032
Spirits from grain.....	49,314	36,084	43,737	141,173	282,919	384,144	500,945	1,248,234
Spirits from molasses.....	268,290	283,622	323,941	329,381	800,965	1,448,280	1,329,151	1,210,635
Spirits from other materials.....						101,836	95,494	120,011
Molasses.....	14,137	16,830	13,163	17,582	131,048	180,830	154,680	108,003
Vinegar.....	11,182	16,915	12,220	20,443	16,945	17,281	26,034	30,738
Beer, ale, porter, and cider.....	52,251	57,975	48,052	64,677	53,503	45,069	45,086	43,732
Linseed oil and spirits of turpentine.....	229,741	145,410	152,837	862,960	1,084,329	1,186,732	896,238	706,400
Lard oil.....						82,945	161,232	92,499
Household furniture.....	278,025	362,830	430,182	714,556	763,197	803,960	982,042	879,448
Coaches and other carriages.....	95,722	199,421	172,445	184,497	244,638	290,525	370,250	476,394
Hats.....	63,671	103,768	80,453	91,261	176,404	177,914	226,682	254,208
Saddlery.....	20,333	30,100	47,937	43,229	53,311	64,896	31,249	45,222
Tallow candles and soap, and other candles.....	664,963	609,732	660,054	681,362	891,566	1,111,349	1,200,704	1,242,604
Snuff and tobacco.....	648,332	1,143,547	1,316,622	1,671,590	1,551,471	1,500,113	1,829,207	1,458,553
Leather, boots, and shoes.....	193,598	453,335	423,708	673,708	806,555	1,052,496	1,313,311	1,311,709
Cordage.....	51,357	52,054	62,903	103,216	104,076	135,267	367,182	286,163
Gunpowder.....	100,352	154,257	121,530	130,043	212,700	356,051	644,974	398,244
Salt.....	75,103	61,424	89,316	119,729	159,026	156,879	311,495	190,699
Lead.....	12,797	11,774	32,725	5,549	26,874	14,298	27,512	53,624
Iron—pig, bar, and nails.....	154,210	215,652	113,624	181,998	308,127	283,437	286,890	397,318
“ castings.....	79,318	164,425	191,383	220,420	450,775	306,430	288,316	299,967
“ all manufactures of.....	1,677,792	1,875,621	1,993,807	2,077,234	3,472,437	3,158,596	3,585,712	4,177,637
Copper and brass, manufactures of.....	105,060	91,871	103,039	103,205	92,103	690,766	134,346	607,054
Medicinal drugs.....	334,783	351,585	263,352	327,073	454,789	788,114	1,066,294	886,009
Cotton piece goods:								
“ printed or colored.....	606,631	1,006,561	926,404	1,086,167	1,137,736	2,613,655	1,966,845	1,755,685
“ uncolored.....	3,774,497	5,571,576	6,139,391	6,926,485	4,130,149	2,907,276	4,616,264	3,715,339
“ twist, yarn, and thread.....	17,405	37,260	34,718	22,594	4,315			
“ other manufactures of.....	335,981	625,908	571,638	733,648	423,085	336,250	384,200	614,153
Hemp and flax:								
“ cloth and thread.....	1,183	1,647	5,405	2,924	24,456	2,506	802	1,066
“ bags and all manufactures of.....	10,513	6,376	8,154	13,360	55,261	34,002	25,233	33,637
Wearing apparel.....	207,632	1,211,894	250,228	239,733	234,388	223,801	273,332	333,442
Earthen and stone ware.....	15,644	23,066	13,310	53,635	34,525	39,119	66,696	34,256
Combs and buttons.....	23,957	27,334	28,833	31,395	37,684	32,049	32,653	39,799
Brushes.....	2,827	8,257	4,385	6,612	9,501	10,856	8,385	7,324
Billiard-tables and apparatus.....	2,295	1,798	1,083	1,673	3,204	4,916	2,773	7,733
Umbrellas, parasols, and sun-shades.....	3,395	12,200	6,340	6,133	11,658	8,441	5,989	6,846
Manufactures of India rubber.....						1,409,107	1,093,388	643,512
Leather and morocco (not sold per pound).....	9,800	13,309	18,617	6,448	17,018	36,045	5,765	2,119
Fire-engines and apparatus.....	3,140	9,483	16,784	9,652	6,597	14,329	29,088	21,524
Printing-presses and types.....	39,242	71,401	47,781	32,250	33,012	36,405	67,517	52,747
Musical instruments.....	21,634	55,700	67,733	52,397	126,123	106,857	133,517	127,748
Books and maps.....	119,475	153,912	217,809	142,604	187,335	207,218	202,562	277,647
Paper and stationery.....	99,656	155,664	119,535	122,212	192,339	185,637	203,013	224,767
Paints and varnish.....	67,597	109,334	85,369	83,020	121,823	163,006	217,179	223,320
Manufactures of glass.....	136,632	135,436	194,634	170,561	229,476	204,679	216,439	179,900
Manufactures of tin.....	13,590	27,823	23,420	22,983	30,750	14,270	13,610	5,622
Manufactures of pewter and lead.....	22,632	16,426	18,460	14,064	16,478	5,233	5,628	4,813
Manufactures of marble and stone.....	34,510	41,449	57,240	47,028	38,327	168,546	162,376	111,493
Manufactures of gold and silver, and gold leaf.....	4,533	63,630	20,332	11,373	1,311,513	9,051	6,116	15,477
Quick-silver.....					442,383	806,119	831,724	665,480
Artificial flowers and jewelry.....	45,233	121,013	114,738	66,397	50,471	22,043	26,386	28,070
Trunks.....	10,370	12,207	15,035	27,143	23,673	35,203	32,457	37,748
Bricks and lime.....	16,343	22,045	13,539	32,625	33,314	57,393	64,297	68,002
Articles not enumerated.....	3,863,071	3,793,341	2,877,659	3,783,700	4,972,084	4,014,432	3,551,613	3,292,722
Total.....	15,166,451	20,158,967	13,862,931	22,519,930	36,847,411	38,333,329	30,970,092	29,053,267
Gold and silver coin and bullion.....	2,046,670	13,063,580	37,437,837	23,543,535	33,234,566	53,957,413	44,143,279	60,073,352
Totals.....	17,213,130	33,222,547	51,300,768	46,143,465	65,083,977	92,790,717	75,113,371	89,126,619

The power of Congress in laying taxes is not necessarily or naturally inconsistent with that of the States. Each may lay a tax on the same property without interfering with the action of the other; for taxation is but taking small portions from the mass of property, which is susceptible of almost infinite division. In imposing taxes for state purposes, a State is not doing what Congress is empowered to do. Congress is not empowered to tax for those purposes which are within the exclusive province of the States. When, then, each government exercises the power of taxation, neither is exercising the power of the other. But when a State proceeds to regulate commerce with foreign nations or among the several States, it is exercising the very power which is granted to Congress, and is doing the very thing which Congress is authorized to do. There is no analogy, then, between the power of taxation and the power of regulating commerce.—STORY.

Domestic Trade.—And first, among the States. It is not doubted that the power of Congress extends to the regulation of navigation, and to the coasting trade and fisheries, within as well as without any State,

wherever it is connected with the commerce or intercourse with any other State, or with foreign nations. It extends to the regulation and government of seamen on board of American ships, and to conferring privileges upon ships built and owned in the United States, in domestic as well as in foreign trade. It extends to quarantine laws, and pilotage laws, and wrecks of the sea. It extends as well to the navigation of vessels engaged in carrying passengers, and whether steam-vessels or of any other description, as to the navigation of vessels engaged in traffic and general coasting business. It extends to the laying of embargoes as well on domestic as on foreign voyages. It extends to the construction of light-houses, the placing of buoys and beacons, the removal of obstruction to navigation in creeks, rivers, sounds, and bays, and the establishment of securities to navigation against the inroads of the ocean. It extends also to the designation of a particular port or ports of entry and delivery for the purposes of foreign commerce. These powers have been actually exerted by the National Government under a system of laws, many of which commenced with the early establishment of the Constitution; and they have con-

tinued unquestioned unto our day, if not to the utmost range of their reach, at least to that of their ordinary application.

Many of the like powers have been applied in the regulation of foreign commerce. The commercial system of the United States has also been employed sometimes for the purpose of revenue; sometimes for the purpose of prohibition; sometimes for the purpose of retaliation and commercial reciprocity; sometimes to lay embargoes; sometimes to encourage domestic navigation, and the shipping and mercantile interest, by bounties, by discriminating duties, and by special

preferences and privileges; and sometimes to regulate intercourse with a view to mere political objects, such as to repel aggressions, increase the pressure of war, or vindicate the rights of neutral sovereignty. In all these cases the right and duty have been conceded to the National Government by the unequivocal voice of the people. It may be added, that Congress have also, from the earliest period of the government, applied the same power of regulating commerce for the purpose of encouraging and protecting domestic manufactures, and Congress have never abandoned the exercise of it for such a purpose.—*STORY on the Constitution.*

STATEMENT EXHIBITING THE VALUE OF FOREIGN MERCHANDISE, IMPORTED INTO THE UNITED STATES, RE-EXPORTED, AND CONSUMED ANNUALLY, FROM 1821 TO 1857, INCLUSIVE; THE ESTIMATED POPULATION AND CONSUMPTION PER CAPITA.

Years ending	Value of foreign Merchandise.			Population.	Consumption per Capita.	Imports entered for Consumption, exclusive of Specie.	Domestic Produce exported, exclusive of Specie.	Foreign Merchandise exported, exclusive of Specie.	Total Exports, including Specie.
	Imported.	Re-exported.	Consumed and on hand.						
Sept. 30, 1821	62,585,724	21,302,488	41,283,236	9,960,974	4 14	48,606,405	43,671,894	10,824,429	64,974,882
1822	83,241,541	22,286,202	60,955,339	10,283,757	5 92	68,367,425	49,874,079	11,504,270	72,160,281
1823	77,579,267	27,543,622	50,035,645	10,606,540	4 71	51,308,936	47,155,408	21,172,435	74,699,030
1824	80,549,007	26,337,157	55,211,850	10,929,323	5 05	58,946,567	50,649,500	18,322,605	76,986,657
1825	96,340,075	32,550,643	63,749,432	11,252,106	5 66	66,375,722	66,800,766	23,793,588	99,535,388
1826	84,974,477	24,539,612	60,434,865	11,574,889	5 22	57,652,577	52,499,855	20,440,984	77,606,827
1827	79,484,068	23,403,136	56,080,932	11,897,672	4 71	54,901,108	57,378,117	16,431,880	82,324,322
1828	88,509,324	21,656,017	66,853,307	12,220,455	5 47	66,975,475	49,976,632	14,044,608	72,264,696
1829	74,052,527	16,653,478	57,334,049	12,243,238	4 61	54,741,571	55,087,307	12,347,344	72,358,671
1830	70,376,920	14,387,479	56,439,441	12,566,020	4 39	49,575,009	58,524,878	13,145,857	73,340,508
1831	103,191,124	20,033,526	83,157,598	13,286,364	6 25	82,808,110	59,218,583	13,077,069	81,310,593
1832	101,029,266	24,030,473	76,989,793	13,706,707	5 61	75,327,688	61,726,529	19,704,074	87,176,943
1833	103,118,311	19,822,735	83,295,576	14,127,050	6 25	85,470,067	69,950,856	15,577,876	90,140,433
1834	126,521,332	23,312,811	103,208,521	14,547,393	7 09	86,973,147	80,623,662	21,636,553	104,336,973
1835	149,895,742	20,504,495	129,391,247	14,967,736	8 64	122,007,974	100,450,481	14,766,331	121,613,577
1836	199,980,035	21,746,360	168,233,675	15,388,079	10 93	158,811,392	106,570,942	17,767,702	128,663,040
1837	140,980,217	21,854,962	119,134,255	15,808,422	7 53	113,310,571	94,280,895	17,162,232	117,419,376
1838	113,717,404	12,452,765	101,264,639	16,223,765	6 23	86,552,508	95,560,880	9,417,600	108,488,616
1839	162,092,132	17,444,525	144,597,607	16,640,108	8 68	147,907,816	101,625,533	10,626,140	121,028,416
1840	107,141,519	18,190,312	88,951,207	17,069,453	5 21	86,250,338	111,660,561	12,008,317	123,085,946
1841	127,946,177	15,469,081	112,477,096	17,612,507	6 38	114,776,309	103,636,236	8,181,235	121,851,808
1842	100,162,087	11,721,593	88,440,544	18,155,561	4 87	87,996,318	91,799,242	8,078,753	104,671,534
July 1, 1843	64,753,799	6,552,697	58,201,102	18,698,615	3 11	37,294,129	77,686,354	5,139,335	84,346,430
1844	108,435,035	11,484,867	96,950,168	19,241,670	5 03	96,390,548	99,531,774	6,214,058	111,206,046
1845	117,254,564	15,346,830	101,907,734	19,734,725	5 15	105,599,541	98,455,331	7,534,781	114,646,606
1846	121,691,796	11,346,623	110,345,174	20,327,780	5 42	110,048,859	101,718,042	7,865,206	118,488,616
1847	146,545,638	8,011,168	138,534,470	20,780,835	6 60	116,257,595	150,574,844	6,166,764	158,643,622
1848	154,998,928	21,128,010	133,870,918	21,413,800	6 25	140,651,902	130,203,709	7,986,802	154,032,131
1849	147,857,439	13,088,805	134,768,634	21,956,945	6 18	132,565,168	131,710,081	8,641,601	155,795,320
1850	178,338,818	14,951,808	163,386,510	23,246,301	7 02	164,032,093	134,900,233	9,475,493	151,818,720
1851	216,224,932	21,698,293	194,526,639	24,250,000	8 02	206,476,219	178,620,138	10,295,121	128,388,011
1852	212,945,442	17,289,332	195,656,060	24,500,000	8 00	195,072,695	154,931,147	12,037,043	209,641,625
1853	267,978,647	17,553,490	250,425,157	25,000,000	10 00	251,071,358	189,869,162	13,006,213	230,452,250
1854	304,662,881	24,850,194	279,712,187	25,750,000	10 00	275,955,903	195,156,304	21,648,304	278,241,064
1855	261,468,520	28,448,293	233,020,227	26,500,000	8 79	228,606,340	192,751,135	26,158,368	275,158,846
1856	314,639,942	16,378,578	298,261,364	27,400,000	9 18	275,650,938	206,438,051	14,781,372	326,664,908
1857	360,830,141	33,975,617	326,854,524	28,500,000	8 45	333,511,295	278,906,713	14,917,407	362,960,692
Total.....	5,307,803,209	708,396,122	4,599,407,177	....	...	4,497,824,633	4,010,603,853	502,119,564	5,020,462,319

FOREIGN COMMERCE OF EACH STATE AND TERRITORY, FROM JULY 1, 1856, TO JUNE 30, 1857.

States.	VALUE OF EXPORTS.						VALUE OF IMPORTS.		
	American Produce.			Foreign Produce.			In American Vessels.		
	In American Vessels.	In foreign Vessels.	Total.	In American Vessels.	In foreign Vessels.	Total.	In American Vessels.	In foreign Vessels.	Total.
Maine.....	2,210,540	189,637	2,400,186	824,273	423,127	1,316,400	1,882,078	782,254	2,664,332
New Hampshire...	.....	1,834	1,834	.....	.....	.....	988	16,568	17,556
Vermont.....	283,009	.....	283,009	365,461	.....	365,461	2,709,193	.....	2,709,193
Massachusetts....	11,573,933	14,995,126	26,573,059	2,842,569	731,884	3,573,953	35,916,647	11,348,694	47,265,341
Rhode Island.....	542,205	1,973	544,178	8,173	.....	8,173	460,135	26,357	515,492
Connecticut.....	1,086,586	.....	1,086,586	8,817	.....	8,817	1,064,819	51,982	1,116,801
New York.....	77,423,356	41,773,945	119,197,301	12,381,414	3,224,538	15,605,952	161,791,931	74,701,554	236,493,485
New Jersey.....	10,613	1,571	12,184	.....	.....	.....	.....	3,867	3,867
Pennsylvania.....	5,868,732	1,145,780	7,014,512	154,520	15,400	169,920	14,255,078	3,600,171	17,855,249
Delaware.....	117,276	.....	117,276	.....	.....	.....	2,895	.....	2,895
Maryland.....	9,074,555	4,350,898	13,425,453	163,896	137,046	300,942	8,534,843	2,046,365	10,581,208
District of Columbia	22,735	.....	22,735	.....	.....	.....	116,333	.....	116,333
Virginia.....	5,564,067	1,070,263	7,234,330	13,834	1,495	15,379	1,203,547	326,607	1,530,154
North Carolina....	339,592	24,614	414,206	.....	.....	.....	206,746	24,748	231,494
South Carolina....	10,588,352	5,539,052	16,127,404	2,421	10,548	12,969	1,720,616	299,170	2,019,786
Georgia.....	6,116,174	4,741,460	10,857,634	.....	.....	.....	581,985	197,924	779,909
Florida.....	2,806,693	401,859	3,268,552	.....	.....	.....	293,672	27,427	321,099
Alabama.....	14,400,506	6,175,481	20,575,987	.....	242	242	617,780	91,360	709,090
Louisiana.....	71,470,119	20,068,292	91,538,371	281,336	125,155	356,491	22,207,145	2,684,822	24,891,967
Ohio.....	173,965	760,024	933,989	.....	.....	.....	130,473	136,792	267,265
Michigan.....	81,508	1,406,715	1,488,223	.....	15,383	15,383	1,018,458	100	1,018,558
Wisconsin.....	385,108	136,936	522,044	.....	.....	.....	2,320	3,497	5,817
Illinois.....	531,162	1,053,934	1,585,096	.....	308	308	107,885	218,490	326,375
Texas.....	989,270	502,105	1,491,375	.....	.....	.....	124,455	176,319	300,774
California.....	11,084,903	1,125,816	12,210,719	1,623,899	601,283	2,225,182	4,159,065	4,937,849	9,137,414
Oregon Territory..	3,907	.....	3,907	.....	.....	.....	5,020	.....	5,020
Washington Territory	16,551	8,854	25,895	.....	.....	.....	2,163	1,554	3,717
Minnesota Territory	.....	51,140	51,140	.....	.....	.....	.....	.....	.....
Total, 1856-57..	222,815,826	106,169,239	338,985,065	18,620,663	5,354,954	23,975,617	259,116,170	101,773,971	360,890,141

SUMMARY STATEMENT OF THE VALUE OF THE EXPORTS OF THE GROWTH, PRODUCE, AND MANUFACTURE OF THE UNITED STATES DURING THE YEAR ENDING JUNE 30, 1897.

PRODUCT OF THE SEA.			
Fisheries:			
Oil, spermaceti .....	....	\$1,216,888	
Oil, whale and other fish .....	....	363,065	
Whalebone .....	....	1,307,322	
Spermaceti .....	....	34,917	
Spermaceti candles .....	....	85,121	
Fish, dried or smoked .....	....	570,343	
Fish, pickled .....	....	211,383	
PRODUCT OF THE FOREST.			
Wood:			
Staves and heading	\$2,055,980		
Shingles	212,805		
Boards, plank, and scantling	4,170,686		
Hewn timber	516,735		
Other lumber	638,406		
Oak bark and other dye	322,754		
All manufactures of wood	3,163,424		
Naval Stores:			
Tar and pitch	208,610		
Rosin and turpentine	1,544,572		
Ashes, pot and pearl	696,367		
Ginseng	58,331		
Skins and furs	1,116,041		
PRODUCT OF AGRICULTURE.			
Of Animals:			
Beef	\$1,218,348		
Tallow	632,286		
Hides	624,867		
Horned cattle	144,840		
Butter	593,084		
Cheese	647,423		
Pork (pickled)	2,805,867		
Hams and bacon	4,511,442		
Lard	5,144,195		
Wool	19,007		
Hogs	5,525		
Horses	195,627		
Mules	171,189		
Sheep	22,753		
Vegetable Food:			
Wheat	\$22,240,857		
Flour	25,882,316		
Indian corn	5,134,666		
Indian meal	957,791		
Rye meal	115,828		
Rye, oats, and other small grain and pulse	680,108		
Biscuit or ship bread	563,266		
Potatoes	205,616		
Apples	135,280		
Onions	77,048		
Rice	2,220,400		
Cotton			
Tobacco .....	....	
Hemp .....	....	
Other agricultural Products:			
Flax-seed .....	....	\$595	
Clover-seed .....	....	330,166	
Brown sugar .....	....	120,012	
Hops .....	....	84,852	
MANUFACTURES.			
Refined sugar .....	....	\$368,206	
Wax .....	....	91,983	
Chocolate .....	....	1,932	
Spirits from grain .....	....	1,243,234	
Spirits from molasses .....	....	1,216,635	
Spirits from other materials .....	....	120,011	
Molasses .....	....	108,003	
Vinegar .....	....	30,786	
Beer, ale, porter, and cider in casks .....	....	26,733	
Beer, ale, porter, and cider in bottles .....	....	16,940	
Linseed oil .....	....	54,144	
Spirits of turpentine .....	....	741,346	
Household furniture .....	....	879,448	
Coaches and parts, and railroad cars and parts .....	....	476,394	
Hats of fur or silk .....	....	180,714	
Hats of palm-leaf .....	....	73,494	
Saddlery .....	....	45,292	
Trunks and valises .....	....	37,748	
Adamantine and other candles .....	....	677,378	
Soap .....	....	630,085	
Snuff .....	....	11,536	
Tobacco, manufactured .....	....	1,447,027	
Gunpowder .....	....	3,824	
Leather .....	....	497,714	
Boots and shoes .....	....	813,965	
Cables and cordage .....	....	286,163	
Salt .....	....	190,690	
Lead .....	....	53,624	
Iron, pig .....	....	53,390	
			\$3,739,644
			14,699,711
			\$16,736,458
			\$59,333,176
			75,067,634
			131,575,851
			20,260,772
			46,907
			605,555

SUMMARY STATEMENT OF THE VALUE OF EXPORTS, ETC.—Continued.

MANUFACTURES—Continued.			
Iron, bar.....		\$64,596	
Nails.....		279,327	
Castings of.....		289,967	
All other manufactures of.....		4,197,687	
Copper and brass, and manufactures of.....		607,054	
Drugs and medicines.....		886,909	
Cotton piece Goods:			\$17,008,439
Printed or colored.....	\$1,785,685		
White, other than duck.....	3,469,230		
Duck.....	252,109		
All other manufactures of.....	614,153		
Hemp, cloth and thread.....		\$6,115,177	
Bags and other manufactures of.....		1,066	
Wearing apparel.....		83,687	
Earthen and stone ware.....		833,442	
Combs and buttons.....		34,256	
Brushes of all kinds.....		39,799	
Billiard-tables and apparatus.....		7,324	
Umbrellas and parasols.....		738	
Morocco and leather not sold by the pound.....		6,845	
Fire-engines.....		2,119	
Printing-presses and type.....		21,524	
Musical instruments.....		52,747	
Books and maps.....		127,743	
Paper and stationery.....		277,647	
Paints and varnish.....		234,767	
Jewelry, real and mock.....		223,820	
Gold and silver, and gold leaf (manufactures of).....		28,070	
Glass.....		15,477	
Tin.....		179,900	
Pewter and lead.....		5,622	
Marble and stone.....		4,818	
Bricks and lime.....		111,403	
India rubber boots and shoes.....		68,002	
India rubber, all other manufactures of.....		331,125	
Lard oil.....		312,387	
Oil-cake.....		92,499	
		1,186,980	
Coal.....			9,838,435
Ice.....			616,861
Gold and silver coin.....			219,816
Gold and silver bullion.....			28,777,372
Quicksilver.....			31,300,930
Articles not enumerated:			665,480
Manufactured.....			3,292,722
Raw produce.....			1,266,828
Total, year 1856-'57.....			\$338,985,005

SUMMARY STATEMENT OF THE VALUE OF GOODS, WARES, AND MERCHANDISE, IMPORTED INTO THE UNITED STATES DURING THE FISCAL YEAR ENDING JUNE 30, 1857.

Species of Merchandise.	Value.
FREE OF DUTY.	
Animals for breed.....	\$48,345
Bullion:	
Gold.....	151,585
Silver.....	335,114
Specie:	
Gold.....	6,503,051
Silver.....	5,472,049
Cabinets of coins, medals, and other collections of antiquities.....	247
Models of inventions and improvements in the arts.....	2,997
Teas.....	5,757,860
Coffee.....	22,386,879
Copper:	
In plates suited to the sheathing of vessels.....	351,311
Ore.....	1,440,314
Cotton, unmanufactured.....	62,172
Adhesive felt for sheathing vessels.....	20,156
Paintings and statuary of American artists.....	93,002
Specimens of natural history, etc.....	3,240
Sheathing metal.....	748,372
Platina, unmanufactured.....	53,714
Plaster, underground.....	90,168
Wearing apparel and other personal effects of emigrants and citizens dying abroad.....	413,780
Old junk and oakum.....	35,459
Garden seeds, trees, shrubs, plants, etc.....	336,504
Articles the produce of the United States, brought back.....	1,201,476
Guano.....	279,026
Articles specially imported for philosophical societies, colleges, seminaries of learning, schools, etc.....	61,074
All other articles not subject to duty.....	20,731,411
Total.....	\$66,729,306

MERCHANDISE PAYING DUTIES AD VALOREM.

Manufactures of Wool:	
Piece goods, including wool and cotton.....	\$11,009,605
Shawls of wool, wool and cotton, silk, and silk and cotton.....	2,246,351

SUMMARY STATEMENT OF IMPORTS—Continued.

Species of Merchandise.	Value.
Manufactures of Wool:	
Blankets.....	\$1,630,973
Hosiery and articles made on frames.....	1,740,829
Worsted piece goods, including cotton and worsted.....	11,365,669
Woolen and worsted yarn.....	192,147
Manufactures not specified.....	693,640
Flannels.....	105,779
Baizes and bookings.....	119,835
Carpeting:	
Wilton, Saxony, Aubusson, Brussels, Turkey, treble ingrained, Venetian, and other ingrained.....	1,784,196
Not specified.....	397,094
Manufactures of Cotton:	
Piece goods.....	21,441,082
Velvets.....	678,294
Cords, gimps, and galloons.....	213,824
Hosiery and articles made on frames.....	9,210,287
Twist yarn and thread.....	1,401,153
Hatters' plush, of silk and cotton.....	11,473
Manufactures not specified.....	1,729,613
Silk and manufactures of silk:	
Piece goods.....	22,067,369
Hosiery and articles made on frames.....	839,299
Sewing silk.....	211,723
Hats and bonnets.....	151,192
Manufactures not specified.....	4,442,523
Floss.....	30,613
Raw.....	953,734
Bolting-cloths.....	57,602
Silk and worsted piece goods.....	1,580,246
Goats' hair or mohair piece goods.....	503,993
Manufactures of Flax:	
Linens, bleached or unbleached.....	9,975,333
Hosiery, and articles made on frames.....	9,912
Manufactures not specified.....	1,459,292
Manufactures of Hemp:	
Ticklenburgs, Osnaburgs, and burlaps.....	130,864
Articles not specified.....	360,469
Sail duck, Russia, Holland, and Ravens.....	14,180
Cotton bagging.....	14,069
Clothing:	
Ready-made.....	347,471
Articles of wear.....	1,571,517

SUMMARY STATEMENT OF IMPORTS—Continued.

Description of Merchandise.	Value.
Laces:	
Thread and insertings.....	\$321,961
Cotton insertings, trimmings, laces, braids, etc.....	1,129,754
Embroideries of wool, cotton, silk, and linen.....	4,443,175
Floor-cloth, patent, painted, etc.....	9,524
Oil-cloth of all kinds.....	84,761
Lasting and mohair cloth for shoes and buttons.....	99,034
Gunny cloth and gunny bags.....	2,139,793
Mattings, Chinese and other, of flags, etc.....	207,587
Hats, Caps, Bonnets, Flats, Braids, Plaits, etc.: Of leghorn, straw, chip, grass, etc.....	2,246,928
Manufactures of Iron and Steel:	
Muskets and rifles.....	61,170
Fire-arms not specified.....	541,175
Side arms.....	5,294
Needles.....	250,320
Cutlery.....	2,140,824
Other manufactures and wares of, not specified.....	4,475,545
Cap or bonnet wire.....	6,168
Nails, spikes, tacks, etc.....	198,756
Chain cables.....	129,124
Mill saws, cross-cut, and pit saws.....	47,297
Anchor and parts thereof.....	32,980
Anvils and parts thereof.....	67,926
Iron, bar.....	4,423,935
Rod.....	809,901
Hoop.....	324,675
Sheet.....	1,082,389
Pig.....	1,001,742
Old and scrap.....	111,680
Railroad.....	7,455,596
Steel—cast, shear, and German.....	1,775,292
All other.....	858,322
Copper, and manufactures of Copper:	
In pigs, bars, and old.....	1,659,513
Wire.....	681
Braziers.....	1,355
Copper bottoms.....	4,390
Manufactures of, not specified.....	166,704
Rods and bolts.....	20
Nails and spikes.....	1,723
Brass, and manufactures of Brass:	
In pigs, bars, and old.....	18,153
Wire.....	4,863
Sheet and rolled.....	68
Manufactures of, not specified.....	199,928
Tin, and manufactures of Tin:	
In pigs and bars.....	1,023,210
Plates and sheets.....	4,789,538
Foil.....	21,426
Manufactures of, not specified.....	31,922
Lead, and manufactures of Lead:	
Pig, bar, sheet, and old.....	2,305,768
Shot.....	15,437
Pipes.....	128
Manufactures of, not specified.....	2,076
Pewter, old.....	3,874
Manufactures of.....	570
Zinc, and manufactures of Zinc:	
In pigs.....	44,764
Sheets.....	546,250
Nails.....	2,453
Spelter.....	447,812
Manufactures of Gold and Silver:	
Epaulets, wings, laces, gallons, tresses, tassels, etc.....	40,438
Gold and silver leaf.....	29,509
Jewelry, real or imitations of.....	503,653
Gems, set.....	4,437
otherwise.....	390,357
Manufactures of, not specified.....	73,131
Glaziers' diamonds.....	898
Clocks.....	79,147
Chronometers.....	16,442
Watches, and parts of.....	8,923,039
Metallic pens.....	108,661
Pens, in packs and otherwise.....	56,110
Buttons, metal.....	18,178
All other and button moulds.....	912,371
Glass, and manufactures of Glass:	
Silvered.....	243,762
Paintings on glass, porcelain, and colored.....	33,783
Polished plate.....	525,061
Manufactures of, not specified.....	142,904
Glassware, cut.....	112,940
" plain.....	79,738
Watch crystals.....	82,170
Bottles.....	69,225
Demijohns.....	80,399
Window glass, broad, crown, and cylinder.....	641,093
Paper, and manufactures of Paper:	
Writing paper.....	843,240
Playing cards.....	17,281
Papier-maché, articles and wares of.....	33,948
Paper-hangings.....	254,591
Paper and fancy boxes.....	86,900

SUMMARY STATEMENT OF IMPORTS—Continued.

Description of Merchandise.	Value.
Paper and manufactures of Paper:	
Paper, and manufactures of, not specified.....	178,293
Blank books.....	18,894
Parchment.....	5,750
Printed Books, Magazines, etc.:	
In English.....	663,597
In other languages.....	179,084
Periodicals and illustrated newspapers.....	80,497
Periodicals and other works in the course of republication.....	326
Engravings.....	182,369
Mathematical instruments.....	34,925
Musical Instruments.....	494,374
Daguerreotype plates.....	10,968
Ink and ink powders.....	47,784
Leather, and manufactures of Leather:	
Tanned, bend, sole, and upper.....	1,606,453
Skins, tanned and dressed.....	809,273
Skivers.....	68,194
Boots and shoes.....	127,651
Gloves for men, women, and children.....	1,559,333
Manufactures of, not specified.....	459,161
Wares—China, porcelain, earthen, and stone.....	4,037,064
Plated or gilt.....	160,424
Japanned.....	46,333
Britannia.....	8,984
Silver-plated metal.....	1,993
Silver or plated wire.....	2,948
Saddlery—common, tinned or japanned.....	82,731
Plated, brass, or polished steel.....	195,164
Furs—undressed on the skin.....	613,792
Hatters' furs, dressed or undressed, not on the skin.....	1,572,388
Dressed on the skin.....	214,495
Manufactures of fur.....	49,955
Wood, manufactures of:	
Cabinet and household furniture.....	47,696
Cedar, mahogany, rose, and satin-wood.....	15,185
Willow.....	175,484
Other manufactures of.....	391,179
Wood, unmanufactured:	
Cedar, grenadilla, mahogany, rose, and satin.....	518,251
Willow.....	41,773
Fire-wood and other, not specified.....	29,457
Dye-wood in stick.....	866,043
Bark of the cork-tree—corks.....	209,572
Unmanufactured.....	17,699
Ivory—manufactures of.....	17,339
Unmanufactured.....	607,483
Marble—manufactures of.....	25,253
Unmanufactured.....	201,978
Burr stones.....	111,211
Quicksilver.....	961
Brushes and brooms.....	283,968
Black-lead pencils.....	88,089
Slates of all kinds.....	96,176
Raw hides and skins.....	10,010,090
Boots and shoes other than leather.....	30,525
India rubber—manufactures of.....	180,595
Unmanufactured.....	832,058
Hair—manufactures of.....	129,571
Unmanufactured.....	453,705
Grass cloth.....	43,804
Umbrellas, parasols, and sun-shades of silk and other.....	65,560
Unmanufactured Articles:	
Flax-seed or lined.....	8,003,824
Angora, Thibet, and other goats' hair or mohair.....	575
Wool.....	2,125,744
Wines in Casks:	
Burgundy.....	21,627
Madeira.....	65,580
Sherry and St. Lucar.....	364,906
Port.....	407,564
Claret.....	669,403
Tenerife and other Canary.....	565
Fayal and other Azores.....	4,704
Sicily and other Mediterranean.....	133,894
Austria and other of Germany.....	27,259
Red wines not enumerated.....	500,527
White wines not enumerated.....	252,594
Wine in Bottles:	
Burgundy.....	7,064
Champagne.....	1,143,469
Madeira.....	2,734
Sherry.....	11,139
Port.....	16,837
Claret.....	365,807
All other.....	273,242
Spirits, foreign distilled:	
Brandy.....	2,527,262
From grain.....	1,125,160
From other materials.....	218,907
Cordials.....	92,396
Beer, ale, and porter—in casks.....	221,290
In bottles.....	628,550
Honey.....	202,436

SUMMARY STATEMENT OF IMPORTS—Continued.

Description of Merchandise.	Value.
Molasses.....	\$8,250,175
Oil and Bone of foreign Fishing:	
Spermaceti.....	413
Whale and other fish.....	17,280
Whalebone.....	252
Oil—olive, in casks.....	74,028
" in bottles.....	847,306
Castor.....	102,502
Lined.....	953,200
Rape-seed and hemp-seed.....	11,601
Palm.....	337,881
Neat's-foot and other animal.....	153
Essential oils.....	146,572
Tea and coffee from places other than those of their production, and not excepted by treaty stipulations:	
Tea.....	17,315
Coffee.....	39,879
Cocoa.....	157,016
Sugar—brown.....	42,614,604
White, clayed, or powdered.....	86,820
Loaf and other refined.....	68,006
Candy.....	1,887
Sirup of sugar-cane.....	4,284
Fruits—almonds.....	209,605
Currants.....	151,418
Prunes.....	108,094
Plums.....	118,053
Figs.....	212,207
Dates.....	17,048
Raisins.....	937,460
Oranges, lemons, and limes.....	640,544
Other green fruit.....	151,587
Preserved fruit.....	102,557
Nuts.....	153,144
Spices—Mace.....	26,754
Nutmegs.....	254,637
Cinnamon.....	18,865
Cloves.....	65,332
Pepper, black.....	279,287
" red.....	2,460
Pimento.....	241,503
Cassia.....	201,883
Ginger, ground.....	82
" root.....	44,123
Camphor—crude.....	56,314
Refined.....	84
Candles—wax and spermaceti.....	9,067
Searin.....	62,137
Cheese.....	143,821
Other than perfumed.....	51,507
Perfumed.....	139,926
Tallow.....	12,507
Starch.....	6,935
Arrow-root.....	25,751
Butter.....	18,654
Lard.....	420
Beef and pork.....	2,614
Hams and other bacon.....	7,204
Bristles.....	289,581
Saltpetre—crude.....	1,166,463
Refined, or partly refined.....	362
Indigo.....	1,010,509
Wood or pastel.....	1,201
Cochineal.....	440,707
Madder.....	1,375,472
Gums—Arabic, Senegal, etc.....	143,350
Other gums.....	456,432
Borax.....	94,844

SUMMARY STATEMENT OF IMPORTS—Continued.

Description of Merchandise.	Value.
Copperas.....	\$6,446
Verdigris.....	9,690
Brimstone—crude.....	152,330
Rolled.....	12,305
Chlorid of lime or bleaching powder.....	590,895
Soda ash.....	1,084,021
Soda, sal.....	56,433
Soda, carbonate of.....	424,024
Barilla.....	31,018
Sulphate of barytes.....	48,567
Acids, acetic, etc.....	58,271
Vitriol—blue or Roman.....	5,834
Oil of.....	98
Sulphate of quinine.....	249,944
Licorice—root.....	42,091
Paste.....	392,552
Bark—Peruvian and Quilla.....	386,252
Other.....	258,605
Ivory and bone black.....	289
Opium.....	463,452
Glue.....	23,571
Gunpowder.....	2,638
Alum.....	24,586
Tobacco—unmanufactured.....	1,358,835
Snuff.....	2,626
Cigars.....	4,221,096
Manufactured, other than snuff and cigars.....	18,898
Paints—dry ochre.....	16,253
Red and white lead.....	113,075
Whiting and Paris white.....	99,169
Litharge.....	17,721
Sugar of lead.....	55,795
Cordage—tarred and cables.....	92,099
Untarred.....	64,433
Twine and selmes.....	59,957
Hemp, unmanufactured.....	423,533
Manilla, sun, and other hemp of India.....	2,353,891
Jute, Sisal grass, coco, etc.....	334,838
Codilla, or tow of hemp or flax.....	92,520
Flax, unmanufactured.....	220,738
Rags of all kinds.....	1,448,125
Salt.....	2,032,533
Coal.....	772,663
Breadstuffs—wheat.....	999
Barley.....	3,068
Oats.....	110
Wheat flour.....	477
Rye-meal.....	477
Oat-meal.....	2,070
Potatoes.....	559
Fish, dried, smoked, or pickled:	
Dried or smoked.....	96,607
Salmon.....	3,949
Mackerel.....	144
Herrings and shad.....	49,213
All other.....	4,633
Value of merchandise not enumerated in the preceding abstract:	
At 5 per cent.....	1,374,024
At 10 per cent.....	646,016
At 15 per cent.....	1,668
At 20 per cent.....	3,604,767
At 25 per cent.....	153,493
At 30 per cent.....	2,264,645
At 40 per cent.....	541,515
Paying duties.....	\$294,160,835
Free of duty.....	66,729,306
Total.....	\$360,890,141

Commercial Regulations of the United States, compiled from General Regulations of the Treasury Department, and from other official Authorities.—Vessels belonging to the following nations are admitted, under the provisions of law, treaties of commerce and navigation, or conventions, into the ports of the United States, on the same terms as American vessels, with the produce or manufactures of their own or any other country:

Argentine Confederation, Austria, Belgium, Brazil, Chili, (Denmark,*) Ecuador, Great Britain, Greece, New Granada, Guatemala, Hanover, Hanse Towns (Hamburg, Bremen, and Lübeck), Mecklenburg Schwe-
rin, Netherlands, Oldenburg, Peru, Prussia, Russia, San Salvador, Sardinia, Sweden and Norway, Tuscany, Two Sicilies,† Venezuela.

* The treaty between the United States and Denmark expired on the 14th day of April, 1856.

† By decree of December 13, 1854, equality with the national flag is offered by the government of the Two Sicilies to the vessels of such nations as reciprocate the favor. This equality applies to the direct and indirect trade.

Vessels belonging to the following nations, with which the United States have reciprocal treaties on the footing of "the most favored nations," or with which reciprocity exists by virtue of an act of Congress of the 24th day of May, 1828, are admitted into the ports of the United States on the same terms, as respects tonnage or navigation duties, as American vessels, with the produce or manufactures of their own or any other country: Bolivia, Costa Rica, Mexico, Muscat, Ottoman empire, Portugal, and Uruguay.

The Rights of Commerce.—"As the end of the law of nations is the happiness and general perfection of the general society of mankind, it enjoins upon every nation the punctual observance of benevolence and goodwill, as well as of justice toward its neighbors. They ought to cultivate a free intercourse for commercial purposes, in order to supply each other's wants and promote each other's prosperity. The variety of climates and productions on the surface of the globe, and the facility of communication by means of rivers, lakes, and the ocean, invite to a liberal commerce, as agreea-

ble to the law of nature, and extremely conducive to national amity, industry, and happiness. The numerous wants of civilized life can only be supplied by mutual exchange between nations of the peculiar productions of each; and who that is familiar with the English classics has not dwelt with delight on the description of the extent and blessings of English commerce, which Addison has given with such graceful simplicity and such enchanting elegance in one of the

Spectator's visits to the Royal Exchange! But as every nation has the right, and, if disposed to exercise it, of judging for itself in respect to the policy and extent of its commercial arrangements, the general freedom of trade, however reasonably and strongly it may be inculcated in the modern school of political economy, is but an imperfect right, and necessarily subject to such regulations and restrictions as each nation may think proper to prescribe for itself."—*KENT's Comm.*

STATISTICAL VIEW OF THE COMMERCE OF THE UNITED STATES, EXHIBITING THE VALUE OF EXPORTS TO AND IMPORTS FROM EACH FOREIGN COUNTRY, AND THE TONNAGE OF AMERICAN AND FOREIGN VESSELS ARRIVING FROM AND DEPARTING TO EACH FOREIGN COUNTRY DURING THE YEAR ENDING JUNE 30, 1857.—[OFFICIAL.]

Countries.	Value of Exports.			Value of Imports.	American Tonnage.		Foreign Tonnage.	
	Domestic Produce.	Foreign Produce.	Total.		Entered the United States.	Cleared from the U. States.	Entered the United States.	Cleared from the U. States.
Russia on the Baltic and North Seas..	4,856,886	171,465	4,858,301	1,435,394	12,084	25,498	1,888	2,716
Russia on the Black Sea	61,174	...	69,174	43,626	....	...	527	...
Asiatic Russia	20,057	26,212	46,269	...	...	...	...	280
Russian Possessions in North America	28,775	57,362	86,137	40,400	2,289	1,590	1,066	2,440
Prussia	80,788	14,311	45,099	66,127	604	949	...	1,334
Sweden and Norway	1,873,306	27,120	1,400,426	744,812	6,701	3,432	7,345	5,592
Swedish West Indies	76,405	3,528	79,933	12,082	1,661	1,719	95	...
Denmark	234,520	...	234,520	8,809	...	1,883	588	2,113
Danish West Indies	1,410,018	97,677	1,516,695	281,559	15,913	21,834	6,141	2,137
Hamburg	8,199,798	654,417	3,854,215	4,647,413	7,064	7,266	56,850	46,451
Bremen	11,082,107	361,888	11,443,995	10,723,523	30,346	31,470	115,485	87,919
Other German ports .....	...	255	255	248	...	245	147	...
Holland	3,991,633	127,244	4,107,877	2,469,762	20,805	25,207	10,062	26,232
Dutch West Indies	869,517	16,779	386,296	518,254	8,861	8,051	774	485
Dutch Guiana	343,728	6,104	349,832	374,461	8,094	6,856	1,374	506
Dutch East Indies	125,356	108,159	233,515	1,287,399	7,575	7,191	507	1,420
Belgium	8,636,628	1,950,638	5,644,326	5,060,311	36,970	40,162	16,715	14,354
England	174,528,921	3,162,131	177,690,152	123,478,529	1,047,046	911,183	344,889	388,792
Scotland	4,671,837	32,181	4,704,018	7,316,111	31,335	33,982	68,826	49,422
Ireland	3,450,614	1,000	3,451,614	113,453	2,710	23,406	16,575	22,690
Gibraltar	564,314	53,065	617,379	43,958	2,525	7,096	5,133	870
Malta	238,485	30,992	310,477	114,477	14,017	9,223	2,648	960
Canada	13,024,708	3,550,187	16,574,895	18,991,834	1,240,159	1,193,584	1,105,356	1,104,650
Other British North Am. Possessions.	6,011,405	776,182	7,687,587	8,832,462	138,640	819,985	389,712	461,245
British West Indies	5,032,055	52,863	5,084,918	2,653,698	75,690	100,361	34,134	24,970
British Honduras	425,379	34,073	460,352	435,030	6,413	6,523	2,122	8,556
British Guiana	1,009,976	5,618	1,009,594	813,353	9,368	16,372	3,716	4,387
British Possessions in Africa	797,835	7,910	687,745	698,375	8,965	19,329	573	1,535
British Australia	3,927,131	143,553	3,440,684	65,632	3,015	47,231	1,859	5,887
British East Indies	564,898	113,030	977,937	10,766,214	109,030	63,337	4,754	6,375
France on the Atlantic	35,360,423	932,523	36,292,951	44,718,773	192,190	228,775	36,993	20,500
France on the Mediterranean	1,858,013	88,024	1,946,036	3,974,054	31,014	25,313	7,780	9,055
French North American Possessions ..	137,561	33,212	170,773	95,049	...	1,835	2,132	4,597
French West Indies	729,779	1,864	731,143	59,689	6,553	20,538	4,828	1,906
French Guiana	84,447	1,000	85,447	53,293	1,298	3,147	...	...
French East Indies .....	...	...	...	...	...	518	...	...
French Possessions in Africa .....	...	...	...	...	553	...	...	196
Spain on the Atlantic	2,662,007	13,892	2,975,979	692,982	33,118	28,611	5,197	10,075
Spain on the Mediterranean	7,715,907	11,211	7,727,118	2,050,034	27,292	21,005	29,697	67,687
Canary Islands	98,027	915	89,942	44,065	3,220	3,749	1,811	1,090
Philippine Islands	60,183	171,479	237,612	3,653,763	37,729	15,579	1,760	1,472
Cuba	9,371,582	5,543,861	14,923,443	45,243,101	684,937	590,241	61,308	14,293
Porto Rico	1,783,429	152,045	1,935,474	5,749,600	59,172	37,633	11,012	3,550
Portugal	1,619,057	16,388	1,635,445	492,536	7,549	19,347	4,669	12,063
Madeira	52,204	684	52,888	34,114	651	814	396	528
Cape de Verd Islands	63,108	1,895	64,503	25,905	1,601	2,662	755	545
Azores	62,972	17,751	80,723	50,859	3,916	3,589	908	1,582
Sardinia	3,057,901	77,567	3,135,468	217,287	9,958	15,882	7,508	6,027
Tuscany	337,400	...	337,400	1,755,002	15,593	2,567	5,789	...
Papal States .....	...	...	...	54,672	...	315	...	...
Two Sicilies	1,033,951	58,969	1,152,920	1,575,953	60,484	5,334	20,339	3,119
Austria	1,130,217	252,727	1,382,944	396,562	6,322	11,152	2,118	1,045
Austrian Possessions in Italy	1,042,348	29,899	1,072,737	25,808	2,093	5,029	294	469
Ionian Republic .....	...	...	...	11,179	...	...	470	...
Greece .....	...	...	...	56,533	...	...	182	...
Turkey in Europe	187,975	7,899	195,364	7,405	...	2,777	...	...
Turkey in Asia	330,506	70,776	410,282	794,445	9,952	4,774	320	...
Egypt	28,163	...	28,163	106,158	...	855	2,783	...
Other ports in Africa	2,308,165	176,551	2,484,746	1,521,665	14,824	22,010	678	749
Hayti	2,216,147	319,517	2,535,364	2,980,242	53,104	35,976	7,454	4,121
San Domingo	42,283	2,066	44,349	109,874	1,504	1,920	1,905	918
Mexico	3,017,640	597,566	3,615,206	5,955,857	27,291	35,508	10,555	14,564
Central Republic	116,239	20,722	137,021	258,060	37,901	34,779	141	502
New Granada	1,770,209	267,490	2,037,689	2,468,169	136,232	124,809	2,374	1,743
Venezuela	1,360,148	67,430	1,427,578	3,860,518	24,921	17,703	3,408	2,083
Brazil	5,268,166	277,041	5,545,207	21,460,738	108,299	84,712	18,243	3,186
Uruguay, or Cisplatine Republic	976,370	29,802	1,006,172	368,297	2,280	22,412	241	2,927
Buenos Ayres, or Argentine Republic ..	1,202,376	111,431	1,313,807	2,784,473	16,376	26,630	496	1,605
Chili	2,473,228	433,957	2,907,185	3,742,439	14,872	42,727	7,207	11,067
Peru	447,733	58,199	507,932	208,747	123,031	68,923	1,577	6,469
Ecuador	84,546	2,630	87,176	15,803	625	1,358	...	...
Sandwich Islands	803,084	144,349	947,433	204,416	16,742	16,951	187	187
China	2,019,900	2,375,230	4,395,130	8,356,932	57,042	59,549	6,987	9,480
Other ports in Asia .....	...	642	642	5,660	...	...	184	...
Islands in the Pacific	72,587	...	72,587	748	1,665	1,354	1,112	1,496
Whale-fisheries	496,253	21,010	517,268	107,186	49,747	57,983	...	...
Uncertain places	20,509	...	20,509	...	...	231	...	...
Total, year 1856-'57	338,985,065	23,975,617	362,960,682	360,890,141	4,731,370	4,581,212	2,464,946	2,490,170

GENERAL STATEMENT OF FOREIGN IMPORTS INTO THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30, 1887.

Whence imported.	Value of Merchandise from each Country.					From the Dominions of each Power.
	Free of Duty.	Paying Duty.	Total.	In American Vessels.	In foreign Vessels.	
Russia on the Baltic and N. Seas	\$55,830	\$1,379,564	\$1,435,394	\$1,214,777	220,617	1,519,421
Russia on the Black Sea	15	43,626	43,626		43,626	
Russian Possessions in N. A.	15	40,385	40,400	16,234	24,166	66,127
Prussia	232	66,127	66,127	66,127		
Sweden and Norway	232	744,580	744,812	450,730	294,082	756,894
Swedish West Indies	2,065	10,017	12,082	12,082		
Denmark		3,809	3,809		3,809	285,368
Danish West Indies	46,696	234,863	281,559	207,393	73,666	
Hamburg	46,328	4,601,085	4,647,413	251,653	4,395,760	4,647,413
Bremen	183,120	10,540,403	10,723,523	5,414,951	5,308,572	10,723,523
Other German ports		248	248		248	248
Holland	221,884	2,248,378	2,469,762	1,435,614	1,034,148	4,640,876
Dutch West Indies	7,302	510,952	518,254	480,376	37,878	
Dutch Guiana	1,400	373,061	374,461	303,166	71,295	5,060,311
Dutch East Indies	830,839	453,570	1,287,399	1,287,399		
Belgium	49,635	5,010,676	5,060,311	3,906,092	1,154,219	5,060,311
England	5,761,012	117,712,517	123,473,529	81,818,923	41,654,606	
Scotland	53,070	7,163,041	7,216,111	1,427,118	5,788,993	31,154
Ireland	4,318	109,135	113,453	82,230	31,154	
Gibraltar	2,166	41,792	43,958	35,233	8,675	29,717
Malta	4,424	110,053	114,477	84,760	29,717	
Canada	17,600,737	691,097	18,291,834	9,423,726	8,868,108	169,523,026
Other British N. A. Possessions	3,635,515	136,647	3,832,462	649,605	3,182,857	
British West Indies	427,809	2,225,889	2,653,698	1,924,446	729,252	44,963
British Honduras	56,957	378,073	435,030	390,072	44,963	
British Guiana	1,432	816,871	818,353	695,844	122,509	16,707
British Possessions in Africa	11,026	637,249	638,275	631,568	16,707	
British Australia	34,241	31,391	65,632	42,232	23,400	408,801
British East Indies	424,408	10,341,306	10,766,214	10,357,413	408,801	
France on the Atlantic	2,032,409	42,656,364	44,718,773	30,005,477	14,713,296	556,552
France on the Mediterranean	51,387	3,022,667	3,074,054	2,517,502	556,552	
French N. Amer. Possessions	205	94,844	95,049	55,460	39,589	229
French West Indies	51,675	8,014	59,689	53,238	6,451	
French Guiana	30,411	22,882	53,293	53,293		67,833
Spain on the Atlantic	3,662	689,290	692,952	605,290	87,662	
Spain on the Mediterranean	26,307	2,023,727	2,050,034	1,315,106	734,928	7,257
Canary Islands		44,065	44,065	36,808	7,257	
Philippine Islands	63,217	3,590,546	3,653,763	3,360,425	293,338	2,133,516
Cuba	1,025,190	44,217,911	45,243,101	43,059,585	2,133,516	
Porto Rico	10,428	5,793,172	5,743,600	4,893,701	854,899	323,451
Portugal	6,948	415,883	422,836	99,385	323,451	
Madeira	8	34,106	34,114		34,114	14,650
Cape de Verd Islands	14,534	11,371	25,905	11,255	14,650	
Azores	33,054	17,205	50,259	49,466	793	217,987
Sardinia	754	216,533	217,287	78,975	138,312	
Tuscany	76,229	1,673,773	1,755,002	1,273,497	481,505	54,672
Papal States	60	54,612	54,672	60	54,612	
Two Sicilies	51,942	1,524,011	1,575,953	1,167,330	408,623	1,575,953
Austria	22,693	373,869	396,562	141,023	255,539	
Austrian Possessions in Italy		25,803	25,803		25,803	11,179
Ionian Republic		11,179	11,179	11,179		
Greece		36,533	36,533		36,533	9
Turkey in Europe	245	7,160	7,405	7,396	9	
Turkey in Asia	2,530	721,855	724,445	677,983	46,462	106,153
Egypt	400	105,758	106,153		106,153	
Ports in Africa	161,935	1,359,730	1,521,665	1,502,197	19,468	2,290,242
Hayti	1,550,634	739,608	2,290,242	2,182,750	107,492	
San Domingo	1,609	108,265	109,874	84,375	25,499	5,985,857
Mexico	5,021,291	964,566	5,985,857	3,701,317	2,284,540	
Central Republic	111,637	176,423	288,060	213,582	74,478	2,468,169
New Granada	413,932	2,054,237	2,468,169	2,423,515	44,654	
Venezuela	1,123,550	2,731,968	3,860,518	3,149,744	710,774	21,460,733
Brazil	18,030,738	3,429,995	21,460,733	19,390,149	2,140,584	
Uruguay, or Cisplatine Rep.		368,297	368,297	314,500	53,797	2,784,473
Buenos Ayres, or Argentine Rep.	11,048	2,773,425	2,784,473	2,725,169	59,304	
Chili	1,365,457	2,876,928	3,042,439	3,006,733	35,706	3,743,489
Peru	107,126	101,621	208,747	177,802	30,945	
Ecuador	15,750	53	15,803	15,803		204,416
Sandwich Islands	67,200	137,216	204,416	190,415	14,001	
China	5,623,935	2,728,037	8,356,932	7,865,080	491,852	5,660
Other ports in Asia		5,660	5,660		5,660	
Whale-fisheries	89,225	20,961	107,186	96,561	10,625	743
Islands in the Pacific		743	743	743		
Total, 1856-'57	\$66,739,306	\$294,160,835	\$360,890,141	\$253,116,170	\$107,773,971	\$360,890,141
Total, 1856-'56	56,965,706	257,684,236	314,639,942	249,973,512	64,667,430	314,639,942

From the above table we get a clear exhibit of the direction of our foreign trade as regards the imports; making a brief summary, we see the proportion borne by the following countries during the year 1856-'57:

Countries.	Imports.	Per Cent.
England	\$193,473,529	54.71
France	43,792,827	12.14
Cuba	45,243,101	12.54
Brazil	21,460,733	5.94
Canada	18,291,834	5.07
British East Indies	10,766,214	2.93
Bremen	10,723,523	2.97
China	8,356,932	2.32
Scotland	7,216,111	2.00
Other countries.	71,565,337	19.83
Total	\$360,890,141	100.00

This summary shows that 80 per cent. of the total imports for 1856-'57 was to countries from which we imported over 2 per cent. Of the total of this 80 per cent. 51 per cent. (against 65 per cent. of exports) came from countries on the west coast of Europe, thereby showing a balance of trade in our favor in our commerce with these countries. A similar examination of our trade with the East Indies and countries in the south of Europe would show a balance of trade against this country. The same course of trade is also particularly to be remarked in regard to Cuba, Brazil, and China; as these three countries show, on an average, an aggregate balance of trade against the United States of over fifty millions of dollars.

COMMERCE OF THE UNITED STATES WITH THE PRINCIPAL COMMERCIAL COUNTRIES, EXHIBITING THE AGGREGATE VALUE OF IMPORTS FROM EACH COUNTRY, EACH YEAR, DURING A PERIOD OF THIRTY-SEVEN CONSECUTIVE YEARS, FROM 1821 TO 1857, BOTH INCLUSIVE.

VALUES OF IMPORTS INTO THE UNITED STATES FROM—

Years.	Great Britain and Dependencies.	France and Dependencies.	Spain and Dependencies.	Netherlands and Dependencies.	Sweden and Dependencies.	Denmark and Dependencies.	Portugal and Dependencies.	China.	Hanse Towns.
1821.....	\$29,277,938	\$5,900,581	\$9,658,728	\$2,984,272	\$1,369,869	\$1,999,730	\$748,428	\$3,111,951	\$990,165
1822.....	39,537,829	7,059,342	12,376,841	2,708,162	1,544,907	2,535,406	881,290	5,242,536	1,775,755
1823.....	34,072,578	6,606,343	14,233,530	2,125,587	1,503,050	1,324,532	533,635	6,511,426	1,981,026
1824.....	32,750,340	9,907,412	15,857,007	2,355,525	1,101,750	1,101,666	601,722	5,618,502	2,527,830
1825.....	42,394,812	11,835,581	9,566,237	2,265,378	1,417,598	1,539,592	733,443	7,533,115	2,739,526
1826.....	32,212,356	9,588,896	9,623,420	2,174,181	1,292,182	2,117,164	765,203	7,422,186	2,516,545
1827.....	33,055,374	9,448,592	9,100,369	1,722,070	1,225,402	2,340,171	650,001	3,017,183	1,638,563
1828.....	35,531,484	10,287,505	8,167,546	1,990,431	1,946,738	2,374,069	433,555	5,339,108	2,044,392
1829.....	27,532,082	9,616,970	6,801,574	1,617,334	1,503,959	2,086,177	687,869	4,680,847	2,274,275
1830.....	26,804,984	8,240,885	8,373,681	1,350,765	1,398,640	1,671,218	471,643	3,878,141	1,873,278
1831.....	47,956,717	14,737,585	11,701,201	1,653,031	1,120,730	1,652,216	397,560	3,088,205	3,493,301
1832.....	42,406,924	12,754,015	10,863,290	2,358,474	1,150,804	1,182,708	485,264	5,344,907	2,565,099
1833.....	43,085,865	13,062,913	13,431,207	2,347,343	1,200,809	1,166,872	555,137	5,141,570	2,227,726
1834.....	52,679,298	17,557,244	13,627,404	2,127,886	1,126,541	1,684,368	699,122	7,802,327	3,855,850
1835.....	65,949,307	23,362,554	15,617,149	2,903,718	1,316,508	1,408,902	1,125,718	5,987,187	3,841,943
1836.....	68,022,915	27,035,235	19,345,690	3,861,514	1,299,693	1,874,340	672,670	7,324,816	4,994,520
1837.....	52,281,557	22,497,817	17,927,871	3,370,828	1,468,878	1,626,906	928,201	8,965,337	5,042,221
1838.....	49,051,181	18,087,149	19,971,394	2,194,283	900,790	1,644,865	726,058	4,764,636	2,847,358
1839.....	71,600,851	33,241,119	15,276,795	3,473,220	1,566,142	1,546,753	1,192,823	3,675,609	4,349,150
1840.....	39,130,921	17,908,127	14,419,647	2,326,896	1,275,453	976,678	589,894	6,640,829	2,521,493
1841.....	51,099,638	24,187,441	10,516,333	2,440,437	1,239,641	1,084,321	574,841	3,958,388	2,449,564
1842.....	38,613,043	17,223,390	12,176,588	2,214,520	914,176	584,321	347,638	4,934,645	2,274,019
1843.....	29,788,582	7,836,137	6,980,594	815,541	278,674	485,285	71,869	4,385,506	920,865
1844.....	45,450,122	17,932,412	13,775,451	2,186,386	445,553	680,510	257,015	4,931,255	2,136,386
1845.....	49,903,725	22,069,914	10,500,544	1,897,623	640,057	733,238	501,734	7,285,914	2,912,537
1846.....	49,666,422	24,300,882	12,376,482	1,971,680	730,150	753,927	547,474	6,508,881	3,149,864
1847.....	72,715,811	25,159,147	16,383,975	2,480,584	613,698	847,223	416,150	5,583,343	3,622,185
1848.....	68,906,979	28,287,791	17,388,307	2,172,166	764,602	555,355	235,877	8,083,496	6,293,250
1849.....	67,887,983	24,458,669	15,110,027	2,367,551	757,828	558,345	414,884	5,513,795	7,742,864
1850.....	85,117,607	27,636,265	15,864,748	2,732,560	1,035,310	267,986	470,820	6,503,462	8,787,874
1851.....	105,323,079	31,767,410	22,972,239	3,124,997	996,238	274,781	504,698	7,065,144	10,005,364
1852.....	102,710,820	25,969,490	24,223,253	3,290,854	779,732	280,356	404,342	10,593,580	8,171,411
1853.....	143,219,260	33,523,999	29,080,320	3,549,619	454,208	184,477	504,698	10,573,710	13,843,455
1854.....	163,018,005	35,972,906	25,401,338	3,376,793	587,768	284,141	304,168	10,506,329	16,066,998
1855.....	139,874,434	31,801,965	26,467,445	3,503,444	881,129	227,009	435,411	11,048,726	12,990,110
1856.....	154,053,749	49,247,303	33,432,700	4,615,436	881,437	226,158	366,242	10,454,436	14,458,512
1857.....	163,523,026	48,000,858	37,482,545	4,649,876	756,894	285,368	533,714	8,356,932	15,371,184

VALUES OF IMPORTS INTO THE UNITED STATES FROM—

Years.	Russia.	Italy.†	Hayti.	Brazil.	Mexico.	Venezuela, N. Granada, and Ecuador.	Central America.	Argentine Republic and Uruguay.	Chili.	Belgium.
1821.....	\$1,852,199	\$973,463	\$2,246,257	\$605,126	....	....	....	....	....	....
1822.....	3,307,328	1,563,033	2,341,817	1,486,567	....	....	....	....	....	....
1823.....	2,263,777	1,339,440	2,352,733	1,214,810	....	....	....	....	....	....
1824.....	2,209,663	1,029,430	2,247,235	2,074,119	....	....	....	....	....	....
1825.....	2,037,110	1,454,022	2,065,329	2,156,707	\$4,044,647	\$1,837,050	\$56,789	\$749,771	\$220,500	....
1826.....	2,617,169	1,120,749	1,511,836	2,156,678	3,916,198	2,079,724	204,370	522,769	629,490	....
1827.....	2,086,077	1,013,126	1,781,800	2,060,971	5,231,867	1,550,249	251,342	80,065	184,693	....
1828.....	2,783,362	1,607,417	2,103,535	3,077,752	4,814,253	1,484,856	204,770	317,466	781,363	....
1829.....	2,218,995	1,409,538	1,799,800	2,585,467	5,026,761	1,255,810	311,931	915,190	416,118	....
1830.....	1,631,890	940,254	1,597,140	2,471,430	5,285,241	1,120,095	302,933	1,431,883	182,585	....
1831.....	1,605,323	1,704,264	1,680,578	2,375,829	5,166,745	1,207,154	198,804	928,103	413,758	....
1832.....	3,251,852	1,619,705	2,053,386	3,890,845	4,293,954	1,439,182	288,316	1,560,171	504,623	....
1833.....	2,772,550	990,184	1,740,053	5,089,638	5,452,818	1,424,622	267,740	1,377,117	334,130	\$180,628
1834.....	2,595,840	1,422,063	2,113,717	4,723,969	8,066,068	1,727,188	170,968	1,430,118	757,409	185,679
1835.....	2,395,245	1,457,977	2,347,556	5,674,466	9,490,446	1,662,764	215,450	878,618	917,095	241,967
1836.....	2,778,554	1,970,246	1,893,019	7,210,190	5,615,319	1,696,650	199,304	1,053,503	811,497	430,000
1837.....	2,316,116	1,927,181	1,440,856	4,991,893	5,654,002	1,567,345	163,402	1,000,002	1,180,156	549,009
1838.....	1,398,306	944,238	1,275,762	3,101,238	3,560,790	1,615,249	155,614	1,029,539	942,095	293,928
1839.....	2,393,804	1,182,297	1,777,989	5,329,955	3,127,153	2,078,216	192,845	1,156,641	1,586,641	466,701
1840.....	2,573,427	1,157,200	1,252,824	4,927,216	4,175,001	1,572,548	189,021	787,964	1,616,559	274,867
1841.....	3,174,448	1,151,238	1,809,634	6,302,653	3,284,957	2,156,121	189,911	1,957,747	1,230,980	374,583
1842.....	1,350,106	987,523	1,266,997	5,943,814	1,995,696	1,720,558	124,994	917,541	831,039	619,588
1843.....	742,893	894,564	898,447	8,947,653	2,732,406	1,307,013	132,167	915,241	857,556	171,695
1844.....	1,059,419	1,036,992	1,441,244	6,883,806	2,387,002	1,625,095	189,616	1,565,955	750,370	634,777
1845.....	1,492,262	2,172,479	1,886,367	6,084,599	1,702,936	1,440,196	65,269	1,177,271	1,123,690	709,562
1846.....	1,570,054	2,092,740	1,542,962	7,441,808	1,856,621	1,576,043	116,733	825,685	1,275,690	836,372
1847.....	924,673	2,018,562	1,391,530	7,096,160	746,818	1,479,150	80,681	354,019	1,716,903	948,325
1848.....	1,319,034	2,234,129	1,367,174	7,992,648	1,581,247	1,438,907	18,272	1,540,161	1,810,451	1,325,061
1849.....	841,293	2,128,678	901,724	8,474,868	2,216,719	1,572,066	50,017	1,739,751	1,817,723	1,544,203
1850.....	1,511,573	2,927,911	1,544,771	9,324,420	2,135,866	2,512,230	261,459	2,653,877	1,796,877	2,404,954
1851.....	1,392,793	2,880,623	1,889,968	11,525,304	1,804,779	3,152,593	149,556	2,884,496	2,734,746	2,377,630
1852.....	1,581,620	2,326,936	1,870,672	12,230,289	1,640,206	2,872,391	368,355	2,141,389	2,002,160	2,054,403
1853.....	1,275,501	2,845,265	1,985,624	14,817,961	2,167,985	3,188,308	500,987	2,489,621	2,214,252	2,732,163
1854.....	1,544,235	3,169,421	2,337,252	14,110,837	3,463,190	4,608,703	2,360,422	2,602,150	3,332,167	3,462,241
1855.....	2,066,113*	3,709,569	2,615,925†	15,218,935	2,893,830	5,429,094	284,409	2,787,896	3,518,896	3,398,690
1856.....	330,531	3,441,570	1,984,455	19,262,657	3,568,681	6,612,515	246,853	2,688,197	2,467,819	3,106,511
1857.....	1,519,420	3,602,914	2,400,116	21,460,733	5,985,857	6,344,400	288,060	3,102,770	3,742,439	5,060,311

* The figures for 1855 are the aggregate of those given in "Commerce and Navigation" for Russia on the Baltic and North Seas, on the Black Sea, and in American and Asiatic Russia, all embraced in prior reports under the single title, Russia.

† Italy, subsequently to 1844, is made to embrace all the Italian states—Sicily, Sardinia, Tuscany, Trieste, etc.; but after 1855, it embraces Sardinia, Tuscany, Papal states, and Two Sicilies, only.

‡ Hayti after 1855 embraces the totals given in "Commerce and Navigation" for Hayti and San Domingo (Dominican Republic), which were embodied in former reports under the single title, Hayti.

From these tables it appears that the principal increase in the countries of Europe was in Great Britain and its dependencies, France and its dependencies, Spain and its dependencies, Belgium and the Hanse

Towns. The South American states that show an increase are, Brazil, Argentine Republic, and Chili. The countries in the north of Europe generally show a decrease.

SUMMARY STATEMENT OF THE COMMERCE OF THE UNITED STATES WITH THE PRINCIPAL COMMERCIAL COUNTRIES, EXHIBITING THE AGGREGATE VALUE OF EXPORTS FROM THE UNITED STATES TO EACH COUNTRY, EACH YEAR, DURING A PERIOD OF THIRTY-SEVEN CONSECUTIVE YEARS, FROM 1821 TO 1857, BOTH INCLUSIVE.

VALUES OF EXPORTS FROM THE UNITED STATES TO—

Years.	Great Britain and Dependencies.	France and Dependencies.	Spain and Dependencies.	Netherlands and Dependencies.	Sweden and Dependencies.	Denmark and Dependencies.	Portugal and Dependencies.	China.	Hankow Towns.
1821.....	\$26,522,572	\$6,474,718	\$7,209,275	\$6,092,061	\$777,407	\$2,327,882	\$435,700	\$4,290,560	\$2,132,544
1822.....	30,041,337	7,075,332	8,433,212	5,801,639	921,434	2,434,046	427,491	6,935,368	2,506,015
1823.....	27,571,060	5,563,924	10,963,398	7,767,075	558,291	1,955,071	246,648	4,636,061	3,169,439
1824.....	28,027,845	10,532,304	15,307,278	3,617,389	569,428	2,188,252	518,836	6,301,171	1,863,273
1825.....	44,217,525	11,891,326	5,921,549	5,895,499	569,550	2,701,088	408,160	5,570,515	3,121,093
1826.....	28,980,019	12,106,429	6,687,351	4,794,070	358,380	2,412,875	513,553	2,566,644	2,116,697
1827.....	32,370,465	13,565,356	7,321,991	3,826,674	850,877	2,404,322	357,270	3,864,405	3,013,185
1828.....	27,020,209	12,038,341	7,204,627	3,083,359	1,106,954	3,348,167	291,614	1,482,302	2,995,251
1829.....	28,071,084	12,832,304	6,888,094	4,622,120	957,948	2,311,174	322,911	1,354,862	3,277,160
1830.....	31,647,581	11,806,238	6,649,051	4,562,437	961,729	2,104,085	279,799	742,193	2,274,880
1831.....	39,901,379	9,852,079	5,601,420	3,096,609	540,078	2,000,793	296,883	1,290,835	2,572,172
1832.....	37,268,556	13,244,698	6,399,183	6,035,466	515,140	2,207,551	294,218	1,260,522	4,098,212
1833.....	39,881,486	14,424,533	5,606,041	5,566,861	420,069	1,839,834	442,661	1,438,759	3,293,206
1834.....	50,797,650	16,111,442	6,206,556	4,578,739	494,741	1,857,114	322,496	1,010,483	4,650,674
1835.....	60,107,134	20,335,066	7,069,279	4,411,053	602,593	1,750,496	521,413	1,968,580	5,528,276
1836.....	64,487,560	21,441,200	8,001,668	4,799,157	700,386	2,122,469	191,007	1,194,264	4,368,892
1837.....	61,218,813	20,255,346	7,604,062	4,285,767	507,523	1,640,173	423,705	630,591	3,754,949
1838.....	53,843,392	16,252,413	7,684,006	3,772,206	355,852	1,299,927	232,131	1,516,602	3,291,645
1839.....	58,169,082	18,924,413	7,734,429	3,771,239	470,914	1,406,846	244,854	1,633,601	3,291,667
1840.....	70,420,846	22,349,154	7,617,347	4,546,085	652,546	1,193,500	321,256	1,009,966	4,198,459
1841.....	62,376,402	22,285,575	7,181,409	3,288,741	771,210	957,283	349,113	1,200,816	4,500,716
1842.....	52,306,050	18,738,860	6,323,205	4,270,770	477,965	1,047,673	302,964	1,444,397	4,564,513
1843.....	46,901,835	12,472,453	3,958,694	2,370,884	67,762	827,855	168,534	2,418,958	3,291,932
1844.....	61,727,876	16,133,436	6,751,811	3,453,855	295,345	983,156	252,170	1,756,941	3,566,687
1845.....	61,044,535	16,143,994	7,790,442	3,610,602	363,667	1,193,506	247,180	2,275,995	4,050,020
1846.....	61,685,446	15,825,851	6,792,238	2,727,445	730,150	753,927	204,976	1,331,741	4,608,620
1847.....	98,218,157	19,819,107	9,989,424	4,493,271	533,908	1,193,198	263,571	1,532,884	3,324,638
1848.....	91,592,904	20,413,360	10,143,235	2,564,653	745,112	1,135,756	345,725	2,190,013	4,321,785
1849.....	93,172,339	15,781,585	7,870,570	3,203,679	850,652	886,484	377,136	1,583,224	3,314,930
1850.....	88,388,075	20,183,094	9,981,240	3,571,607	819,532	1,168,538	357,308	1,605,217	2,506,522
1851.....	136,022,774	28,635,214	13,249,056	1,039,889	868,268	1,140,086	385,301	2,458,287	6,047,447
1852.....	132,254,251	24,512,114	11,170,153	3,230,390	890,963	1,046,788	416,833	2,663,177	6,786,957
1853.....	145,553,624	27,044,479	11,847,101	2,979,332	884,483	1,037,544	417,927	3,736,992	8,920,053
1854.....	180,297,258	32,860,841	14,332,310	3,082,310	1,137,667	1,074,867	241,273	1,398,088	12,086,263
1855.....	178,789,640	33,553,972	14,311,974	2,950,669	1,047,057	968,135	423,527	1,719,429	10,926,581
1856.....	204,126,036	43,307,584	16,689,103	4,448,082	1,980,065	1,131,516	476,944	2,558,237	14,239,371
1857.....	222,706,352	39,226,350	27,889,568	5,077,620	1,450,359	1,751,224	1,833,559	4,396,130	15,298,465

VALUES OF IMPORTS INTO THE UNITED STATES FROM—

Years.	Russia.	Italy.†	Haiti.	Brazil.	Mexico.	Venezuela, N. Granada, and Ecuador.	Central America.	Argentine Republic and Uruguay.	Chili.	Belgium.
1821.....	\$628,804	\$1,099,697	\$2,270,601	\$1,381,760	.....	.....	.....	.....	.....	.....
1822.....	529,081	1,450,184	2,119,811	1,463,929	.....	.....	.....	.....	.....	.....
1823.....	643,734	1,067,905	2,378,732	1,341,300	.....	.....	.....	.....	.....	.....
1824.....	231,981	664,348	2,586,155	2,301,004	.....	.....	.....	.....	.....	.....
1825.....	287,401	465,059	2,054,615	2,393,754	\$6,470,144	\$2,220,255	\$99,522	\$573,520	\$921,438	.....
1826.....	174,648	530,221	1,414,415	2,200,349	6,231,050	1,052,672	119,774	379,340	1,447,498	.....
1827.....	382,244	100,221	1,331,091	1,863,806	4,173,267	944,534	224,773	151,204	1,702,601	.....
1828.....	450,406	920,750	1,332,711	1,988,705	2,836,434	834,524	239,272	154,228	2,629,402	.....
1829.....	396,226	901,012	975,158	1,929,927	2,331,151	767,348	239,354	626,052	1,421,134	.....
1830.....	416,575	740,360	828,178	1,843,238	4,337,458	696,990	250,118	629,887	1,536,114	.....
1831.....	493,760	637,525	1,518,375	2,070,065	6,173,318	658,149	306,497	659,797	1,968,155	.....
1832.....	582,682	694,563	1,669,032	2,054,794	3,467,541	1,117,024	335,307	926,365	1,221,119	.....
1833.....	703,505	372,186	1,427,063	3,272,101	3,495,091	957,543	676,016	699,728	1,463,940	\$1,005,611
1834.....	300,694	492,557	1,436,952	2,050,351	5,265,053	735,567	184,149	971,387	1,476,356	1,468,442
1835.....	585,447	235,447	1,515,812	2,608,656	9,029,221	1,064,016	183,793	703,913	941,884	748,222
1836.....	911,013	664,059	1,240,039	3,094,936	6,041,635	829,255	189,513	384,933	937,917	2,284,060
1837.....	1,806,732	629,697	1,011,981	1,743,209	3,880,323	1,080,100	157,663	273,872	1,437,799	1,110,587
1838.....	1,045,339	459,837	910,255	2,657,194	2,164,097	724,739	243,400	296,994	1,370,264	1,614,951
1839.....	1,239,246	433,152	1,022,514	2,657,485	2,787,369	750,785	216,241	466,363	1,704,553	607,910
1840.....	1,169,481	473,185	1,127,514	2,606,574	2,515,341	919,123	217,946	510,006	1,728,829	2,390,655
1841.....	1,025,729	912,138	1,155,557	2,517,273	2,036,620	872,937	140,913	515,170	1,102,988	1,593,582
1842.....	836,532	890,517	899,966	2,001,502	1,534,233	763,936	69,446	651,292	1,630,676	1,610,684
1843.....	893,792	723,221	653,370	1,792,288	1,471,937	745,455	52,966	557,234	1,040,463	1,707,709
1844.....	555,414	576,823	1,126,356	2,618,252	1,794,833	656,075	150,276	966,445	1,105,221	2,063,801
1845.....	727,337	1,410,010	1,405,740	2,387,950	1,152,331	804,107	67,649	660,142	1,648,191	1,651,013
1846.....	632,467	2,260,096	1,715,142	7,441,803	1,531,180	1,576,097	120,255	411,399	1,768,570	3,281,814
1847.....	750,450	3,109,297	1,098,518	2,943,778	692,425	1,676,097	96,568	412,928	1,671,610	2,322,557
1848.....	1,150,010	5,305,821	1,098,518	3,372,434	4,053,436	587,631	50,373	617,656	1,924,511	2,189,935
1849.....	1,135,504	6,353,387	602,592	3,102,977	2,090,568	835,418	136,219	915,821	2,017,100	2,781,307
1850.....	1,364,941	5,683,707	1,350,188	3,197,114	2,012,827	2,800,014	70,192	1,136,184	1,432,721	2,548,760
1851.....	1,611,691	4,740,932	1,847,900	3,752,916	1,581,783	4,055,347	262,391	1,120,557	1,895,305	2,552,012
1852.....	1,200,480	5,498,344	1,715,093	3,021,042	2,284,923	2,309,207	473,518	992,190	2,339,133	4,203,778
1853.....	2,456,553	19,784,140	1,998,933	3,994,444	3,558,824	700,997	346,330	1,180,912	3,236,437	3,208,533
1854.....	480,616	4,154,418	2,209,725	4,230,241	3,138,486	2,138,133	308,584	1,374,632	3,193,259	5,066,894
1855.....	125,445*	3,132,899	2,245,052	4,261,273	2,023,804	3,351,586	1,622,170	1,291,699	3,426,257	3,027,240
1856.....	680,406	3,046,739	2,206,486	5,094,904	3,702,239	3,351,606	396,621	1,811,192	2,867,743	5,600,623
1857.....	4,729,581	4,625,788	4,754,528	5,545,207	3,515,206	3,502,443	137,021	2,319,979	2,907,155	5,644,326

* The figures for 1855 are the aggregate of those given in "Commerce and Navigation" for Russia on the Baltic and North Seas, on the Black Sea, and in American and Asiatic Russia, all embraced in prior reports under the single title Russia.

† Italy, subsequently to 1844, is made to embrace all the Italian states—Sicily, Sardinia, Tuscany, Trieste, etc.; but after 1855 it embraces Sardinia, Tuscany, Papal States, and Two Sicilies, only.

‡ Haiti after 1855 embraces the totals given in "Commerce and Navigation" for Haiti and San Domingo (Dominican Republic), which were embodied in former reports under the single title Haiti.

The following tables exhibit in a condensed manner the gross exports and imports from the United States each year from 1790 to 1821, inclusive; also the gross exports, domestic and foreign, the gross imports, the

exports and imports of specie, and the tonnage cleared from the United States each year from 1821 to 1857, inclusive. The marvelous growth of the foreign trade of this country can not be more clearly shown.

STATEMENT EXHIBITING THE GROSS VALUE OF EXPORTS AND IMPORTS OF THE UNITED STATES FROM 1790 TO 1821.

Years ending Sept. 30.	Exports.			Imports.	Years ending Sept. 30.	Exports.			Imports.
	Domestic Produce.	Foreign Merchandise.	Total.	Total.		Domestic Produce.	Foreign Merchandise.	Total.	Total.
1790....	\$10,666,000	\$539,156	\$30,205,156	\$33,000,000	1816....	\$41,253,727	\$50,283,236	\$101,536,963	\$129,410,000
1791....	18,500,000	612,041	19,012,041	29,200,000	1817....	48,639,592	59,643,558	108,343,150	138,500,000
1792....	19,000,000	1,753,038	20,753,038	31,500,000	1818....	9,433,546	12,997,414	22,430,960	56,900,000
1793....	24,000,000	2,104,572	26,104,572	31,100,000	1819....	31,405,702	20,797,531	52,203,233	53,400,000
1794....	26,500,000	6,926,233	33,426,233	34,600,000	1820....	42,366,675	24,391,235	66,757,970	85,400,000
1795....	39,500,000	8,489,472	47,989,472	69,756,228	1821....	45,294,043	16,022,790	61,316,833	53,400,000
1796....	40,764,037	26,300,000	67,064,037	81,436,164	1812....	30,032,109	8,495,127	38,527,236	77,000,000
1797....	29,850,266	27,000,000	56,850,266	75,670,406	1813....	25,008,192	2,847,565	27,855,757	22,005,000
1798....	28,527,037	33,000,000	61,527,037	68,551,700	1814....	6,782,372	145,169	6,927,541	12,965,000
1799....	33,142,532	45,623,000	78,665,532	79,069,148	1815....	45,974,403	6,593,550	52,557,753	113,041,274
1800....	31,840,903	39,130,877	70,971,780	91,252,768	1816....	64,781,836	17,138,156	81,920,452	147,103,000
1801....	47,473,204	46,642,721	94,115,925	111,368,511	1817....	68,313,500	19,358,069	87,671,569	99,250,000
1802....	36,708,189	35,774,971	72,483,160	76,333,333	1818....	73,354,437	19,426,696	93,281,133	121,750,000
1803....	42,295,961	13,594,072	55,890,033	64,666,666	1819....	50,976,838	19,105,633	70,142,521	87,125,000
1804....	41,437,477	36,231,597	77,669,074	85,000,000	1820....	51,633,640	18,008,029	69,691,669	74,450,000
1805....	42,387,002	53,179,019	95,566,021	120,600,000	1821....	43,671,894	21,302,438	64,974,332	62,585,724

GENERAL STATEMENT OF THE ANNUAL FOREIGN COMMERCE AND NAVIGATION OF THE UNITED STATES FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821....	\$43,671,834	\$21,202,488	\$64,874,322	\$62,585,724	\$10,478,053	\$8,064,890	804,547	83,073
1822....	40,574,079	22,286,202	72,160,281	83,241,541	10,810,180	3,369,546	813,749	97,490
1823....	47,155,408	27,543,622	74,699,030	77,879,267	6,372,987	5,097,896	810,761	119,740
1824....	60,640,500	25,337,157	85,977,657	80,549,007	7,014,552	8,379,835	919,278	102,552
1825....	66,944,745	29,530,643	96,475,388	90,340,075	8,952,034	6,150,765	960,360	95,050
1826....	53,054,710	24,539,612	77,594,322	84,974,477	4,074,533	6,880,966	953,012	99,417
1827....	58,921,691	23,403,136	82,324,827	79,454,065	8,014,880	8,151,130	980,452	151,250
1828....	50,669,639	21,575,017	72,244,656	88,500,524	8,243,476	7,439,741	997,404	151,030
1829....	55,700,193	16,698,478	72,398,671	74,492,524	4,924,030	7,405,612	944,790	153,006
1830....	53,402,029	14,357,479	67,759,508	70,576,920	2,173,773	8,155,964	971,760	133,436
Total.....	\$536,104,913	\$239,643,834	\$775,748,752	\$798,633,427	\$71,673,494	\$69,144,645	9,056,617	1,146,074
Sept. 30, 1831....	\$61,377,057	\$20,033,526	\$81,310,583	\$103,191,124	\$9,014,931	\$7,305,945	972,504	271,994
1832....	63,137,470	24,039,473	87,176,943	101,029,266	5,656,340	5,907,504	974,865	387,505
1833....	70,317,698	19,822,735	90,140,433	108,118,311	2,611,701	7,070,368	1,142,160	497,039
1834....	81,024,162	23,312,811	104,336,973	126,521,332	2,076,758	17,911,632	1,184,020	577,700
1835....	101,189,092	20,504,495	121,693,577	149,835,742	6,477,775	13,131,447	1,400,517	639,324
1836....	106,916,640	21,746,360	128,663,000	180,980,035	4,324,336	13,400,581	1,355,223	674,721
1837....	95,564,414	21,854,962	117,419,376	140,989,217	9,576,249	10,516,414	1,266,632	756,202
1838....	96,034,821	12,452,795	108,487,616	113,717,406	3,508,046	17,747,116	1,088,761	604,166
1839....	103,533,891	17,494,525	121,028,416	162,092,132	8,776,743	5,555,176	1,477,228	611,839
1840....	113,895,634	18,190,312	132,085,946	107,141,519	8,417,014	8,882,811	1,647,009	706,486
Total.....	\$892,889,909	\$199,451,004	\$1,092,341,903	\$1,302,676,034	\$66,839,893	\$107,469,206	12,739,909	5,718,476
Sept. 30, 1841....	\$106,382,722	\$15,469,081	\$121,851,803	\$127,946,177	\$10,024,332	\$4,988,633	1,634,156	736,349
1842....	102,969,966	11,721,538	114,691,504	100,162,087	4,813,539	4,087,016	1,536,451	740,497
June 30, 1843....	77,793,738	6,552,697	84,346,435	64,753,799	1,520,791	22,390,559	1,285,033	523,949
1844....	99,716,179	11,434,867	111,200,046	108,465,035	5,454,214	5,830,429	2,010,924	906,814
1845....	99,239,776	15,346,830	114,586,606	117,254,564	8,606,495	4,070,242	2,653,977	930,275
1846....	102,141,893	11,346,623	113,488,516	121,691,797	3,905,268	3,777,732	2,221,028	968,178
1847....	150,637,464	8,011,158	158,648,622	146,545,638	1,907,024	24,121,289	2,202,393	1,176,605
1848....	132,004,121	21,132,315	153,136,436	154,998,028	15,841,610	6,300,224	2,461,280	1,404,159
1849....	132,666,955	13,068,865	145,735,820	147,857,439	5,404,648	6,651,240	2,753,724	1,675,700
1850....	136,946,912	14,961,808	151,908,720	178,138,315	7,532,994	4,628,792	2,632,788	1,728,214
Total.....	\$1,131,453,801	\$129,105,782	\$1,260,559,583	\$1,267,783,782	\$65,010,921	\$36,906,156	20,774,804	10,791,249
June 30, 1851....	\$196,639,713	\$21,698,293	\$218,338,011	\$216,224,932	\$39,472,752	\$5,453,592	3,200,519	1,929,595
1852....	192,368,084	19,200,232	211,568,316	213,945,442	42,674,135	5,505,044	3,230,510	2,047,675
1853....	213,417,637	17,558,460	230,976,157	267,978,847	27,456,875	4,201,382	5,766,739	2,298,790
1854....	253,390,870	24,850,194	278,241,064	304,562,351	41,231,804	6,753,587	6,011,302	2,107,802
1855....	246,708,553	28,448,293	275,156,846	261,468,590	50,247,343	3,650,812	4,068,979	2,110,392
1856....	310,536,330	16,378,678	326,915,008	314,639,942	45,745,485	4,207,632	4,538,364	2,462,100
1857....	338,985,065	23,975,017	362,960,082	360,890,141	69,136,922	12,661,799	4,551,212	2,490,170

* Nine months to June 30, and the fiscal year from this time begins July 1.

The following table shows the extent and progress of the lake tonnage of the United States for the years 1855, 1856, 1857. This branch of our shipping has acquired such importance as to require a separate statement of its progress and extent. Table of vessels built at the American lake ports in the year 1857, including lakes Erie, Ontario, Huron, and Michigan.

	1855.		1856.		1857.	
	No.	Tons.	No.	Tons.	No.	Tons.
Steamers....	3	1,635	3	2,000	5	4,120
Propellers....	8	4,213	22	12,755	23	11,875
Tugs....	4	251	5	895	15	1,412
Barks....	1	776	5	2,438	3	1,364
Brigs....	6	1,742	1	434	2	869
Schooners....	105	28,752	121	34,328	57	28,642
Scows....	...	...	...	...	5	415
Total....	128	37,420	157	53,550	149	48,598

This gives our lake tonnage an increase in three years of

11 steamers.....	7,815 tons.
53 propellers.....	28,814 "
24 tugs.....	2,538 "
Total steam.....	39,217 "
10 barks.....	4,478 tons.
9 brigs.....	8,045 "
327 schooners.....	92,637 "
Total sail.....	100,160 "
Grand total.....	139,377 "

The value of this new tonnage is as follows:

Years.	Steam.	Sail.	Total.
1855.....	\$395,000	\$1,213,300	\$1,608,300
1856.....	1,132,000	1,604,450	2,736,450
1857.....	1,320,200	1,423,300	2,743,500
Total....	\$2,847,200	\$4,241,050	\$7,088,250

The total tonnage on the lakes in the Fall of 1857 was 588,868 tons, and the value of the same was \$15,195,100, or nearly forty dollars per ton.

STATEMENT OF AMERICAN AND FOREIGN VESSELS, WITH THEIR TONNAGE AND CREWS, WHICH CLEARED FROM THE UNITED STATES FOR FOREIGN COUNTRIES DURING THE YEAR ENDING JUNE 30, 1857.

Cleared for	American Vessels.				Foreign Vessels.				Total.			
	Num-ber.	Tonnage.	Crews.		Num-ber.	Tonnage.	Crews.		Num-ber.	Tonnage.	Crews.	
			Men.	Boys.			Men.	Boys.			Men.	Boys.
Russia on the Baltic and North Seas.....	36	25,478	648	6	9	2,710	99	2	45	28,214	747	8
Russia on the Black Sea.....	9	501	20	.....	.....	.....	.....	.....	2	591	26	.....
Asiatic Russia.....	.....	.....	.....	.....	1	280	13	.....	1	280	13	.....
Russian Poss. in N. America.....	3	1,890	68	.....	6	2,440	120	.....	9	4,330	183	.....
Prussia.....	2	949	28	.....	4	1,334	46	.....	6	2,283	74	.....
Sweden and Norway.....	7	8,432	100	.....	16	5,532	194	.....	23	9,024	294	.....
Swedish West Indies.....	10	1,719	82	.....	.....	.....	.....	.....	10	1,719	82	.....
Denmark.....	2	983	27	.....	7	2,113	70	.....	9	3,096	97	.....
Danish West Indies.....	105	21,834	839	4	11	2,157	91	.....	114	23,991	930	4
Hamburg.....	13	7,266	199	1	58	46,451	1,744	.....	71	53,717	1,943	1
Bremen.....	29	31,470	1,546	.....	145	87,919	2,970	.....	174	119,389	4,516	.....
Other German ports.....	1	245	10	.....	.....	.....	.....	.....	1	245	10	.....
Holland.....	43	25,207	661	1	55	26,282	805	2	98	51,489	1,466	3
Dutch West Indies.....	42	8,051	331	.....	4	485	30	.....	46	8,536	361	.....
Dutch Guiana.....	31	6,856	279	8	5	806	41	.....	36	7,662	320	8
Dutch East Indies.....	11	7,191	219	.....	4	1,420	58	.....	15	8,611	277	.....
Belgium.....	52	40,162	1,017	1	12	14,854	687	.....	64	55,017	1,704	1
England.....	866	911,183	22,551	68	410	388,792	13,313	87	1,276	1,299,975	35,864	155
Scotland.....	61	33,982	940	.....	49	49,422	1,928	2	110	83,404	2,868	2
Ireland.....	26	23,406	211	2	60	22,690	752	.....	86	46,096	1,363	2
Gibraltar.....	31	7,906	287	.....	4	870	40	.....	35	8,776	327	.....
Malta.....	8	2,023	76	.....	4	960	34	.....	12	2,983	110	.....
Canada.....	3,480	1,133,584	44,028	416	5,316	1,104,650	60,643	1085	8,796	2,238,234	104,666	1501
British North American Poss.....	898	319,985	8,878	28	3,727	461,245	23,692	29	4,625	781,230	25,570	57
British West Indies.....	557	106,361	4,237	3	218	24,970	1,620	.....	775	131,331	5,857	3
British Honduras.....	35	6,523	269	.....	24	3,556	182	.....	59	10,079	451	.....
British Guiana.....	66	16,372	576	.....	29	4,387	223	.....	95	20,759	799	.....
British Possessions in Africa.....	56	19,329	654	.....	6	1,835	69	.....	62	21,164	723	.....
Other ports in Africa.....	88	22,010	899	15	2	742	25	.....	90	22,752	924	15
British Australia.....	70	47,231	1,813	.....	14	5,587	223	.....	84	52,818	1,536	.....
British East Indies.....	85	63,337	1,793	1	11	6,375	200	.....	96	69,712	2,002	1
France on the Atlantic.....	271	238,775	6,369	57	36	20,500	1,289	.....	307	249,275	7,658	57
France on the Mediterranean.....	67	25,313	800	.....	20	9,055	400	4	87	34,368	1,200	4
French North American Poss.....	12	1,835	72	2	30	4,597	220	.....	42	6,432	292	2
French West Indies.....	118	20,538	822	3	11	1,906	76	.....	129	22,444	898	3
French Guiana.....	16	3,147	137	5	.....	.....	.....	.....	16	3,147	137	5
French East Indies.....	1	518	20	.....	.....	.....	.....	.....	1	518	20	.....
French Possessions in Africa.....	.....	.....	.....	.....	1	196	11	.....	1	196	11	.....
Spain on the Atlantic.....	71	28,611	851	1	35	10,075	425	.....	106	38,686	1,276	1
Spain on the Mediterranean.....	65	21,005	677	.....	211	67,637	2,814	1	276	88,692	3,491	1
Canary Islands.....	17	3,749	147	.....	4	1,090	45	.....	21	4,839	192	.....
Philippine Islands.....	18	15,579	422	.....	4	1,472	73	.....	22	17,051	495	.....
Cuba.....	1,846	590,241	21,819	73	60	14,293	705	.....	1,906	604,534	22,024	73
Porto Rico.....	213	37,633	1,537	9	21	8,550	166	.....	234	41,183	1,703	9
Portugal.....	56	19,847	644	.....	44	12,063	447	.....	100	31,410	1,061	.....
Madeira.....	4	814	33	.....	3	525	26	.....	7	1,342	60	.....
Cape de Verd Islands.....	12	2,662	105	.....	2	545	27	.....	14	3,207	132	.....
Azores.....	12	3,589	136	1	8	1,532	91	.....	20	5,121	227	1
Sardinia.....	27	15,852	434	.....	16	6,027	252	.....	43	21,879	686	.....
Tuscany.....	4	2,567	78	.....	.....	.....	.....	.....	4	2,567	78	.....
Papal States.....	1	315	12	.....	.....	.....	.....	.....	1	315	12	.....
Two Sicilies.....	14	5,834	163	.....	11	3,119	146	.....	25	8,453	309	.....
Austria.....	22	11,152	311	1	3	1,045	82	.....	25	12,197	343	1
Austrian Possessions in Italy.....	10	5,029	128	.....	1	469	10	.....	11	5,498	138	.....
Turkey in Europe.....	9	2,777	105	.....	.....	.....	.....	.....	9	2,777	105	.....
Turkey in Asia.....	14	4,774	167	.....	.....	.....	.....	.....	14	4,774	167	.....
Egypt.....	1	355	11	.....	.....	.....	.....	.....	1	355	11	.....
Hayti.....	221	35,976	1,548	.....	27	4,121	194	.....	248	40,097	1,742	.....
San Domingo.....	11	1,920	75	.....	6	915	47	.....	17	2,835	122	.....
Mexico.....	164	35,593	1,617	1	96	14,664	904	.....	260	50,257	2,521	1
Central Republic.....	37	34,779	1,670	.....	2	502	27	.....	39	35,281	1,697	.....
New Granada.....	149	124,809	5,718	.....	8	1,748	79	.....	156	126,552	5,797	.....
Venezuela.....	82	17,793	742	.....	9	2,083	85	.....	91	19,736	827	.....
Brazil.....	281	84,712	2,994	3	10	3,186	132	.....	291	87,898	3,126	3
Uruguay.....	66	22,412	739	.....	6	2,027	71	.....	72	24,439	810	.....
Buenos Ayres.....	73	26,630	846	2	4	1,605	55	.....	77	28,235	901	2
Chili.....	62	42,166	1,143	.....	25	11,067	412	.....	87	53,233	1,555	.....
Peru.....	61	68,523	1,624	.....	14	6,462	250	.....	75	74,985	1,874	.....
Ecuador.....	2	1,358	38	.....	.....	.....	.....	.....	2	1,358	38	.....
Sandwich Islands.....	42	16,951	586	.....	1	187	9	.....	43	17,138	586	.....
Other Islands in the Pacific.....	7	1,354	65	1	1	1,496	89	.....	8	2,850	154	1
China.....	53	59,540	1,562	.....	20	9,480	337	.....	73	69,029	1,899	.....
Whale-fisheries.....	193	57,933	4,762	150	.....	.....	.....	.....	193	57,933	4,762	150
Uncertain places.....	1	281	9	.....	.....	.....	.....	.....	1	281	9	.....
Total clearances, 1856-'57.....	11,134	4,580,651	154,290	863	10,969	2,490,170	119,867	1,212	22,103	7,070,821	274,157	2,075
Total arrivals, 1856-'57.....	11,304	4,721,370	161,062	863	11,024	2,464,946	116,797	1,240	22,328	7,186,316	277,859	2,073

The above table gives us a clear exhibit of the national character of our carrying trade. A condensed summary shows our exports for the fiscal year ending

June 30, 1857, to the principal maritime countries to be in the following proportion as to national or foreign vessels.

TONNAGE CLEARED FROM THE UNITED STATES, 1856-'57.

Countries.	American Vessels.		Foreign Vessels.		Countries.	American Vessels.		Foreign Vessels.	
	Tons.		Tons.			Tons.		Tons.	
Canada.....	1,133,584		1,104,650		Bremen.....	31,470		87,919	
England.....	911,183		388,792		Scotland.....	33,982		49,422	
Cuba.....	590,241		14,293		Spain.....	49,616		77,763	
British N. American Poss.....	319,985		461,245		China.....	59,549		1,562	
France.....	254,088		29,555		Other countries.....	965,793		248,257	
British West Indies.....	106,361		24,970						
New Granada.....	124,809		1,743						
					Total.....	4,580,651		2,490,170	

STATEMENT SHOWING THE NAVIGATION OF EACH STATE AND TERRITORY FOR THE YEAR ENDING JUNE 30, 1857.

Tonnage entered.	American Vessels.				Foreign Vessels.				Total American and Foreign.			
	Num-ber.	Tons.	Crews.		Num-ber.	Tons.	Crews.		Num-ber.	Tons.	Crews.	
			Men.	Boys.			Men.	Boys.			Men.	Boys.
Maine.....	334	111,375	3,261	6	572	60,294	3,500	4	906	171,669	6,761	10
New Hampshire.....	6	730	33	...	43	4,963	231	19	49	5,699	264	19
Vermont.....	519	26,454	1,437	...	306	21,379	912	...	825	47,833	2,349	...
Massachusetts.....	1,499	500,116	18,634	56	2,601	378,621	16,092	15	4,100	878,737	34,726	71
Rhode Island.....	111	22,850	1,064	5	56	9,645	406	...	167	32,495	1,470	5
Connecticut.....	123	28,953	1,431	91	46	7,232	315	...	169	36,185	1,746	91
New York.....	5,289	2,537,273	85,446	513	5,480	1,421,833	71,620	1101	10,769	3,959,106	167,066	1614
New Jersey.....	...	...	...	...	17	2,125	97	...	17	2,125	97	...
Pennsylvania.....	470	153,743	5,102	...	141	38,122	2,092	...	611	196,865	7,194	...
Delaware.....	3	472	17	...	...	...	...	...	3	472	17	...
Maryland.....	414	122,119	4,179	...	182	41,262	1,875	...	596	163,381	6,054	...
District of Columbia.....	6	1,267	48	...	...	...	...	...	6	1,267	48	...
Virginia.....	166	95,895	2,616	1	84	17,722	650	...	250	113,617	3,275	1
North Carolina.....	113	18,366	764	...	11	1,847	82	...	124	20,213	846	...
South Carolina.....	198	53,205	2,825	5	158	44,380	2,001	...	356	127,585	4,826	5
Georgia.....	111	47,851	1,135	...	130	68,017	2,175	...	241	115,868	3,310	...
Florida.....	152	59,084	2,456	...	37	5,812	350	...	189	64,896	2,815	...
Alabama.....	92	64,562	1,880	156	50	42,922	1,126	101	142	107,484	3,006	257
Louisiana.....	788	473,998	13,502	...	322	139,316	5,385	...	1,110	613,314	18,887	...
Ohio.....	249	41,596	2,031	...	358	48,815	2,868	...	607	90,414	4,899	...
Michigan.....	354	100,718	4,221	...	165	29,890	1,525	...	519	130,608	5,745	...
Wisconsin.....	41	46,063	1,529	...	6	1,439	75	...	47	47,502	1,604	...
Illinois.....	100	70,179	2,406	...	109	27,051	1,124	...	209	97,230	3,530	...
Texas.....	9	3,148	95	...	11	4,363	150	...	20	7,511	245	...
California.....	142	104,870	4,872	...	135	46,753	2,065	...	277	151,623	6,937	...
Oregon Territory.....	1	210	10	...	...	...	...	...	1	210	10	...
Washington Territory.....	14	1,264	68	...	4	1,140	63	...	18	2,404	131	...
Total entered.....	11,804	4,721,370	161,062	833	11,024	2,464,946	116,797	1340	22,328	7,186,316	277,851	1013
Total cleared.....	11,135	4,581,212	154,305	863	10,969	2,490,170	119,867	1212	22,104	7,071,382	274,172	2075

STATEMENT OF THE TONNAGE OF THE UNITED STATES ANNUALLY, FROM 1789 TO 1814, INCLUSIVE.

Year ending December 31,	Registered Sail Tonnage.	Enrolled and Licensed Sail Tonnage.	Total Tonnage.	Year ending December 31,	Registered Sail Tonnage.	Enrolled and Licensed Sail Tonnage.	Total Tonnage.
1789.....	123,893	77,669	201,562	1802.....	560,380	331,724	892,104
1790.....	346,254	132,123	274,377	1803.....	597,157	352,015	949,172
1791.....	362,110	139,086	502,146	1804.....	672,530	369,874	1,042,404
1792.....	411,438	153,019	564,457	1805.....	749,341	391,027	1,140,368
1793.....	367,734	153,080	520,764	1806.....	808,265	400,451	1,208,716
1794.....	438,863	199,755	628,618	1807.....	848,307	420,241	1,268,548
1795.....	529,471	218,494	747,965	1808.....	769,054	473,542	1,242,596
1796.....	576,733	255,166	831,899	1809.....	910,059	440,222	1,350,281
1797.....	597,777	279,136	876,913	1810.....	984,269	440,515	1,424,784
1798.....	603,376	294,952	898,328	1811.....	768,852	463,650	1,232,502
1799.....	662,197	277,212	939,409	1812.....	760,624	509,373	1,269,997
1800.....	669,921	302,571	972,492	1813.....	674,853	491,776	1,166,629
1801.....	632,907	314,670	947,577	1814.....	674,633	484,577	1,159,210

COMPARATIVE VIEW OF THE REGISTERED AND ENROLLED TONNAGE OF THE U. STATES FROM 1815 TO 1857, INCLUSIVE.

Years.	Registered Tonnage.	Enrolled Tonnage.	Total Tonnage.	Registered Tonnage in the Whale-fishery.	Steam Tonnage.	Proportion of the enrolled Tonnage employed in the			
						Coasting Trade.	Cod-fishery.	Mackerel-fishery.	Whale-fishery.
1815.....	854,204	513,833	1,368,127	...	...	435,066	26,510	...	1-29
1816.....	800,759	511,458	1,312,218	...	...	479,979	37,879	...	1168
1817.....	809,724	590,186	1,399,911	4,871	...	481,457	53,990	...	349
1818.....	606,085	619,095	1,225,184	16,134	...	503,140	58,551	...	614
1819.....	612,930	647,821	1,260,751	31,700	...	523,556	65,044	...	6-6
1820.....	619,047	661,118	1,280,166	35,391	...	539,080	60,842	...	1053
1821.....	619,896	679,062	1,298,958	26,070	...	559,435	51,351	...	1924
1822.....	623,150	696,548	1,324,699	45,449	...	573,080	58,405	...	3133
1823.....	639,920	699,644	1,336,565	39,918	24,879	566,408	67,621	...	585
1824.....	669,972	729,190	1,399,163	33,105	21,609	589,223	63,419	...	1680
1825.....	700,737	722,323	1,423,110	35,379	23,061	587,273	70,626	...	...
1826.....	737,973	796,212	1,534,190	41,757	34,058	666,420	63,761	...	226
1827.....	747,170	873,437	1,620,607	45,653	40,197	732,937	74,048	...	328
1828.....	812,619	928,772	1,741,391	54,621	39,418	765,922	74,947	...	180
1829.....	650,142	610,654	1,260,797	57,284	54,036	508,558	101,796	...	...
1830.....	576,675	615,311	1,191,776	38,911	64,471	516,978	61,554	25,973	792
1831.....	620,451	647,394	1,267,846	82,315	34,485	539,723	69,977	46,210	481
1832.....	636,989	752,460	1,439,450	72,868	90,813	649,927	54,027	47,420	377
1833.....	751,026	856,123	1,606,149	101,158	101,849	744,198	62,720	48,725	478
1834.....	867,438	901,468	1,768,907	108,060	122,815	783,618	54,403	61,082	364
1835.....	885,821	989,118	1,874,940	97,640	122,815	792,301	72,374	64,443	...
1836.....	897,774	984,328	1,882,102	144,680	145,556	873,023	62,307	64,425	1573
1837.....	810,447	1,086,238	1,896,685	127,242	154,764	956,980	80,551	46,810	1894
1838.....	822,591	1,173,047	1,995,639	119,629	198,413	1,041,105	70,064	56,649	5229
1839.....	834,244	1,262,284	2,096,478	131,845	204,938	1,163,551	72,258	35,833	439
1840.....	899,764	1,290,999	2,180,764	136,926	201,339	1,176,694	76,035	38,289	...
1841.....	845,803	1,184,940	2,130,744	157,405	175,088	1,107,607	66,551	11,321	...
1842.....	975,353	1,117,031	2,092,390	151,612	229,661	1,045,753	54,504	16,036	377
1843.....	1,009,315	1,149,297	2,158,602	162,374	236,867	1,076,155	61,224	11,775	143
1844.....	1,063,764	1,211,330	2,275,095	168,293	273,179	1,109,614	85,224	16,170	321
1845.....	1,095,172	1,321,299	2,417,002	190,675	326,018	1,190,890	69,825	21,413	206
1846.....	1,130,286	1,431,788	2,562,074	189,980	347,893	1,289,570	72,516	36,403	439
1847.....	1,241,312	1,597,732	2,839,045	193,858	404,841	1,452,623	70,177	31,451	...
1848.....	1,361,886	1,793,155	3,155,041	192,179	427,891	1,620,938	82,651	43,558	432
1849.....	1,438,941	1,895,073	3,334,015	180,186	462,394	1,730,410	42,970	73,853	...
1850.....	1,585,711	1,949,743	3,535,454	146,016	525,946	1,755,796	85,646	53,111	...
1851.....	1,726,807	2,040,132	3,772,439	181,644	583,607	1,854,317	87,475	50,539	...
1852.....	1,899,448	2,288,992	4,188,440	198,797	643,240	2,005,021	102,659	72,546	...
1853.....	2,108,674	2,303,336	4,407,010	193,202	514,097	2,134,256	109,227	59,550	...
1854.....	2,338,819	2,469,033	4,807,902	181,901	676,607	2,273,900	102,194	35,041	...
1855.....	2,535,136	2,676,864	5,212,001	186,775	770,285	2,491,108	102,927	21,624	70
1856.....	2,711,402	2,880,249	5,591,652	189,213	673,077	2,211,985	95,816	29,886	217
1857.....	2,468,907	2,476,875	4,945,782	195,771	705,784	2,300,399	104,572	28,327	70

COMPARATIVE EMPLOYMENT OF AMERICAN AND FOREIGN TONNAGE, AS SHOWN IN THE IMPORTS OF THE UNITED STATES, IN 1821, 1831, 1841, AND 1851.

States and Territories.	1821.		1831.		1841.		1851.	
	In American Vessels.	In Foreign Vessels.	In American Vessels.	In Foreign Vessels.	In American Vessels.	In Foreign Vessels.	In American Vessels.	In Foreign Vessels.
Alabama.....	....	....	143,320	81,115	410,358	120,461	46,736	869,710
California.....	....	....	....	....	....	....	4,462,700	....
Columbia, District of.....	398,984	....	180,573	12,982	53,863	23,400	80,527	286
Connecticut.....	312,090	....	405,066	....	293,221	2,768	320,858	22,136
Delaware.....	80,997	....	21,056	....	1,188	2,088	....	....
Florida.....	11,830	1,440	110,196	5,514	116,712	28,469	88,875	56,122
Georgia.....	757,622	245,062	236,298	163,642	299,977	149,030	404,477	317,079
Illinois.....	....	....	....	....	....	....	3,609	1,048
Indiana.....	....	....	....	....	....	....	1,754	....
Kentucky.....	....	....	....	....	....	....	218,576	....
Louisiana.....	2,697,049	682,668	5,969,622	3,797,071	6,141,088	2,115,262	10,187,465	2,393,995
Maine.....	972,795	7,409	832,303	100,104	574,664	126,297	968,061	268,529
Maryland.....	3,982,914	67,928	4,513,897	312,680	5,348,866	752,447	5,662,056	988,579
Massachusetts.....	14,647,778	178,954	13,962,768	286,288	18,835,492	1,482,511	28,117,834	9,597,493
Michigan.....	15,132	13,944	27,299	....	187,608	192	182,146	....
Mississippi.....	....	....	....	....	....	....	845	....
Missouri.....	....	....	....	....	33,875	....	622,039	....
New Hampshire.....	350,021	....	140,205	....	61,585	12,116	44,682	13,546
New Jersey.....	17,606	....	....	....	1,919	396	....	1,111
New York.....	21,926,635	1,702,611	53,617,038	3,460,384	66,688,750	9,024,676	106,568,635	34,977,903
North Carolina.....	200,673	....	186,802	9,554	214,731	5,629	125,978	80,953
Ohio.....	12	....	153	464	9,563	1,755	586,460	99,571
Pennsylvania.....	7,873,092	285,830	11,623,584	500,490	9,840,354	506,344	11,541,212	2,627,571
Rhode Island.....	1,020,195	2,773	502,161	....	333,929	5,663	295,209	16,421
South Carolina.....	1,737,530	1,219,523	553,171	384,992	1,217,955	339,476	1,646,915	434,397
Tennessee.....	....	....	....	....	7,523	....	64,761	....
Texas.....	....	....	....	....	....	....	62,745	31,970
Vermont.....	15,937	....	166,206	....	246,739	....	691,268	....
Virginia.....	946,904	131,536	383,797	104,725	351,917	25,320	227,339	325,564
Oregon Territory.....	....	....	....	....	....	....	103,500	....
Total.....	53,025,906	4,550,818	93,962,110	9,220,014	113,221,877	14,724,300	168,216,272	52,563,083

STATEMENT OF THE NUMBER AND CLASS OF VESSELS BUILT, AND THE TONNAGE THEREOF, IN THE SEVERAL STATES AND TERRITORIES OF THE UNITED STATES, FROM 1815 TO JUNE 30, 1857, INCLUSIVE.

Years.	Ships and Barks.	Brigs.	Schoon-ers.	Sloops and Canal Boats.	Steam-ers.	Total.	Total Tonnage.
1815	136	224	681	274	...	1314	154,624
1816	76	122	791	424	...	1403	131,668
1817	34	86	539	394	...	1073	86,393
1818	43	85	423	332	...	883	82,421
1819	53	82	473	242	...	850	79,817
1820	21	60	301	152	...	534	47,784
1821	43	89	247	127	...	507	55,856
1822	64	131	260	168	...	623	75,346
1823	55	127	260	165	15	622	75,007
1824	56	156	377	166	26	781	90,939
1825	56	197	583	168	35	984	114,997
1826	71	187	482	227	45	1012	126,438
1827	55	153	404	241	38	934	104,342
1828	73	108	474	196	33	884	98,375
1829	44	68	485	145	43	785	77,008
1830	26	56	403	116	37	637	58,094
1831	72	95	416	94	34	711	85,962
1832	132	143	568	122	100	1065	144,539
1833	144	160	625	185	65	1183	161,726
1834	98	94	477	180	68	937	113,330
1835	25	50	301	100	30	507	46,238
1836	93	65	444	164	124	890	113,627
1837	67	72	507	163	135	949	122,987
1838	66	79	501	153	90	889	113,135
1839	83	63	437	122	125	858	120,989
1840	97	109	373	224	64	872	118,309
1841	114	101	310	157	78	762	118,893
1842	116	91	273	404	137	1021	129,083
1843	58	34	135	173	79	482	63,617
1844	73	47	204	379	163	766	103,537
1845	124	87	322	342	103	1068	140,013
1846	100	164	576	355	225	1420	188,203
1847	151	168	689	392	198	1588	243,732
1848	264	174	701	547	175	1857	318,075
1849	198	148	623	370	209	1547	250,577
1850	247	117	577	290	159	1360	272,218
1851	211	65	532	326	233	1367	279,203
1852	255	79	584	267	259	1444	351,498
1853	209	95	681	394	271	1170	425,572
1854	334	112	631	356	281	1774	535,616
1855	381	126	605	669	253	2094	553,450
1856	396	103	594	473	221	1703	499,393
1857	251	68	504	359	263	1434	378,504

Navigation.—When our navigation laws were first enacted in 1789, the registered tonnage of the United States was secured against the protecting navigation laws of other nations by countervailing or protecting provisions. Such provisions were, from time to time, extended, so as to countervail the prohibitory enactments of the commercial nations with which we had intercourse. These commercial restrictions have grad-

nally yielded to the more liberal principles of free trade in the transportation of freight and passengers, until in that business we have free trade with almost all the nations of the earth, only marred by the charge of light-money to our vessels, where we charge none. The removal of restrictions, in our commercial intercourse with other nations, in the carrying business, has not been prejudicial to our foreign commercial marine. The burden of light-money, to which our tonnage, in the ports of Great Britain and other commercial nations, is subject, should be removed by mutual agreement, and the tonnage duty now charged on our vessels in the ports of France and some other countries, and on their vessels in our ports, should be taken off, and port charges equalized.

NUMBER AND CLASS OF VESSELS BUILT, AND THE TONNAGE THEREOF, IN EACH STATE AND TERRITORY OF THE UNITED STATES, DURING THE YEAR ENDING JUNE 30, 1857.

States and Territories.	Ships and Barks.	Brigs.	Schooners.	Sloops and Canal Boats.	Steamers.	Total of Vessels built.	Total Tonnage.
Maine.....	127	26	85	1	1	240	110,933
N. Hampshire.....	8	1	...	...	9	9	8,716
Vermont.....	...	1	...	...	1	1	65
Massachusetts.....	53	4	47	2	2	113	55,411
Rhode Island.....	4	2	3	...	2	11	3,583
Connecticut.....	1	1	21	13	3	39	5,040
New York.....	28	5	76	83	45	237	67,822
New Jersey.....	...	...	42	26	1	69	8,642
Pennsylvania.....	2	...	26	168	82	278	34,258
Delaware.....	1	...	10	2	10	23	4,843
Maryland.....	16	17	74	1	2	110	20,826
D. of Columbia.....	...	...	...	23	...	23	1,483
Virginia.....	2	...	12	4	14	32	3,932
North Carolina.....	...	...	19	2	...	21	1,373
South Carolina.....	...	...	2	4	...	6	266
Georgia.....	...	...	...	1	1	2	197
Florida.....	1	...	4	...	...	5	1,393
Alabama.....	...	...	1	1	1	3	221
Mississippi.....	...	...	6	...	...	7	136
Louisiana.....	...	...	6	...	5	11	920
Tennessee.....	...	...	...	4	4	1,427	8,462
Kentucky.....	...	...	...	28	28	10	2,400
Missouri.....	...	...	...	...	...	...	2,805
Illinois.....	...	...	8	2	...	10	2,403
Wisconsin.....	1	...	9	...	...	39	84
Ohio.....	1	...	31	13	13	10	7,441
Michigan.....	1	1	14	11	87	3	11
California.....	...	...	7	1	3	11	950
Oregon.....	...	1	...	...	...	1	255
Total, 1857..	251	58	504	359	263	1434	378,504
Total, 1856..	306	103	574	479	221	1703	469,393

The limited space allotted to the article UNITED STATES in this work precludes any attempt to give more than the statistics of the production, commerce, and navigation of the United States proper. Under their separate heads are given the imports and exports of every article of commerce—as COTTON, BREADSTUFFS, RICE, SUGAR, TOBACCO, etc.; also the trade of each individual State under its proper head; and under their proper heads the commercial law and the latest statistics regarding the United States in subjects—as COINS, COMMERCE, CANALS, CONSULS, RAILROADS, TELEGRAPH, SHIPPING, TONNAGE, etc. To all of which reference is made for more particular information regarding the United States.

Uruguay. This small republic, known also as the Banda Oriental, or the Cisplatine Republic, lies on the north coast of the estuary of the Rio de la Plata, and contains a population estimated at 120,000—the least of any of the South American States—of which about 16,000 reside at the capital, Montevideo. The soil of Uruguay is fertile, well watered by large rivers, and is peculiarly adapted to grazing and agriculture. Animal products are the staple domestic exports, and consist principally of hides, dry or salted, of horned cattle and horses; tallow, grease, bones, animal carbon, horns, horse-hair, cow-tails, sheep-skins, and wool.

Though there is no treaty existing between the United States and Uruguay, our commercial intercourse is on a footing of equality with that of other countries; being favored by no privileges, and being subjected to no restrictions not common to all other foreign nations. This intercourse is regulated by the legislation of the republic, and during the past few years has undergone several liberal and important modifications. Prior to 1849, an exorbitant impost of \$15 per barrel was levied on the article of flour. By decree dated April 6th of that year, this duty was reduced to \$2 50 per barrel, with a provision that "this impost shall last no longer than necessary to pay the debt incurred on the article of flour, the liquidation of which shall commence immediately." By subsequent decrees of April, 1852, the export duty on horse-hides, dry or

salted, and the transit duties upon all merchandise were abolished; and the former duty of 20 cents per hide on ox and cow hides, dry or salted, was reduced to 7½ cents per hide. By the new tariff, however, of October 11, 1853, now in force, the duty on flour is fixed at 35 per cent.; and all products of the country, and all foreign merchandise free of import duty, or that has paid such duty on importation, are free of duty on being exported. The transit duty is also abolished. This tariff has been superseded by another, bearing date July 19, 1856. The provisions referred to remain, however, quite the same.

The port regulations are liberal—vessels being allowed to remain in port twelve days without entering at the custom-house, and to land samples, so as to dispose of a part or the whole of their cargoes. Should they leave within that period without effecting a sale, they are subject only to pilotage, health-visit, bill of health, and stamps.

A treaty of commerce and navigation, etc., was ratified between England and Uruguay, July 17, 1843, which expired toward the close of 1853, and was not renewed at the latest dates from Montevideo. With France a preliminary treaty was concluded April 8, 1836, to continue in force until another treaty should be agreed upon; or, should none such be subsequently entered into, then to continue fifteen years. The treaty with England, now lapsed, was based upon a principle of reciprocity; and that with France is upon the principle of the most favored nation. The merchant marine of Uruguay, it is believed, comprises but few, if any, vessels of more than sixty tons burden. It consists of about 300 vessels of between twenty and fifty tons each, averaging each about six men, or from 1800 to 2000 men in all. These are mostly engaged in the internal and coasting trade, the latter chiefly with Brazil; which trade is also open to foreign vessels, on the payment of the discriminating tonnage. Besides the above, there are five vessels, all of foreign construction, under the Uruguayan flag, measuring in the aggregate about 1500 tons, which make voyages north of the equator.

COMMERCE OF THE UNITED STATES WITH URUGUAY (FORMERLY CISPLATINE REPUBLIC), FROM OCT. 1, 1830, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1831.....	.....	.....	.....	.....	.....	.....	356	.....
1832.....	\$3,325	.....	\$3,325	.....	.....	.....	379	.....
1833.....	.....	.....	.....	.....	.....	.....	1,129	.....
1834.....	.....	.....	.....	.....	.....	.....	4,774	.....
1835.....	.....	.....	.....	.....	.....	.....	6,391	349
1836.....	.....	.....	.....	.....	.....	.....	5,734	.....
1837.....	7,864	.....	7,864	\$10,510	.....	.....	3,562	435
1838.....	35,762	\$24,567	60,329	19,031	\$650	.....	3,112	170
1839.....	50,995	38,302	89,300	625,432	7,375	.....	8,536	262
1840.....	32,102	67,628	149,730	494,492	31,667	\$7,397	8,197	280
Total...	\$180,051	\$130,497	\$310,548	\$1,148,975	\$40,192	\$7,397	42,170	1,446
Sept. 30, 1841.....	\$140,031	\$16,193	\$156,224	\$345,234	.....	\$600	10,107	.....
1842.....	201,999	67,968	269,967	581,918	\$10,432	4,607	14,115	812
9 mos., 1843.....	219,576	75,549	295,125	121,753	7,803	.....	6,858	393
June 30, 1844.....	394,266	67,910	462,176	144,763	25,674	22,088	12,519	1,159
1845.....	140,986	16,150	157,136	20,573	23,964	.....	3,552	614
1846.....	210,496	15,498	225,994	26,472	5,516	3,000	5,590	303
1847.....	180,536	56,303	236,839	112,810	33,300	1,806	3,536	756
1848.....	339,859	43,367	383,226	523,064	2,692	400	11,949	4,413
1849.....	134,638	13,083	147,721	79,924	8,600	.....	2,635	.....
1850.....	60,024	1,513	61,542	.....	.....	.....	867	1,167
Total...	\$2,022,321	\$374,047	\$2,396,368	\$1,956,511	\$117,981	\$32,501	71,247	12,282
June 30, 1851.....	\$32,711	\$13,078	\$45,789	\$19,114	\$12,500	.....	1,320	647
1852.....	131,156	11,917	143,073	49,707	.....	.....	2,906	3,537
1853.....	206,088	12,253	218,341	302,080	.....	.....	8,700	1,356
1854.....	450,855	62,102	512,957	457,179	.....	.....	17,832	1,751
1855.....	304,657	27,515	332,172	242,709	3,200	.....	16,556	3,165
1856.....	517,849	33,480	551,329	361,036	4,333	.....	12,784	535
1857.....	976,370	29,802	1,006,172	368,297	.....	.....	22,412	2,027

* Nine months to June 30, and the fiscal year from this time begins July 1.

In 1854, the number of vessels under the United States flag which entered the port of Montevideo was seventy, with an aggregate tonnage of 22,043 tons; and the number cleared was thirty-nine, with an aggregate tonnage of 12,701 tons. Imports from the United

States in 1854, according to official returns of Uruguay, consisted of rum, 453 barrels; spirits of turpentine, 262 barrels; starch, 2556 casks and boxes; rice, 2169 casks; refined sugar, 1797 casks; codfish, 312 boxes; tubs and buckets, 529 dozen; bitumen, 133 barrels;

cinnamon, 150 boxes; Chinese crackers, 998½ packages; brooms, 1474 dozen; flour, 19,993 barrels; hams, 2900; gin in bottles, 34,438 dozen; gin in demijohns, 31,748; gin in pipes, 200; lumber, 3,662,881 feet; chairs, 1655 cases; tobacco (chewing), 1142 boxes; stearin candles, 1070 boxes.

By a decree of October 11, 1853, the government of Uruguay opened to all flags the navigation of the rivers and streams of the republic, on a footing of equality with the national flag; which decree was superseded by a brief enactment of June 17, 1854, as follows: *Art. 1.* The navigable rivers and streams of the republic are open to the navigation and commerce of all nations. *2.* In the navigation of the rivers and streams, foreign vessels are subjected to the same regulations of police and of custom-houses with national vessels. The precise meaning of this act was at first in some doubt. It did not expressly declare whether or not it was applicable to the port of Montevideo. Upon reference to the government of Uruguay, however, by the agents of foreign governments resident at that port, it was announced that the law applies to the port of Montevideo.

Usance, a period of *one, two, or three months*, or of a fixed number of days, after the date of a bill of exchange, according to the custom of different places, before the bill becomes due. Double or treble usance is double or treble the usual time; and half usance is half the time. When a month is divided, the half usance, notwithstanding the differences in the lengths of the months, is uniformly fifteen days. Usances are calculated exclusively of the date of the bill. Bills of exchange drawn at usance are allowed the usual days of grace, and on the last of the three days the bill should be presented for payment.—*See* **BILLS OF EXCHANGE** and **EXCHANGE**.

When a bill is drawn at a certain number of days after date or after sight, those days are reckoned exclusive of the day on which the bill is drawn or accepted, and inclusive of the day on which it falls due. "After sight" is equivalent to "after acceptance;" and with regard to notes, it means "after presentment for sight." By the custom of trade, in bills and notes, a month is deemed to be a calendar or solar month. The irregularity of the respective months is not taken into the account. If a bill at one month be drawn on the 31st January, it will be due on the 28th of February, or 29th if leap-year, and, reckoning the days of grace, will be payable on the 3d of March.

The three days of grace generally allowed are reckoned exclusive of the day on which the bill falls due, and inclusive of the last day of grace. When there are no days of grace, and the bill falls due on a Sunday, Christmas-day, or Good Friday, public fast or Thanksgiving-day, or when the last of the days of grace happens on such a day, the bill becomes payable on the day preceding, and if not then paid must be treated as dishonored. A presentment for payment before the expiration of the days of grace is premature, and will not entitle the holder to charge the antecedent parties.

Days of grace are allowed on promissory notes as well as on bills, but they are not allowed on checks, or on bills or notes payable on demand.

When a month is the ordinary usance, a half usance is fifteen days.

The calculation of the time depends upon the different modes of computing time.

All places with which we are in the habit of negotiating bills compute their time as we do (except that Russia adheres to the old style), by years reckoned in a series from the birth of our Saviour, and divided each into twelve months, or 365 (or in every fourth year, 366) days.

Upon a bill drawn at a place using one style, and payable at a place using the other, if the time is to be reckoned from the date, it shall be computed according to the style of the place at which it was drawn; otherwise according to the style of the place where it is pay-

able; and in the former case the date must be reduced or carried forward to the style of the place where the bill is payable to the time reckoned from thence.

Thus, on a bill dated the 1st May, old style, and payable here two months after date, the time must be computed from the corresponding day of May, new style, viz., May 13th; and on a bill dated 1st of May, new style, and payable at St. Petersburg two months after date, from the corresponding day of April, old style, viz., April 19th.—*LEONIE LEVI'S Com. Law of the World*, vol. i. p. 24.

Usquebaugh, an Irish spirituous liquor, compounded of spirits, raisins, cinnamon, and cloves.

Usury, an illegal rate of interest or compensation for the use of money. Usury is generally supposed to be unequivocally condemned in the Scriptures; but it must be remembered that the present signification of the term is very different from that in former times. We find in Exodus, xxii. 25, "If thou lend money to any of my people that is poor by thee, thou shalt not be to him as an usurer, neither shalt thou lay upon him usury;" and in Leviticus, xxv. 35, "If thy brother be waxen poor * * * * take thou no usury of him or increase." It will be seen from these extracts that the taking of any compensation from the poor is forbidden, and not a limited rate is regarded as usury. We apprehend that, in a strict acceptation of the term, 7 per cent. per annum is usury, as well as the same per cent. a month. In the present time, however, no arguments are needed to prove that money is a merchantable commodity, and therefore as much a matter of profit and subject to fluctuation as other merchandise. We will, therefore, confine ourselves to a short account of the efforts to repeal this relic of a past age, and the laws now in force in the different States.

The repeal of the usury laws in Great Britain took place August 5th, 1854, by an act of the British Parliament. Such an important change in the commercial policy of that country could not have been adopted either suddenly or without mature consideration. In fact, the change had been going on gradually for more than twenty years; and the advantages of experience were thus sought from time to time, as the restrictions were, step by step, removed, and the commercial circles of the country thus finally relieved from the operation of the former vicious laws. In the year 1833 the first important innovation upon the usury-law policy was made in England.

After four years' trial, it was found that commercial and manufacturing people of all classes pronounced the new features of the law to be advantageous in their operation to borrowers, if not to lenders. The next step was in the year 1837, when Parliament granted further relief by removing the usury restrictions upon all commercial paper having twelve months or less to mature. This would seem to cover the ground entirely, and to furnish all the relief that commercial circles could reasonably demand. But so satisfied were the English people and the English government, that the usury laws, even in their mildest form, were inoperative or prejudicial, that, after various petitions and investigations, the total abolishment of these laws was effected on the 5th August, 1854. The bill to this effect had passed the House of Lords on the 27th July preceding, and was immediately brought forward in the House of Commons, where it was favorably considered and finally passed. The passage of the bill was strongly urged in the House of Lords by the Marquis of Lansdowne, by Lord Campbell, and the Lord Chancellor. Lord Brougham supported the bill, both on mercantile and moral grounds. The Marquis of Lansdowne remarked that:

"The inconvenience which had been found to result from the operation of the laws against usury had been so many and so great, that notwithstanding strong prejudices on the subject of usury and usurers, it had been found necessary to relax those laws from time to

time. At the time of the commercial failures in the years 1836 and 1837, it was found that the greatest relief which was experienced was the result of a provision which had been introduced not long previously into the act for the renewal of the Bank charter, enabling the Bank of England to dispense with the usury laws."

Many people, in their aversion to any modification of the usury laws, are under the conviction that if the price of money is not regulated by law, they will be compelled to pay an enormous tax (ranging from 25 to 75 per cent. per annum) on loans of money. Those who seriously reflect upon the matter—who have any practical or familiar knowledge of the laws of trade—are unanimous in their opinions that all shackles of the kind should be permanently removed.

If we examine the usury laws of the different States, we will find in all elaborate and stringent enactments providing punishment and penalties for the exercise of every one's inalienable right; namely, that of using their property to the best advantage.

We give a synopsis of the usury laws of the United States as they are now in force.

States.	Legal Int.	Penalties.
Maine.....	6 per cent.	Loss of excess of interest and law costs.
N. Hampshire. 6	"	Loss of three times excess of interest.
Vermont..... 6	"	Loss of excess of interest.
Massachusetts. 6	"	Loss of three times the whole interest and law costs.
Rhode Island... 6	"	Loss of excess of interest.
Connecticut... 6	"	Loss of all interest.
New York 7	"	Forfeiture of contract; and, in criminal action, fine not exceeding \$1000, and imprisonment not exceeding six months.
New Jersey ... 6	"	Contract void, and principal and interest forfeited.
Pennsylvania . 6	"	Principal and interest forfeited.
Delaware..... 6	"	Principal and interest forfeited.
Maryland..... 6	"	Loss of excess of interest.
Virginia..... 6	"	Usurious contracts void.
North Carolina 6	"	Principal and interest forfeited; and, if usury is paid, double the amount of principal and interest.
South Carolina 7	"	Loss of interest.
Georgia..... 7	"	Loss of interest.
Alabama..... 8	"	Loss of interest.
Arkansas..... 6	"	Loss of interest.
Florida..... 6	"	Loss of interest.
Illinois..... 6	"	10 per cent. allowed on contract, and loss of interest if exceeding this.
Indiana..... 6	"	Loss of five times the interest.
Iowa..... 6	"	10 per cent. allowed on contracts. Forfeiture of excess of interest.
Kentucky..... 6	"	Loss of interest.
Louisiana..... 8	"	Loss of interest.
Michigan..... 7	"	10 per cent. allowed on contracts. Forfeiture of excess of interest.
Mississippi.... 6	"	10 per cent. allowed on contracts. Forfeiture of excess of interest.
Missouri..... 6	"	10 per cent. allowed on contracts. Forfeiture of excess of interest.
Ohio..... 6	"	10 per cent. allowed on contracts. Forfeiture of excess of interest.
Tennessee... 6	"	Liable to an indictment for misdemeanor. Forfeiture of usurious interest, and fined.
Texas..... 8	"	12 per cent. allowed on contracts. Forfeiture of all interest.
Wisconsin 12	"	Loss of interest.
California 10	"	No penalty.

From this synopsis we see that the usury laws of New York are the most rigorous, and include, in criminal actions, a fine of \$1000 and imprisonment of six months; in merely civil actions, a forfeiture of contract.

California is the only State that provides no penalty. The Territories are also not subject to any usury laws.

No argument is needed to prove that such absurd laws are clogs on the commercial prosperity of the country, and that in financial revulsions like the present they effectually prevent the exercise of any commercial elasticity. A parallel could be found by supposing restrictive laws against selling flour above \$5 per barrel; we would then run as good a chance of starving as our merchants do of commercially starving for want of money when there is an abundance around them, but when the legal interest does not pay capital-

ists for the risk.—See articles BANKS, COMMERCE, INTEREST, etc. For Usury Laws, Discussions on, etc., see *Edinburgh Review*, xxvii. 339 (Defense of); *American Quarterly Review*, xxii. 177, xxi. 145; *North American Review*, xxxix. 168 (A. H. EVERETT); *Blackwood's Magazine*, xxiv. 68; *Bunkers' Magazine*, New York, iv. 581 (JOHN WHIPPLE), 683 (J. R. McCulloch), v. 781, 842, viii. 845, ix. 241-248 (M'VICKAR), 811; *Hunt's Merchant's Magazine*, iii. 516, v. 40, 115; *Dem. Rev.*, xxvii. 221-328; *Quar. Rev.*, xxxiii. 186.

Utah, a territory of the United States, mostly comprised in the Great California Basin, and extending from the crest of the Rocky Mountains on the east to the Sierra Nevada on the west. It has Oregon on the north, California on the west, and New Mexico on the south. Area, 208,775 square miles. In 1850 it was divided into seven counties, and the number of dwellings and population were as follows: Dwellings, 2322; white inhabitants, 11,330; free colored, 24. The counties erected since 1850 are Deseret, Green River, Milard, Juab, and Washington.

The eastern portion of Utah is drained by the Colorado River of the Gulf of California. Its valley has been but imperfectly explored, but, as far as our knowledge exists of it, a very small portion of it only can be brought into cultivation. The remaining portion of Utah is comprised in the Great Basin, and forms a distinct and most peculiar region. The rivers all terminate within its limits, in lakes with no visible outlets. The Great Salt Lake is about 35 miles broad and 70 long, and the waters contain more salt than can be held in solution; hence its borders abound with crystallized salt, and the bottom of the lake is incrustated with it. No living creature can exist in its waters. The valleys are susceptible of cultivation, and are very fertile, where they can be irrigated. Timber, although scarce, is very durable. Iron ore exists in the mountain ridges, and several furnaces are already in operation smelting it. The temperature is more uniform in the Great Salt Lake valley than on the Atlantic coast; it rarely falls below zero. There is but little rain, except on the mountains, from March to October.

There were in this territory, in 1850, 16,333 acres of land improved, and 30,516 of unimproved in farms; cash value of farms \$311,799, and the value of implements and machinery \$84,288. Live stock—horses, 2429; asses and mules, 325; milch cows, 4801; working oxen, 5269; other cattle, 2489; sheep, 3262; swine, 914; value of live stock, \$546,968.

Agricultural Products, etc.—Wheat, 107,702 bushels produced; rye, 210; Indian corn, 9899; oats, 10,900; barley, 1799; buckwheat, 332; peas and beans, 239; potatoes, 43,968; sweet do. 60 bushels. Value of produce of market gardens, \$23,868; pounds of butter made, 83,309; of cheese, 30,998; molasses, 58 gallons; beeswax and honey, 10 lbs.; wool, lbs. produced, 9222; flax, 550; hops, 50; tobacco, 70; tons of hay, 4805; clover seeds, 2 bushels; flax-seed, 5; value of home-made manufactures, \$1392; of slaughtered animals, \$67,985.

The capital is Fillmore City, but the Great Salt Lake City is where the Legislature meets, and it is also the residence of the governor. The other towns are Palmyra, Springville, Provo, Cedar, Parowan, Manti, Lehi, Brownsville, etc.

Utah was a part of Alta California, which was ceded to the United States at the treaty of Guadalupe Hidalgo February, 1848. Previous to the Mexican war this territory was only known and occupied by trappers and Indians. About the time of the opening of the war, the Mormons were driven from Nauvoo, Illinois, and, after making a temporary sojourn at Council Bluffs, Iowa, they settled in Utah. They organized a government under the title of the State of Deseret, but the United States established a territorial government in 1850, by which the territory is nominally under subjection.

V.

Valonia, a species of acorn, forming a very considerable article of export from the Morea and the Levant. The more substance there is in the husk, or cup of the acorn, the better. It is of a bright drab color, which it preserves so long as it is kept dry: any dampness injures it, as it then turns black, and loses both its strength and value. It is principally used by tanners, and is always in demand. Though a very bulky article, it is uniformly bought and sold by weight. A ship can only take a small proportion of her registered tonnage of valonia, so that its freight per ton is always high.

Valparaiso, the principal sea-port of Chili, lat. (Fort St. Antonio) $33^{\circ} 1' 9''$ S., long. $71^{\circ} 41' 5''$ W. Population perhaps 28,000 or 30,000. The water in the bay is deep, and it affords secure anchorage, except during northerly gales, to the violence of which it is exposed; but as the holding ground is good, and the pull of the anchor against a steep hill, accidents seldom occur to ships properly found in anchors and cables. There is no mole or jetty; but the water close to the shore is so deep, that it is customary for the smaller class of vessels to carry out an anchor to the northward, and to moor the ship with the stern ashore by another cable made fast to the shore. Large ships lie a little farther off, and load and unload by means of lighters. The best shelter is in that part called the Fisherman's Bay, lying between the castle and fort St. Antonio, where, close to a clear shingle beach, there is 9 fathoms water. In the very worst weather a landing may be effected in this part of the bay.—See *MIRER's Chili and La Plata*, i. 440, where there is a plan of Valparaiso. The harbors of Valdivia and Concepcion are much superior to that of Valparaiso; the former being, indeed, not only the best in Chili, but second to few in any part of the world. But Valparaiso, being near the capital, Santiago, and being the central depot for the resources of the province, is most frequented. The town is conveniently situated, at the extremity of a mountainous ridge; most part of the houses being built either upon its acclivity or in its breaches. Large quantities of corn and other articles of provision are shipped here for Callao and San Francisco, but principally for the latter.

In Valparaiso, the phenomenon of the sea-breeze is finely developed. Valparaiso is situated near the southern border of the calm belt of Capricorn when it is at its farthest southern reach, which happens in our late winter and early spring—the Southern summer and autumn. This is the dry season, when the sky is singularly clear and bright. The atmosphere, being nearly in a state of equilibrium, is then ready to obey even the most feeble impulse, and to hasten toward the place of any, the slightest rarefaction.

At about ten in the morning the land begins to feel the sun, and there is a movement in the air. By 3 or 4 P.M., the sea-breeze comes rushing in from the southward and westward, and strikes the shipping in the harbor with the force of a gale. Vessels sometimes drag before it, and communication with the shore is suspended. By 6 P.M., however, the wind has spent its fury, and there is a perfect calm.—*MAURY's Phys. Geography*.

United States.—The United States has ranked next after England and France in the foreign trade of Chili; but, since the incorporation of California as a State of the American Union, the first rank in this trade is now assigned to the United States flag. This trade consists in the exportation of cotton textiles, flour, salted provisions, and miscellaneous cargoes. The article of cotton manufacture called *twecoyos* is much demanded in Chili, and, until lately, imported from the manufactories of England exclusively, is now supplied by the

United States, and constitutes a leading article of trade. Besides these countries, Chili has also considerable trade with several other European and South American nations. From Belgium she receives cigars, refined sugar, woolens, window-glass, gin, cheese, paper, and books; from Central America, bastard pearls, hides, indigo, cochineal, sugar, sarsaparilla, dye-woods, cotton, and coffee; for which she sends in return, from the warehouses of Valparaiso, textiles of cotton calicoes. Brazil sends no vessels to the ports of Chili; but there is some trade carried on between the two countries under the Chilian and foreign flag. Neither has Mexico any direct trade with Chili; but Hamburgian and English vessels annually supply the port of Mazatlan with valuable cargoes of European merchandise taken on board at Valparaiso. Owing to the restrictive character of Mexican commercial regulations, this trade is mostly contraband. Valparaiso is the chief port of transit for the commerce of all the republics of South America. The manufacturing industry of the southern provinces of Chili has made but little progress. There is but one establishment worthy of being specially noticed—namely, a copper foundry, which at the commencement of 1846 was in active operation; and from which that year were exported to foreign countries 4000 quintals of its productions. The ore was supplied from the ports in the northern parts of the republic, and even from the Bolivian port of Cobija. Chili is, however, essentially an agricultural country. Independently of the working of the mines of gold, silver, and copper, and the casting of these metals, almost all the mechanical industry of the republic is to be found in the flour-mills, the tanneries and currying establishments, and the tailoring shops, where the *ponchos* or *mangos* are made. There are, besides these, some establishments for the manufacture of candles and common soap. Still, there is but little probability that the manufacturing industry of Chili, at least for a great many years to come, will present any competition with the manufactured productions imported from Europe and the United States. The revenues of Chili have augmented in a ratio equal to the increase of its commercial prosperity. Its foreign debt is yearly curtailed, and the interest on it paid with such punctuality as to have raised the 6 per cent. stock in London to 108. This debt, contracted during the war of Independence, consisted originally of a loan raised in England of £1,000,000. Owing to civil wars, and the generally unsettled state of the country, the debt, with the accruing interest, soon doubled itself. Under the administration of Secretary Rengifo (in 1830), a compromise was effected with the English creditors, and its terms have since been faithfully adhered to. In 1852 this debt was reduced to \$7,104,000—one half at 6 per cent., and the remainder at 3. The home debt has been reduced to less than \$1,500,000, bearing 3 per cent. interest. The merchant marine of Chili has also shared in the general prosperity of the republic. Steam-vessels can at all times obtain coal in the greatest abundance, and of an excellent quality, from the mines of Talcahuano, and at many points along the coast. With such advantages for the active development of her physical and commercial resources, Chili has long since drawn to her ports the merchants of the great industrial and commercial nations of the world. Among these, England, France, Germany, and the United States, are the chief competitors for her foreign trade.

The revenues derived from import duties in 1851 amounted to \$2,724,718, of which there was collected at the port of Valparaiso \$2,426,631. The total amount in 1852 was \$3,465,038 77. The following table exhibits the quantities and values of copper, in bars, ex-

ported from Chili to the United States, from 1850 to 1855, both inclusive:

Years.	Value.
1850.....	\$1,008,044
1851.....	1,367,191
1852.....	1,294,481
1853.....	1,247,311
1854.....	1,367,206
1855.....	1,893,434

In 1852 the imports into Chili reached in value \$15,347,332; and the exports from Chili amounted to \$14,087,566. Compared with the preceding year, imports fell off \$537,640, while the exports of 1852 show an increase over those of 1851 of \$1,941,227. This perceptible advance in the export trade of Chili in 1852 is attributed to the increased activity in working the copper mines of Coquimbo and the silver mines of Copiapo, as also to several heavy shipments of flour and other products to California.

The following tabular statement exhibits the number of foreign vessels and their tonnage, and the number of national vessels, that entered Chilean ports from 1844 to 1851, both inclusive:

Years.	Foreign Vessels.	Tonnage.	Chilian Vessels.
1844.....	1487	374,028	1429
1845.....	1452	369,850	1486
1846.....	1523	388,557	1529
1847.....	1434	360,097	1521
1848.....	1397	343,456	1523
1849.....	1777	503,259	1541
1850.....	2599	740,425	1784
1851.....	2351	686,185	899

The number of vessels that cleared in 1850 was 2497, making an aggregate of (entered and cleared) 5096 vessels, with an aggregate tonnage of 1,442,425 tons. The number cleared in 1851 was 2205, which, with the 2351 given in the table, makes a total of 4556 vessels, measuring in all 1,233,978 tons. This shows a falling off in 1851 of 540 vessels, and 208,447 tons. It will be perceived that the number of national vessels that entered Chilean ports in 1851 is put down in the table at 899. It must not, however, be inferred from this that the merchant marine of Chili actually counts that number of vessels. The figures merely indicate the number of times the national merchant flag entered Chilean ports during the year. Still, within the past few years the merchant marine of Chili has largely increased. Starting from 1848, this increase is found to be—of vessels, 100 per cent., and of tonnage over 300 per cent. This is shown by the following statement:

Years.	No. of Vessels.	Aggregate Tonnage.
1848.....	105	12,628
1849.....	119	20,022
1850.....	153	27,601
1851.....	182	34,511
1852.....	215	41,509

An official dispatch to the British government from Chili, under date of September 13, 1855, states that the returns of Chilean trade for 1853 and 1854 shows a great increase in both branches of import and export; but that the markets were considerably affected by the high price of provisions, which commenced in 1854, and continued up to the date of the dispatch; owing mainly to the large exportation of wheat to Australia, where it brought as high as \$36 per quarter of eight bushels. Wool may be said to be, after copper, the chief article of import into the United States from Chili. The following tabular statement exhibits the quantities and values of wool imported into the United States from Chili, during the five years ending with June 30, 1855, together with the aggregate quantities and values of the same imported from all other countries for the same period—as given by United States authorities:

Years.	From all Countries.	Values.	From Chili.	Values.
	Pounds.		Pounds.	
1851.....	32,548,491	\$3,833,157	2,109,846	\$125,650
1852.....	18,341,298	1,930,711	1,863,189	169,616
1853.....	21,695,079	2,669,718	2,664,300	255,196
1854.....	20,200,110	2,882,185	1,867,447	161,066
1855.....	18,534,415	2,072,139	2,846,902	317,554

In 1843 a decree was passed by the Chilean government providing for the establishment of a statistical board. Since that period full commercial returns have been regularly published, under the title of *Estadística Comercial de la Republica de Chile*. From these publications the following tables, exhibiting the general foreign commercial movements of Chili, from 1844 to 1851, have been compiled:

TABULAR COMPARATIVE STATEMENT EXHIBITING THE FOREIGN IMPORT AND EXPORT TRADE OF CHILI, THE PRINCIPAL COUNTRIES PARTICIPATING THEREIN, AND THE SHARE ASSIGNED TO EACH, IN 1851, AND ALSO THE TOTAL TRADE FOR A PERIOD OF EIGHT YEARS.

Countries.	Imports.	Exports.
France and colonies.....	\$1,705,929	\$851,113
Belgium.....	195,372	2,495
Holland.....	402,069	65,739
Germany.....	1,059,853	469,155
England and colonies.....	4,319,864	4,643,290
Denmark.....	.....	1,890
Sweden and Norway.....	5,081	2,194
Spain and colonies.....	145,510	74,852
Portugal.....	18,168	.....
Sardinia.....	74,410	21,809
China.....	229,348	42,547
United States.....	4,594,211	8,515,235
Mexico.....	23,837	7,532
Central America.....	42,241	103,513
Ecuador.....	120,732	42,774
Brazil.....	624,877	518,898
Peru.....	1,616,644	1,179,247
Bolivia.....	456,983	209,002
Uruguay.....	10,352	61,215
Argentine Confederation.....	170,586	46,624
Polynesia.....	58,910	59,352
New Granada.....	.....	225,483
Other countries.....	.....	7,802
Total year 1851.....	\$15,884,972	\$12,146,891
“ “ 1850.....	11,783,193	12,426,269
“ “ 1849.....	10,722,840	10,603,447
“ “ 1848.....	8,601,367	8,353,595
“ “ 1847.....	10,068,849	8,442,035
“ “ 1846.....	10,149,136	8,115,288
“ “ 1845.....	9,104,764	7,601,152
“ “ 1844.....	8,596,674	6,087,023

TABULAR COMPARATIVE STATEMENT EXHIBITING PARTICULAR DESCRIPTIONS OF THE PRINCIPAL ARTICLES OF MERCHANDISE, AND THE RESPECTIVE VALUES THEREOF, IMPORTED INTO THE PORTS OF CHILI FROM 1849 TO 1851, BOTH INCLUSIVE.

Articles.	1849.	1850.	1851.
Ale and porter.....	\$10,607	\$16,039	\$18,059
Books, printed.....	22,334	26,320	35,490
Calicoes.....	656,512	486,327	516,148
Cassimeres.....	223,459	235,714	236,574
Chairs.....	35,846	32,656	29,873
Cloth.....	170,561	171,217	164,572
Clothing.....	43,629	18,406	19,477
Coal.....	346,500	253,246	236,473
Cotton checks.....	14,028	15,166	17,506
“ drillings.....	26,445	43,276	28,093
“ handkerchiefs.....	102,950	92,559	66,542
“ colored.....	56,287	56,666	9,077
“ shawls.....	75,289	82,323	56,257
“ and wool shawls.....	71,627	101,391	118,787
“ silk and wool.....	49,966	43,204	42,337
“ stockings.....	56,078	52,423	66,390
“ tickings.....	27,116	21,450	33,498
“ thread.....	57,511	67,025	47,688
“ unbleached.....	681,201	475,504	615,825
“ white.....	1,039,338	748,511	800,872
“ and wool.....	166,849	160,534	159,473
Crape shawls.....	102,849	120,281	98,273
Drugs and medicines.....	86,581	29,054	29,054
Earthen-ware.....	71,292	77,865	34,929
Household furniture.....	22,570	46,689	62,621
Iron, assorted.....	77,335	130,787	85,892
Jewelry.....	38,503	31,758	106,983
Lastings.....	36,115	12,815	15,065
Liquors, assorted.....	13,577	10,469	15,434
Machinery.....	14,169	4,000	39,150
Paints.....	17,465	19,905	13,547
Ribbons.....	39,004	45,606	58,266
Rice.....	70,840	56,693	68,215
Saddles.....	17,578	15,866	19,152
Shoes and boots.....	85,857	21,253	43,778
Silk shawls and handkerchiefs.....	161,948	222,517	162,567
Soap.....	73,227	69,224	66,427
Sugar, refined.....	95,423	400,969	603,129
“ crushed.....	226,490	336,634	500,141
Tea.....	31,873	21,912	49,675
Tobacco.....	561,760	387,240	659,055
Woolen goods.....	32,949	62,714	77,013
“ shawls.....	57,421	115,073	143,801

PRINCIPAL ARTICLES OF DOMESTIC PRODUCE EXPORTED FROM
THE PORTS OF CHILI FROM 1849 TO 1851, BOTH INCLUSIVE
—THE PRODUCE OF THE MINES EXCEPTED.

Articles.	1849.	1850.	1851.
Wheat.....	\$315,190	\$353,610	\$228,754
Flour.....	302,798	1,899,606	1,514,215
Biscuit.....	114,007	74,952	120,199
Barley.....	76,910	216,888	567,406
Beans.....	48,563	136,737	167,055
Potatoes.....	14,514	43,806	32,722
Nuts.....	55,192	40,039	78,425
Dried fruits.....	72,147	79,911	24,643
Salt beef.....	26,230	16,960	21,839
Charqui (dried beef).....	74,398	26,643	34,854
Cheese.....	18,156	11,746	7,551
Tallow, etc.....	39,043	31,046	47,554
Hides.....	165,942	143,366	99,795
Goat, sheep, and chinchilla skins.....	17,754	31,201	31,307
Wool.....	64,308	83,333	104,301
Hams.....	3,007	3,594	800
Assorted provisions.....	50,454	30,571	18,290
Cords and rope.....	26,614	7,278	4,850
Rigging for ships.....	988	4,510	3,825
Planks and lumber.....	310,914	106,372	29,795
Coal.....	4,933	7,500	2,540
Guano.....	13,645	37,708	55,392

The principal ports of Chili open to general foreign trade are Valparaiso, Coquimbo, Huasco, Copiabo, Talcahuano, Constitucion, Valdivia, and Ancud. Vessels from abroad, entering any other than open ports, are liable to seizure. Under the Chilean commercial regulations, the coasting trade is prohibited to foreign vessels; but they may discharge portions of their original cargoes in one or more ports, and load Chilean produce for a foreign port. The port charges are as follows: Tonnage dues, 25 cents per ton; light dues (where light-houses exist), $3\frac{1}{2}$ cents per ton; roll and captain of the port's fees, \$4; harbor-master's fees, \$8. National or foreign vessels of war, national or foreign steamers, whale-ships, vessels in distress, or in ballast, or discharging under twenty packages, are exempt from tonnage and light dues. When tonnage dues have been paid at one port, they are not levied in another.

Commercial relations between the United States and Chili are regulated by the treaty of May 16, 1832—ratifications having been exchanged and proclamation made April 29, 1834. This treaty establishes the principle of "the most favored nation," and contains, besides, a stipulation providing that "free ships make free goods," and the usual guarantees for commercial reciprocity. The duration of the treaty was limited to twelve years; but, by virtue of the twelve-months' notice clause, it is still in force. Subsequent and recent commercial legislation of the Chilean government has modified and enlarged the provisions of the treaty of 1834. The principle of "the most favored nation" is but another name for differential duties between the national flag and that of the country with which such treaty is negotiated. These differential duties have been defined by Chili in a law bearing date January 8, 1834, and by various subsequent enactments. Such duties, however, have been suppressed, under certain limitations, chiefly by a law of July 16, 1850. The following is a translation of this law, so far as it relates to this subject:

Art. 1. Are suppressed, and of no force, articles 15, 16, 17, and 18 of the law of importation of the 8th January, 1834. The law defining differential duties. Is also suppressed that section of the law of August 7, 1834, by virtue of which national vessels were exempted from tonnage duties, such vessels hereafter being subjected to the same duties as foreign vessels. 2. The products of the soil and industry, and, in general, articles of commerce imported into Chili for consumption, in bottoms under a foreign flag, shall pay only the same duties as if imported under the national flag. 3. Articles of commerce imported into the republic in vessels of any nation that shall not have accepted the conditions of reciprocity established by the present law, will be subject to a surcharge, or extra duty, equal

to that imposed by such nation on merchandise brought into its ports in Chilean vessels. 4. To give effect to the foregoing article, the President of the republic shall fix the amount of differential duties authorized by the foregoing article.

Several decrees have been since issued regulating the amount of these differential or countervailing duties. Their principal points are: 1. Vessels of nations that have not accepted the reciprocity law of July 16, 1850, shall pay, instead of 25 cents per ton of the vessels' measurement, 75 cents per ton. 2. Merchandise imported in such vessels shall pay, in addition to existing duties, an additional duty of 6 per cent. *ad valorem*. The President of the United States, by his proclamation bearing date November 1, 1850, accepted the reciprocity granted in the above-recited law and decrees, and all restrictions and discriminations in the commercial relations of the two countries have ceased since that period.

The customs rates of the tariff of Chili are *ad valorem* on a fixed valuation of the articles of merchandise. By the 8th chapter, articles 2, 3, and 4, of the Chilean custom-house ordinance, it is provided that the tariff of values shall be adjusted by a commission of from five to nine merchants and custom-house officials at Valparaiso, subject to the approval of the government, and the values thus fixed shall be in force one year without change.—See CHILI.

Value. The exchangeable value of commodities, depends, at any given period, partly on the comparative facility of their production, and partly on the relation of the supply and demand. If any two or more commodities respectively required the same outlay of capital and labor to bring them to market, and if the supply of each were adjusted exactly according to the effectual demand; that is, were they all in sufficient abundance, and no more, to supply the wants of those able and willing to pay the outlay upon them and the ordinary rate of profit at the time, they would each bring the same price, or be exchanged for the same quantity of any other commodity. But if any single commodity should happen to require more or less capital and labor for its production, while the quantity required to produce the others continued stationary, its value, as compared with them, would in the first case rise, and in the second fall; and, supposing the cost of its production not to vary, its value might be increased by a falling off in the supply, or by an increase of demand, and conversely. But it is of importance to bear in mind that all variations in price arising from any disproportion in the supply and demand of such commodities as may be freely produced in indefinite quantities are temporary only; while those that are occasioned by change in the cost of their production are permanent, at least as much so as the cause in which they originate. A general mourning occasions a transient rise in the price of black cloth; but, supposing that the fashion of wearing black were to continue, its price would not permanently vary; for those who previously manufactured blue and brown cloths, etc., would henceforth manufacture only black cloth; and, the supply being this way increased to the same extent as the demand, the price would settle at its old level. When the price of a freely produced commodity rises or falls, such variation may evidently be occasioned either by something affecting the commodity, or by something affecting the value of money. But when, instead of being confined to one, the generality of commodities rise or fall, the fair presumption is that the change is not in them, but in the money with which they are compared. Exclusive, however, of the commodities now alluded to, there is a considerable class whose producers or holders either enjoy an absolute or a partial monopoly of the supply. When such is the case, prices depend entirely or principally on the proportion between the supply and demand, and are not liable to be influenced, or only in a secondary degree, by changes in the cost of production.

Prices have been often affected by variations in the cost and supply of gold and silver, whether arising from the exhaustion of old, or the discovery of new mines, improvements in the art of mining, changes of fashion, etc. Hence it is that tables of the prices of commodities, extending for a considerable period, communicate far less solid information than is generally supposed, and, unless the necessary allowances be made, may lead to the most unfounded conclusions. The real value of any commodity depends on the quantity of labor required for its production; but supposing that we were to set about inferring this real value, or the ultimate sacrifice required to obtain the commodity, from its price, it might happen (had the quantity of labor required for its production declined, but in a less degree than the quantity required to produce gold and silver), when its value would appear to rise when it had really diminished. When, however, the rate of wages, as well as the price of commodities, is given upon authentic data, a table of prices is valuable, inasmuch as it shows the extent of the command over the necessities and conveniences of life enjoyed by the bulk of the community during the period through which it extends. Those desirous of detailed information as to the prices of commodities in Great Britain in distant times, may consult the elaborate tables in the third volume of Sir F. M. EDEN's *Work on the Poor*, and the fourth volume of MACPHERSON's *Annals of Commerce*. ARBUTHNOT's *Tables of Ancient Coins, Weights, Measures, Prices*, etc., are well known, but the statements are not much to be depended upon. The *Traité de Metrologie* of M. PAUCOT (4to, Paris, 1780) is the best work on this curious and difficult subject. See also TOOKE's *History of Prices*, vols. i.-vi., which is the most complete history of prices extant.—See *articles COMMERCE, GOLD, MONEY, PRICES*, etc.

Vancouver (or, more properly, **Quadra and Vancouver**) **Island**, British North America, between lat. 48° 20' and 51° N., and long. 123° and 128° W., separated from the main land by Queen Charlotte Sound and the Gulf of Georgia. Length, northwest to southeast, 300 miles; greatest breadth, 75 miles. Estimated area, 16,000 square miles; and population, 11,463. Surface mountainous, and richly wooded. On its west coast are Nootka Sound, and many other harbors. This land was named in honor of George Vancouver. This British navigator was born about 1750. He served as midshipman under Captain Cook, in his second and third voyages. In 1790 he was appointed to command the expedition to explore the western coast of North America, to ascertain whether any navigable communication existed between the Atlantic and Pacific oceans. Of this voyage, which occupied from 1790 to 1795, he compiled an account, but died before its entire completion, May 10, 1798. The island is intersected by high mountain ranges, but it has, notwithstanding, a considerable extent of level and undulating land susceptible of cultivation. Soils very various, being principally, however, of a friable description. The best is a black vegetable mould, producing a most luxuriant vegetation. Climate peculiarly mild; but in winter the rains, accompanied with violent thunder-storms, are heavy, and almost incessant. The bays, rivers, and adjacent seas, swarm with a variety of fish, including salmon, sturgeon, herrings, etc., with seals, sea-otters, tortoises, etc., and they are also resorted to by whales. The harbors of the island are consequently well situated for carrying on an extensive and profitable fishery, and well fitted for ship-building. The mineral riches of the island have been very imperfectly explored. Beds of coal are to be met with in its northeast parts. In various localities the beds have been found cropping out at the surface, and large supplies have been obtained with but little difficulty and little expense. The native inhabitants subsist principally by hunting and fishing, especially the latter, and by cultivating the potato.

They are remarkable for indolence and filth; their heads are flattened when young by artificial means; and their legs are ill formed, those of the women being frequently swollen. A settlement established by the English at Nootka Sound in 1788 was suppressed in the following year by the Spaniards, an outrage which nearly occasioned a war with Spain. Since then it has been almost wholly neglected, till within these few years that some establishments have been formed upon it by the Hudson's Bay Company. Latterly it has been proposed to make it the site of a colony that should prosecute the seal and whale fishery, for which, as already stated, it is supposed to be peculiarly well situated; and, with a view to the realizing of this project, it has been made over to the Hudson's Bay Company, on condition of their establishing a colony within its limits in the course of the five years following 1848. Coal is procured at the settlement of Nanaimo, where the Hudson's Bay Company have made a large purchase of land and commenced an extensive coal work. Two valuable beds of coal, varying from five to seven feet in thickness, are found within 100 feet of the surface; the coal is bituminous, and is greatly prized for domestic consumption and for steaming purposes. The produce of these works may be increased, by increasing the number of hands, to any desirable extent. Another source of wealth and enterprise may be found in the magnificent ship spars produced on Vancouver's Island, which, in point of size and comparative strength, are probably the most valuable in the world, and may be procured in any number, even were the demand to include the supply of spars for the whole British navy. The oil exported from this colony is procured from the native tribes inhabiting the west coast of Vancouver's Island, and is manufactured by them from the whale and dog-fish; it is of excellent quality, and has a high character in California, where it brings from two to three dollars a gallon, in consequence of its retaining its fluidity and burning freely in the coldest weather. It is estimated that a quantity equal to 10,000 gallons was purchased from the natives of the west coast last year; and, considering the imperfect means they possess for taking the fish and trying out the oil, it is not unreasonable to propose that with the use of proper means the returns of oil would be greatly increased. The oil trade is carried on by a few enterprising individuals who live among the Indians, and collect the article as it is manufactured by the natives. The number of ships with cargoes which between July 5, 1854, and July 5, 1855, entered inward was 25; tonnage, 4054. In ballast, 3; tonnage, 260. Cleared outward with cargoes, 16; tonnage, 2350. In ballast, 9; tonnage, 1853. Port Victoria has five vessels belonging to it, and Vancouver's Island is a rising and flourishing little colony, all the more to be cherished as its people seem to be on good terms with the natives and encourage them in industrial pursuits.

Van Diemen's Land, or **Tasmania**, a large island belonging to Great Britain, forming part of Australia, lying between lat. 41° 20' and 43° 30' S., and long. 144° 40' and 148° 20' W. It is supposed to contain about 27,000 square miles. This land was discovered by the Dutch navigator Tasman in 1642, and was named in honor of Anthony Van Diemen, at that time governor-general of the Dutch possessions in the East Indies; but it is now frequently called Tasmania, from its discoverer. Previously to 1798, it was supposed to form part of New Holland, but it was then ascertained to be an island. It was taken possession of by the British in 1803; and in 1804 Hobart Town, the capital, was founded. The surface is generally hilly and mountainous; but though none of the land be of the first quality, there are several moderately fertile plains, and a good deal of the hilly ground is susceptible of being cultivated. On the whole, however, it is not supposed that more than about a third

part of the entire surface of the island can be considered arable; but about a third more may be advantageously used as sheep pasture. As compared with New Holland, it is well watered. The climate, though variable, is, generally speaking, good, and suitable for European constitutions; and it is not exposed to the tremendous droughts that occasion so much mischief in New South Wales. Wheat is raised in considerable quantities; though wool is at present the staple produce of the colony. Van Diemen's Land, like New South Wales, was originally intended to serve as a penal colony, and it received between 1823 and 1850 no fewer than 58,243 convicts. It has also received, especially of late years, large numbers of free settlers. In 1850 the total population of the island, exclusive of aborigines, who perhaps do not exceed 3000 or 4000, amounted to 70,194. Of these, 45,916 were free, and 24,188 convicts. For some considerable time back

great dissatisfaction was felt by the colonists at the continued importation of convicts; and latterly very vigorous measures were taken to effect its suppression. For this purpose it was in 1852-'53 finally abandoned. In truth, after the discovery of the gold-fields in the adjoining continent, it could no longer be continued.

Trade of Van Diemen's Land.—Hardware, haberdashery, apparel, cotton and linen goods, woolens, malt liquor, spirits, wine, etc., form the principal articles of import. Here, as in New South Wales, wool forms by far the most important article of export; next to it is whale-oil, and then follows wheat and flour, live stock, timber, whalebone, mimosa bark, and various less important articles. The usual excess of the imports over the exports is accounted for by the remittances to defray the cost of the convict establishment.

POPULATION, TRADE, ETC., OF VAN DIEMEN'S LAND FROM 1839 TO 1848, BOTH INCLUSIVE.

Years.	Population.	Value of Imports. £	Value of Exports. £	Shipping.		Total ordinary Revenue. £
				Inward. Tonnage.	Outward. Tonnage.	
1839.....	44,121	748,887	875,165	79,283	77,556	136,768
1840.....	46,057	988,356	867,007	85,081	86,701	126,210
1841.....	51,499	851,981	630,501	84,214	85,201	121,733
1842.....	58,902	587,453	532,509	82,933	82,866	121,725
1843.....	.....	705,260	439,890	92,501	88,984	110,271
1844.....	.....	442,988	408,799	68,462	73,756	151,136
1845.....	.....	520,562	422,218	73,294	71,422	128,881
1846.....	.....	561,238	582,585	74,795	79,430	107,936
1847.....	.....	724,593	610,876	86,940	85,861	150,474
1848.....	70,194	594,164	490,281	91,883	95,988	129,545

The trade between the United States and Van Diemen's Land commenced in 1834, in which year our exports amounted to \$7120, and from that period up to 1847 averaged annually upward of \$20,000; while our imports from that colony during the same period did not exceed an annual average amount of \$7000.—See article AUSTRALIA.

Vanilla, the fruit of the *Epidendrum vanilla*, a species of vine extensively cultivated in Mexico. It has a trailing stem, not unlike the common ivy, but not so woody, which attaches itself to any tree that grows near it. The Indians propagate it by planting cuttings at the foot of trees selected for that purpose. It rises to the height of eighteen or twenty feet; the flowers are of a greenish yellow color, mixed with white; the fruit is about eight or ten inches long, of a yellow color when gathered, but dark brown or black when imported into Europe; it is wrinkled on the outside, and full of a vast number of seeds like grains of sand, having, when properly prepared, a peculiar and delicious fragrance. It is principally used for mixing with and perfuming chocolate; and is, on that account, largely imported into Spain. Vanilla is principally gathered in the intendency of Vera Cruz, in Mexico, at Misantla, Colipa, Vacuatla, and other places. It is collected by the Indians, who sell it to the whites (*gente de razon*), who prepare it for market. They spread it to dry in the sun for some hours, then wrap it in woolen cloths to sweat. Like pepper, it changes its color in this operation—becoming almost black. It is finally dried by exposing it to the sun for a day. There are four varieties of vanilla, all differing in price and excellence; viz., the *vanilla fina*, the *zacate*, the *rezacate*, and the *vasura*. The best comes from the forests surrounding the village of Zentila, in the intendency of Oaxaca. According to Humboldt, the mean exportation of vanilla from Vera Cruz may amount to from 900 to 1000 millares, worth at Vera Cruz from 30,000 to 40,000 dollars. Vanilla is also imported from Brazil, but it is very inferior. The finest Mexican vanilla is extremely high priced.—See HUMBOLDT, *Nouvelle Espagne*; POINSETT'S *Notes on Mexico*.

Variation of the Compass, the angle which the magnetic needle makes with the plane of the true meridian. It is otherwise called the *declination*.—See COMPASS. For tables showing the variation in a great

number of places, and its progressive, annual, and diurnal changes, see BREWSTER'S *Treatise on Magnetism*, 1837, reprinted from the *Encyclopædia Britannica*.

Varnish (Fr. *Vernis*), a fluid which, when spread thin upon a solid surface, becomes dry, and forms a coating impervious to air and moisture. There are two kinds of varnish, namely, *spirit* and *oil varnishes*: rectified alcohol is used for the former; and for the latter fixed and volatile oils, or mixture of the two. The solid substances dissolved in the above menstrua, and which constitute what is termed the body of the varnish, are almost exclusively resinous, and are chiefly the following: 1. *Turpentine*, all the varieties of which are employed by the varnisher: they form an excellent body, and give strength and glossiness at a small expense; but they do not dry without other additions. 2. *Copal*, a peculiar resin, very difficult to dissolve, but forming a hard and durable ingredient. It is generally melted over a gentle fire previous to use. 3. *Lac*, which gives great toughness and hardness; but is often inadmissible, on account of its reddish-brown color. 4. *Mastic*, which yields a tough, hard, brilliant, and colorless varnish. 5. *Elemi*, a resin of a pale yellow green tint, and a valuable ingredient, on account of its toughness and durability. 6. *Sandarach*, a resin which imparts splendor, but which alone is not durable. 7. *Amber*, a valuable ingredient, on account of its hardness and durability; but difficult of transparent solution, and hence chiefly used in opaque varnishes. 8. *Benzoin*, added on account of its fragrance. 9. *Anime*, which gives brilliancy and some scent. 10. *Gamboge*, for yellow varnishes. 11. *Dragon's blood*, for red varnish. These, together with turmeric, saffron, and annotta, are chiefly used on account of their color, and to cover brass and copper under the name of *lacquers*. 12. *Cucutcheon*: this extraordinary vegetable product has of late been much employed in a variety of preparations used as varnishes. It is invaluable where materials are to be rendered air-tight, as balloons, for example, and where at the same time flexibility, and even elasticity, are required; but its principal application in this way is in the manufacture of various *water-proof* articles. 13. *Asphaltum*, the varieties of which are indispensable in black oil varnishes. In making spirit varnishes, the strongest alcohol of commerce should be used (of a specific gravity not exceed-

ing 820), and its solvent power over some of the more intractable resins is sometimes improved by the addition of a little camphor. In order to prevent the agglutination of the resin, it is often requisite to mix it with sand or pounded glass, by which the surface is much increased, and the solvent energy of the spirit facilitated. The proportions in which the several ingredients are used, and the selections for particular purposes, are infinitely various. The following are a few good varnishes, in illustration of their varieties: 1. *Spirit Varnish*.—Sandarach 4 oz., seed lac 2 oz., elemi 1 oz.; digest the whole in a quart of moderately warm alcohol, and when dissolved add Venice turpentine 2 oz. 2. *Lac Varnish*.—Seed lac 8 oz.; digest for four days in a warm place with a quart of alcohol, and then strain through flannel. 3. *Turpentine Varnish*.—Mastic 12 oz., mixed with 5 oz. of pounded glass, and digested in a quart of oil of turpentine, adding at intervals about half an ounce of camphor in small pieces. When the mastic is dissolved, add to the warm fluid an ounce and a half of previously liquefied Venice turpentine, and stir the whole together. 4. *Copal Varnish*.—Copal which has been previously melted by gentle heat 3 oz., oil of turpentine 20 oz. (measure); put the oil into a flask placed in boiling water, and add the powdered copal in small portions at a time, so that it may be gradually dissolved; let it stand a few days to clear, and then pour it off, and if too thick for use, add to it a little warm oil of turpentine. This varnish dries slowly, but is very durable.—See article PAINTS.

Vellum, a species of fine parchment.—See PARCHMENT.

Velvet, a rich kind of stuff all silk, covered on the outside with a close, short, fine, soft shag, the other side being a very strong, close tissue. The nap or shag, called also the *velveting* of this stuff, is formed of part of the threads of the warp, which the workman puts on a long narrow-channelled ruler or needle, which he afterward cuts by drawing a sharp steel tool along the channel of the needle to the ends of the warp. Florence, Genoa, and some other cities of Italy, are most noted for the manufacture of velvet. There are cotton velvets manufactured in imitation of the silk ones in England.

Venezuela, a republic of South America; its territory lies chiefly between lat. 2° and 12° N., and long. 60° and 73° W., having on the east British Guiana, on the south Brazil, on the west New Granada, and on the north the Caribbean Sea. The chief wealth of Venezuela consists in its rich and extensive pastures, its mines of the precious metals, and of lead, iron, copper, etc., and its valuable forest timber. The agricultural and other products of the country which enter into its foreign commerce as articles of export are coffee, cocoa, cured hides, indigo, fustic, tobacco, cotton, cattle, mules and horses, and specie. These form the basis of the foreign commerce of Venezuela, and are exchanged for tissues of cotton, thread, silk, and wool; flour, provisions, hardware, soap, furniture, glassware, brandies, wines, etc. Conformably to the law of May 5, 1849, the ports open to foreign commerce are divided into three classes, namely: ports open for importation and exportation; ports open for importation for local consumption only, and for exportation; ports open for exportation only. This organization was simplified by a decree of April 15, 1854, of which the following is a translation:

Ciudad Bolívar, in the province of Guiana; La Guayra, in that of Caraccas; Puerto Cabello, in that of Carabobo; La Vela, in that of Coro; Maracaibo and Barcelona, in the two provinces bearing those names, are declared ports open to commerce, both for importation and exportation, without any restriction. Cumana, Carupano, Cariacito, and Barrancas, in the province of Cumana; Pampatar and Juan Griego, in the province of Margarita; Soledad, in the province of Barcelona; and Cumarebo, in that of Coro, are declared ports open to commerce for importation for local

consumption only, and for exportation. The custom-houses of the ports open for importation for local consumption only can not clear, under a certificate, foreign produce for other ports, open or not to commerce, except the custom-houses of Cumana, Carupano, and Cariacito, which are allowed to deliver cockets (certificates of cargo), the two former for the ports of Cariaco and Rio Caribe, the others for the ports of Irapa and Yaguarapara.

In the year 1803 the exports of Venezuela were estimated at a value of nearly \$7,000,000; of this amount La Guayra exported \$2,500,000, Cumana and Barcelona \$1,500,000, Maracaibo and Angostura \$1,000,000, Carupano and the smaller ports the remainder. These amounts are in Venezuelan currency—in which all values, derived from Venezuelan official sources, are generally stated. The dollar of the United States is equivalent in value to \$1 3½ in the present currency of Venezuela. The dollar of Mexico, Peru, Chili, Central America, and of Cuba, is that of the United States.

Internal Commerce.—The River Orinoco is now navigated as high up as Nutrias, in the province of Varinas; and the productions of the fertile countries watered by this magnificent river are thus added to the commercial wealth of the republic. A recent communication from Puerto Cabello affords the following facts: "Several mercantile firms of Puerto Cabello have applied for and obtained from the Congress of Venezuela a charter for a railroad to run nearly west from that city—54 miles—to San Felipe, in the province of Barquisimeto. The estimated cost is \$1,400,000 (United States currency), exclusive of land, which, for the most part, will be afforded free of expense. The government gives all the public land and timber which may be required, either for the road or buildings, and admits the tools, iron, etc., free of duty; subscribes for \$186,916 of the stock (\$250,000 in Venezuelan currency). The provinces of Barquisimeto and Corabobo together take \$67,290 of the stock. Of the grades, 70 per cent. will be below 80 feet to the mile, and only 5 per cent. above 50 feet. There will be 15 bridges, estimated to cost \$104,590. The charter is to continue 40 years as an exclusive privilege, and 40 years more the right of property in the road is guaranteed to the company; after which it reverts to the government. The road must be commenced within two years from 1st July, 1855, and be completed within four years from the date of its commencement. John Dougherty, of New York, chief engineer of the road, estimates the annual net income at \$242,222. San Felipe is situated on the Yariciu River, and is a commanding point for the collection of the products of the interior. Puerto Cabello is the best harbor in Venezuela."

The provinces of Varinas, Apure, and the two Guianas, are now brought into direct communication with the sea; and by the establishment, in 1845, of a line of steamers under the auspices of a company from the United States, specially chartered by the Venezuelan government, and by means of the 240 sailing vessels, with a capacity of 36,000 tons, which annually ascend as high as Angostura (Ciudad Bolívar), some 250 miles from the sea, there is but little room to doubt that Venezuela is about to enter upon a career of commercial prosperity. At present, the annual exports from Apure and Varinas consist of dry hides (about 100,000), buckskins, coffee, cotton, indigo, cocoa; and from the latter province between 1,000,000 and 2,000,000 pounds of tobacco. The value of this trade to the United States will be perceived, when it is known that nearly all the hides offered in the Venezuelan markets are taken by this country.

The value of the total trade of Venezuela for the fiscal year ending June 30, 1845, has already been given. For the year ending December 31, 1845, it reached a total of \$8,021,040, and the navigation employed 3209 vessels, measuring in the aggregate 190,732 tons.

COMMERCE OF THE UNITED STATES WITH VENEZUELA, FROM OCTOBER 1, 1898, TO JULY 1, 1957.

Years ending	Exports.			Imports.	Whereof there was in		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1899.....	\$413,245	\$27,736	\$685,181	\$1,982,702	\$104,482	\$35,041	9,241	1,550
1940.....	554,267	229,605	783,872	1,355,166	73,957	27,521	9,386	920
Total...	\$867,512	\$507,341	\$1,460,853	\$3,337,868	\$185,192	\$62,562	18,627	2,470
Sept. 30, 1941.....	\$532,419	\$230,083	\$762,502	\$2,012,004	\$145,717	\$3,168	9,530	1,284
1942.....	499,380	166,882	666,212	1,514,342	71,222	27,676	9,742	3,211
9 mos., 1943.....	483,077	100,425	583,502	1,101,280	21,033	95,816	8,030	884
June 30, 1944.....	442,491	88,741	531,232	1,423,479	45,333	5,058	8,835	1,839
1945.....	535,545	199,585	725,130	1,263,275	152,521	19,448	10,733	1,117
1946.....	584,069	197,478	781,547	1,509,000	154,043	2,959	11,125	1,244
1947.....	571,474	43,739	615,213	1,322,496	7,945	42,409	10,800	630
1948.....	400,230	62,798	463,028	1,225,611	38,511	73,577	7,631	1,575
1949.....	431,421	106,213	537,634	1,413,096	132,332	65,870	8,420	1,157
1950.....	678,462	340,008	1,018,470	1,920,247	490,439	49,730	8,500	2,677
Total...	\$5,158,568	\$1,525,902	\$6,684,470	\$14,829,830	\$1,250,196	\$385,731	93,355	15,568
June 30, 1951.....	\$851,779	\$189,746	\$1,044,525	\$2,350,295	\$422,075	\$36,584	11,761	2,391
1952.....	736,024	67,889	793,413	1,121,564	94,972	22,521	11,244	3,109
1953.....	749,859	94,068	843,927	2,613,760	257,454	11,339	12,001	1,789
1954.....	1,131,004	68,279	1,200,883	3,072,649	400,828	56,861	12,263	4,074
1955.....	1,152,604	70,545	1,223,149	3,616,369	270,464	9,685	15,057	4,369
1956.....	1,643,621	69,153	1,712,774	4,202,692	566,970	22,832	25,615	1,637
1957.....	1,360,148	67,430	1,427,578	3,860,518	336,100	35,148	17,703	2,033

* Nine months to June 30, and the fiscal year from this time begins July 1.

COMMERCE OF VENEZUELA IN THE YEARS 1851-52.

Countries.	Vessels.		Tonnage.	
	Entered.	Cleared.	Entered.	Cleared.
Austria.....	...	2	...	474
Belgium.....	3	...	576	...
Brazil.....	1	...	203	...
Sardinia.....	9	10	2,015	1,895
Hanse Towns.....	43	49	14,257	11,680
Denmark.....	88	37	9,621	3,350
Spain.....	42	87	6,059	11,224
France.....	46	58	10,112	10,376
United States.....	124	153	23,777	31,374
Great Britain.....	515	1073	23,033	31,829
Hayti and St. Domingo.....	...	2	...	326
Mexico.....	...	4	...	472
New Granada.....	...	1	...	22
Netherlands.....	195	175	10,307	10,788
Other places.....	3	...	44	...
Total 1851-52....	1069	1651	100,004	113,810

FOREIGN TRADE OF VENEZUELA, THE NATIONS PARTICIPATING THEREIN, THE SHARE ASSIGNED TO EACH, AND THE AMOUNT OF DUTIES PAID BY EACH FLAG DURING THE YEAR 1854.

Countries.	Imports.	Exports.	Import Duties.
United States.....	\$1,180,445	\$2,420,936	\$313,679
Hanse Towns.....	733,005	1,197,035	295,917
England.....	1,649,813	273,212	712,870
France.....	632,712	1,077,592	221,954
Denmark.....	873,580	498,416	201,630
Spain.....	253,673	1,078,272	95,278
Holland.....	261,559	441,524	76,253
Mexico.....	2,682	106,006	0
Sardinia.....	27,710	38,311	11,340
Other countries.....	27,209	...	8,013
Venezuelan currency.....	\$5,692,388	\$7,139,804	\$1,936,943
Or, in U. S. currency.....	4,243,500	5,323,200	1,445,479

During the same year there entered the different ports of Venezuela 262 vessels, measuring an aggregate of 11,608 tons; and there cleared 392 vessels; with an aggregate of 17,645 tons—all under the national flag. Of foreign vessels there entered 494 vessels, measuring in all 76,760 tons; and there cleared 743 vessels, with an aggregate of 98,152 tons—making a total of 1237 vessels, and an aggregate of 174,912 tons, under foreign flags.

The Culture and Exportation of Cotton.—Notwithstanding many portions of the republic of Venezuela are well adapted to the cultivation of the cotton-plant, this branch of industry has been gradually declining during the past ten years. This has been attributed principally to two causes: 1st. The want of roads, or other artificial means of transportation, which reduces the planters to the necessity of employing mules to convey their produce to market; thus absorbing all the profit which this branch of industry might otherwise realize. 2d. The superior inducements which the cultivation of coffee, cocoa, and other tropical produce offer, as respects the amount of labor bestowed on their

production, the expense of transportation to market, and the price which such produce usually commands. To these may be added the superior quality of these latter products, for which Venezuela has acquired a high reputation in the markets of the world.

All cotton textiles which are consumed in the republic are imported from foreign countries. From the 1st July, 1849, to the 30th June, 1850, the total value of cottons imported amounted to \$253,586, namely: in national vessels, \$26,464; and in foreign vessels, \$227,122. During the same period, the exports of raw cotton reached 660,117 lbs., valued at \$44,248, viz.: in national vessels, 95,200 lbs., valued at \$5810; and in foreign vessels, 564,917 lbs., valued at \$38,438. The ports from which raw cotton was exported in 1849-'50, together with the quantities exported during that period, were as follows:

Puerto Cabello.....	461,924 pounds.
Maturin.....	98,200 "
La Guayra.....	90,693 "
La Vela.....	4,500 "
Ciudad Bolivar.....	2,800 "
Rio Coribe.....	2,000 "

From the above it will be perceived that, out of the fifteen ports of Venezuela, no cotton was exported from nine; among them being two of the most important—Cumana and Maracaibo—although the provinces of Cumana and Maracaibo are not only very extensive, but eminently adapted to the cultivation of this article. The species of cotton cultivated in Venezuela is what is denominated the long staple (black seed) of Louisiana and Georgia, and was introduced from the United States.

Commercial Regulations.—All foreign nations enjoy equal commercial privileges in Venezuela. Treaties exist between the republic and most of the governments of Europe and America. That with the United States was ratified May 31, 1836, and was to continue in force twelve years, with the usual twelve months' notice after that period. Such notice not having been given by either party, its provisions still continue in force. This treaty guarantees entire reciprocity and perfect liberty of trade, direct and indirect, between the two republics; and stipulates that all favors to other nations in respect of commerce and navigation, granted by either party, shall immediately become common to the other. Under the provisions of this treaty, and the commercial legislation of Venezuela, United States vessels enjoy the same privileges, and are subject to the same restrictions, as those of all other nations. American trade, however, would, it is thought, rest upon a firmer basis, and might be greatly extended by a new treaty with that republic, better adapted to the exigencies of present commercial relations than

that of 1836, entered into in the very infancy, political as well as commercial, of Venezuela.

In 1840, four years after the ratification of this treaty, the United States exported to that country 20,034 barrels of flour, valued at \$147,304. In 1854 our exports of that article reached 40,097 barrels, valued at \$318,732; showing an increase in the quantity and value of that one article, which we exchanged for the hides, coffee, and indigo of Venezuela, of 100 per cent.

The hides imported into the United States in 1840 amounted in value to \$288,372. In 1854 they reached as high as \$1,623,695; showing an increase, in that single article of our imports, of over 400 per cent. A more liberal tariff of duties on our flour and cotton goods in the ports of Venezuela would continue to augment still more largely this growing trade. The justice of such a measure will be obvious when it is considered that the principal article which the United States import from Venezuela (hides) is subject in our ports to a duty of 5 per cent. only; while the principal article which we furnish in exchange (flour) is taxed in its ports with a duty of \$4 per barrel, which, at a value of from \$12 to \$16 per barrel (its average price in the Venezuelan markets), is equal to 25 @ 30½ per cent., besides sundry other duties which are superadded before the article can get into market. These facts are sufficiently suggestive without further comment. Duties are levied on a valuation basis, though many articles in the tariff are liable to specific duties. Instead of specifying each extra charge separately, these heavy imposts can be best illustrated by an actual case:

Custom duties on 100 barrels American flour landed at the port of La Guayra, at \$4 per barrel import duty	\$400 00
10 per cent. on amount of duties on account of late internal war	40 00
2 per cent. on amount of duties for wharfage	8 80
2 per cent. road tax	8 80
	\$457 60
20 per cent. on aggregate amount; contribution extraordinary	91 52
	\$549 12
½ per cent. for the new church on \$457 60	2 29
Total duties, extras, etc.	\$551 41

NAVIGATION DUES.

Tonnage duties	\$0 37½ per ton = \$0 25 (U. S. cur'y.)
Anchorage	18 " = 12 "
Water	12 " = 9 "
Light-house	6 " = 4 "
Entrance	7 " = 5 "
Clearance	2 00 " = 1 54 "
To captain of the port	3 00 " = 2 25 "
To health officer	3 00 " = 2 25 "
To interpreter	3 00 " = 2 25 "

The ton is Venezuelan measurement, generally 12½ per cent. more than that of the United States. The value of Venezuelan money differs considerably, as already noted, from that of the other South American states, though of the same denomination. The following are the legal values of some of the foreign coins in circulation in Venezuela, as fixed by the law of May 30, 1848:

One dollar of the United States equal to	\$1 34½
One dollar of Peru equal to	1 84½
One dollar of Mexico equal to	1 84½
Five-franc piece of France equal to	1 25
One shilling of Great Britain equal to	81½
One guinea of Great Britain equal to	6 50

—*Com. Rel. U. S.*

Articles noted free in the tariff pay, in lieu of all extras, 15 per cent. One of the greatest impediments heretofore existing to the increase of American trade with Venezuela was the restriction imposed on the transshipment of American merchandise imported expressly for the markets of New Granada. Some years since, Maracaibo was declared a place of deposit for such merchandise—a measure of the greatest importance to commerce, as nearly half the imports at that port are destined for San José de Cucuta, in New Granada. The privilege thus granted was subsequently rendered nu-

gatory by severe restrictions and onerous duties. A more liberal decree, however, has very lately been promulgated (August 10, 1855), which must necessarily largely augment the imports into Venezuela, and thus promote the general commerce of the republic.—*See articles CARACCAS and LA GUAYRA.*

Venice (It. *Venezia*; Ger. *Venedig*; ancient, *Venetia*), a fortified city of Austrian Italy, formerly the capital of the republic of that name, on a cluster of small islands toward the northern extremity of the Adriatic, in lat. 45° 25' 53" N., long. 12° 20' 31" E. Population in 1851 about 128,000. The commerce of Venice, once the most extensive of any European city, is now comparatively trifling; and the population is gradually diminishing both in numbers and in wealth. Her imports consist of wheat and other sorts of grain from the adjoining provinces of Lombardy and the Black Sea; olive-oil, principally from the Ionian Islands; cotton stuffs and hardware from England; sugar, coffee, and other colonial products from England, the United States, Brazil, etc.; dried fish, dye-stuffs, etc. The exports principally consist of grain, raw and wrought silk, silk goods, glass wares, books, paper, woolen manufactures, fruits, cheese, etc., the products of the adjoining provinces of Italy, and of her own industry; but her manufactures, so famous in the Middle Ages, are now much decayed. The origin of Venice dates from the period of the invasion of Attila in 452, when a number of the inhabitants of Venetia, and other parts of Italy, taking refuge in the islands of the Adriatic, formed a confederation to oppose the barbarians. In 697 they elected, as the head of their government, a doge or duke (*dux*).

The Venetian states formed themselves into a republic in 809. In 997 they took possession of the town of Narenta, a nest of pirates, and thus commenced their maritime power; they afterward subjugated all the towns of Dalmatia. The crusades were a source of aggrandizement for Venice. At the end of the 12th century, the Venetians made themselves masters of part of the Morea, Corfu, Cephalonia, and Crete. During two centuries they monopolized the commerce of India by the route of Egypt; but they lost this on the discovery of the passage by the Cape of Good Hope. The state attained the height of its prosperity in the 15th century. It began to decline at the beginning of the 16th century, and its overthrow was completed by the French in 1797. By the treaty of Presburg in 1805, it was made over, with the provinces of the continent, to the kingdom of Italy, and was held by the French till 1814, when it reverted to Austria. In 1848 the Venetians revolted against the Austrians, and held the city for several months. The government of Venice comprises eight delegations, which bear the names of their capitals: Venice, Padua, Vicenza, Verona, Rovigo, Treviso, Belluno, and Udine. Population in 1850, 2,281,732; do. of provinces, 298,425. The Gulf of Venice is formed by the Adriatic, on the northeast coast of Italy, bounded by the Piave and Brenta.

Port.—The islands on which Venice is built lie within a line of long, low, narrow islands, running north and south, and inclosing what is termed the lagoon, or shallows, that surround the city, and separate it from the main land. The principal entrance from the sea to the lagoon is at Malamocco, about 1½ league south from the city; but there are other, though less frequented entrances, both to the south and the north of this one. There is a bar outside Malamocco, on which there are not more than 10 feet at high water at spring tides; but there is a channel between the western point of the bar and the village of San Pietro, which has 16 feet water at springs, and 14 at neaps. Merchant vessels usually moor off the ducal palace; but sometimes they come into the grand canal which intersects the city, and sometimes they moor in the wider channel of the Giudecca. Vessels coming from the south for the most part make Pirano or Rovigno, on the coast of Istria, where they take on board pilots, who carry them to the

bar opposite to Malamocco. But the employment of Istrian pilots is quite optional with the master, and is not, as is sometimes represented, a compulsory regulation. When one is taken, the usual fee from Pirano or Rovigno to the bar is 20 Austrian dollars. On arriving at the bar, ships are conducted across it and into port by pilots, whose duty it is to meet them outside, or on the bar, and of whose services they must avail themselves.

Money.—Formerly there were various methods of accounting here; but now accounts are kept, as at Genoa, in lire Italiane, divided into centesimi, or 100th parts. The lira is supposed to be of the same weight, fineness, and, consequently, value, as the franc. But the coins actually in circulation, denominated lire, are respectively equal in value to about ten cents. The latter are coined by the Austrian government.

Weights and Measures.—The commercial weights are here, as at Genoa, of two sorts: the *peso sottile* and the *peso grosso*. The French kilogram, called the *libra Italiana*, is also sometimes introduced.

100 pounds peso grosso	= 105.186 pounds avoirdupois.
"	= 127.830 pounds Troy.
"	= 47.698 kilograms.
"	= 98.435 pounds of Hamburg.
"	= 96.569 pounds of Amsterdam.
100 pounds peso sottile	= 66.428 pounds avoirdupois.
"	= 80.728 pounds Troy.
"	= 30.123 kilograms.
"	= 63.196 pounds of Hamburg.
"	= 60.986 pounds of Amsterdam.

The *moggio*, or measure for corn, is divided into 4 staja, 16 quarte, or 64 quartaroli. The staja = 2.27 bushels. The measure for wine, anfora = 4 bigonzi, or 8 mastelli, or 48 sechii, or 192 bozze, or 768 quartuzzi. It contains 137 English wine gallons. The botta = 5 bigonzi. Oil is sold by weight or measure. The botta contains 2 migliaje, or 80 miri of 25 lbs. peso grosso. The miro = 4.028 English wine gallons. The braccio for woolen = 26.6 English inches; the braccio for silks = 24.8 do. The foot of Venice = 13.68 English inches.

The foreign commerce of Venice in 1847 amounted in value to 36,500,000 francs. The revolutionary movements of 1848, the long siege which it endured, and the suspension of its privileges as a free port, completely paralyzed its commercial movements. In 1851 these privileges were restored, and the commerce of Venice has again resumed its wonted activity.

The imports into the port of Venice in the years 1847 and 1848 were:

1847.—Foreign imports	36,484,000 francs.
1848.—Foreign imports	3,322,000 "

IMPORTS AND EXPORTS TO AND FROM VENICE IN 1851 AND 1852.

Years.	Imports.	Exports.	Total Trade.
1851..... francs	25,800,800	6,754,100	32,554,400
1852..... "	35,798,700	14,206,300	50,005,000

It will thus be seen that the commercial movements of the port of Venice in 1852 exceeded in value the sum of 50,000,000 francs (nearly \$10,000,000), and show an increase over the totals of 1851 of 17,500,000 francs. This is to be attributed to the restoration of the commercial franchise of the port—an act of justice which was delayed until the operations of the second half year of 1851 had already commenced.

The following table exhibits the navigation of Venice during the two years under review:

1851.—Total vessels entered and cleared	1281, of 173,714 tons.
1852.—Total	" 1743, of 234,240 "

The following statement exhibits the imports and exports to and from Venice in 1853 compared with 1852:

Years.	Imports.	Exports.	Total Trade.
1853..... francs	38,798,700	15,604,700	54,403,400
1852..... "	35,798,700	14,206,300	50,005,000
Increase, 1853.	" 3,000,000	" 1,398,400	" 4,398,400

The coasting trade during the year 1853, added to the foregoing, figures a total of 20,544,400 francs, against 19,699,100 francs in 1852. Thus:

COASTING TRADE OF VENICE IN THE YEARS 1852 AND 1853.			
Years.	Imports.	Exports.	Total Trade.
1853..... francs	10,848,400	9,696,000	20,544,400
1852..... "	10,417,000	9,281,800	19,699,100
Increase, 1853.	" 431,100	" 414,200	" 845,300

The navigation of this port in 1853, compared with that of 1852, is thus given:

	Entered.		Cleared.	
	Vessels.	Tons.	Vessels.	Tons.
1852.....	942	135,462	801	98,778
1853.....	1025	139,253	949	127,262

During these years it appears that not a single American vessel entered that port, or cleared thence for the United States. This may seem strange when the eye is cast over the following list of leading articles imported into Venice in 1852:

	Francs.
Cereals.....	8,128,300
Olive-oil.....	4,491,400
Salted fish.....	4,471,500
Coal.....	3,780,000
Salt.....	2,490,900
Dried fruits.....	1,891,500
Twist (all kinds).....	1,959,200
Raw cotton.....	1,084,900
Wines and spirits.....	953,900
Iron and steel.....	861,200
Wax.....	704,900
Coffee and cocoa.....	427,900
Cheese.....	603,600
Sugar (brown and refined).....	1,484,600

From a consular return, dated Venice, April 24, 1856, it appears that there entered that port in November and December, 1855, two American vessels, measuring respectively 663 and 527 tons, having cleared from Richmond and bound to Palermo, after discharge of cargo, consisting of tobacco, valued at \$75,000. They left Venice for their destination in ballast. In January another American vessel, measuring 248 tons, entered in ballast, and cleared for Constantinople with a cargo of hay valued at \$2500.—*Com. Rel. U. S.*

Vera Cruz, the principal sea-port on the eastern coast of Mexico; lat. 19° 11' 52" N., long. 96° 8' 45" W. Population about 16,000. Opposite the town, at the distance of about 400 fathoms, is a small island on which is built the strong castle of San Juan d'Ulloa, which commands the town. The harbor lies between the town and the castle, and is exceedingly insecure; the anchorage being so very bad that no vessel is considered safe unless made fast to rings fixed for the purpose in the castle wall: nor is this always a sufficient protection from the fury of the northerly winds (*los nortes*), which sometimes blow with tremendous violence. Humboldt mentions, in proof of what is now stated, that a ship of the line, moored by nine cables to the castle, tore, during a tempest, the brass rings from the wall, and was dashed to pieces on the opposite shore.—*Nouvelle Espagne*, ed. 2de, iv. 59. Its extreme unhealthiness is, however, a more serious drawback upon Vera Cruz than the badness of its port. It is said to be the original seat of the yellow fever. The city is well built, and the streets clean; but it is surrounded by sand hills and ponds of stagnant water, which, within the tropics, are quite enough to generate disease. The inhabitants, and those accustomed to the climate, are not subject to this formidable disorder; but all strangers, even those from the Havana and the West India Islands, are liable to the infection. No precautions can prevent its attack; and many have died at Xalapa, on the road to Mexico, who merely passed through this pestilential spot. During the period that the foreign trade of Mexico was carried on exclusively by the *flota*, which sailed periodically from Cadiz, Vera Cruz was celebrated for its fair, held at the arrival of the ships. It was then crowded with dealers from Mexico and most parts of Spanish America; but the abolition of the system of regular fleets in 1778 proved fatal to this fair, as well as to the still more celebrated fair of Porto Bello. A light-house has been erected on the northwest angle of

the Castle of San Juan. The light, which is a revolving one of great power and brilliancy, is elevated 79 feet above the level of the sea.

For a considerable period after the town of Vera Cruz had thrown off the Spanish yoke, the Castle of San Juan d'Ulloa continued in possession of the Spaniards. During this interval the commerce of Vera Cruz was almost entirely transferred to the port of Alvarado, 12 leagues to the southeast. Alvarado is built upon the left bank of a river of the same name. The bar at the mouth of the river, about $1\frac{1}{2}$ mile below the town, renders it inaccessible for vessels drawing above 10 or 12 feet water. Large ships are obliged to anchor in the roads, where they are exposed to all the violence of the north winds, loading and unloading by means of lighters. Alvarado is supposed, but probably without much foundation, to be a little healthier than Vera Cruz. The trade has now mostly reverted to its old channel.

The commercial intercourse of the United States with Vera Cruz depends now solely on the regulations of the mother country (i. e., the capital). Local legislation has nothing to do with it, except as regards a few unimportant harbor dues, and municipal taxes imposed by the "ayuntamiento" (city council). The existing regulations are permanent in name, but may be regarded as temporary in fact, being liable to be changed at any moment by arbitrary decree, or utterly destroyed by "pronunciamiento." There are no privileges permitted the commerce of other nations which are denied to the United States, nor are there any restrictions imposed on the commerce of other nations and not on that of the United States. It is understood that the Danish commercial treaty is the least favorable to Mexico; but, practically, all nations may be regarded as on an equal footing. Mexico takes care to make no national distinctions, but she very frequently sells special privileges to individuals, as in the cases at San Blas, Mata-

moras, and Mazatlan. At Vera Cruz an immense amount of raw cotton is being imported from New Orleans, on the payment of about one half the duty indicated by the existing tariff—"permits" to import that article at a greatly reduced rate having been granted to favored individuals. The regular duty is three cents per pound, but permits can now be bought up at second hand at two cents per pound.

Verd [Cape] Islands. The Cape Verd Islands are situated 329 miles west of Cape Verd, between lat. $14^{\circ} 45'$ and $17^{\circ} 13' N.$, and long. $22^{\circ} 45'$ and $25^{\circ} 25' W.$ The Archipelago consists of the following ten islands: Sal, Boavista, Mayo, Santiago (St. James), the largest, Forgo, Brava, Grande, Rombo, St. Nicolão, and St. Luzia; and four islets, Branco, Razo, St. Vicente, and St. Antão. Area estimated at 1680 square miles. Population in 1850, 86,738. The white population in the whole Archipelago is to the colored as one to twenty. The surface of the islands is in general mountainous, and some of their peaks have a considerable elevation. The volcano of Pogo is 9157 feet in height. The soil is extremely various, but mostly fertile; the absence of trees and the scarcity of water are the causes of frequent and severe distress. Chief vegetable products, maize, rice, and French beans. Coffee, introduced in 1790, has completely succeeded; the cotton shrub is indigenous; indigo grows wild, and tobacco is cultivated in some of the islands; tropical fruits are abundant. The sugar-cane and the vine are cultivated, but the manufacture of wine is prohibited. The climate of these islands is much varied by extreme heats and droughts, no rain falling during some periods for three or four years. Hence the population are frequently subject to distress and suffering. These visitations have, on several occasions during the past few years, strongly appealed to the sympathies of the civilized nations of the world in behalf of the 87,000 inhabitants of these islands.—See article MEXICO.

COMMERCE OF THE UNITED STATES WITH THE CAPE DE VERD ISLANDS, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.		Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.	
Sept. 30, 1821.....	\$22,176	\$7,656	\$29,832	\$64,086	....	\$3,200	825	....
1822.....	34,941	35,832	70,773	47,422	\$97,525	17,073	1,049	....
1823.....	22,055	11,010	33,065	56,849	....	17,412	689	....
1824.....	51,019	21,665	72,684	66,805	2,277	30,142	1,781	67	
1825.....	60,072	18,967	79,039	39,592	....	32,650	2,680	....
1826.....	31,693	9,299	40,992	104,120	....	21,443	754	134
1827.....	80,010	24,155	104,165	77,425	....	24,600	2,129	....
1828.....	67,502	9,727	77,229	82,063	....	17,545	2,433	....
1829.....	68,528	18,477	87,005	26,460	....	7,068	3,268	83
1830.....	50,500	7,773	58,273	33,753	....	15,457	2,628	....
Total...	\$496,556	\$159,566	\$656,122	\$648,525	\$99,892	\$215,400	18,236	284	
Sept. 30, 1831.....	\$45,432	\$13,557	\$58,989	\$63,643	....	\$32,327	1,200	236
1832.....	66,588	19,437	86,025	87,706	\$400	27,631	2,643	162	
1833.....	162,033	44,987	207,020	39,318	1,453	11,570	5,944	816	
1834.....	79,511	25,836	105,347	40,633	1,250	20,028	3,391	....
1835.....	102,440	27,747	130,187	19,795	975	9,987	2,643	....
1836.....	67,210	8,246	75,456	18,813	4,100	5,422	2,987	....
1837.....	136,201	27,857	164,058	33,943	8,635	15,673	3,725	2148	
1838.....	96,941	8,933	105,874	29,174	800	9,396	3,224	538	
1839.....	77,138	8,415	85,553	59,523	680	4,160	3,336	....
1840.....	62,611	2,509	65,120	29,348	....	....	2,262	946
Total...	\$916,375	\$187,904	\$1,104,279	\$401,796	\$18,293	\$136,194	31,855	4876	
Sept. 30, 1841.....	\$66,926	\$13,226	\$80,152	\$42,661	\$3,603	\$9,360	1,996	....
1842.....	103,557	11,529	115,086	17,866	300	3,704	3,210	....
9 mos., 1843.....	52,227	4,978	57,205	4,713	....	3,200	1,302	167
June 30, 1844.....	65,258	5,299	70,557	4,836	....	3,000	1,697	382
1845.....	59,549	2,884	62,433	7,579	....	....	4,256	170
1846.....	31,037	655	31,692	857	....	....	1,004	115
1847.....	71,084	17,848	88,932	2,399	10,000	2,200	1,798	240	
1848.....	101,723	6,849	108,572	225	1,900	....	4,084	2038
1849.....	62,647	3,815	66,462	1,853	1,575	....	2,714	4773
1850.....	47,043	2,167	49,210	....	....	....	1,886	611
Total...	\$652,141	\$69,230	\$721,371	\$32,989	\$22,378	\$21,464	23,947	8929	
June 30, 1851.....	\$57,476	\$2,437	\$59,913	\$1,850	....	....	1,505	730
1852.....	54,425	9,651	64,076	18,129	\$4,100	....	1,693	1152
1853.....	23,275	1,604	24,879	41,053	....	\$13,957	2,181	....
1854.....	30,037	2,203	32,240	8,085	810	1,500	4,391	....
1855.....	56,496	3,120	59,616	24,300	3,443	7,000	5,743	243	
1856.....	51,415	2,294	53,709	36,910	489	12,053	3,188	400	
1857.....	63,108	1,395	64,503	25,905	....	12,000	2,662	545

* Nine months to June 30, and the fiscal year from this time begins July 1.

In 1842 the imports from the United States amounted to \$57,500, employing 16 vessels with an aggregate tonnage of 1610 tons. An export duty of \$5 58 per pipe is levied on wine. The duties on the principal imports from the United States are as follows:

Flour, per barrel.....	\$1 00
Corn, per bushel.....	6½
Rice, per pound.....	1
Staves (pipe), per 1000.....	1 60
Staves (hoghead), per 1000.....	1 80
Staves (barrel), per 1000.....	75
Lumber, per 1000 feet.....	1 90

Port charges in Madeira amount to about \$18 on a vessel of any tonnage, for health officer, government visits, and custom-house fees.—*For WEIGHTS and MEASURES, see p. 1943.*

Verdigris (Ger. *Grünspan*; Fr. *Vert-de-gris*, *Verdet*; It. *Verderame*; Sp. *Cardenillo*, *Verdete*, *Verde-gris*; Russ. *Jar*), a kind of rust of copper, of a beautiful bluish green color, formed from the corrosion of copper by fermented vegetables.

Its specific gravity is 1.78. Its taste is disagreeably metallic, and, like all the compounds into which copper enters, it is poisonous. It was known to the ancients, and various ways of preparing it are described by Pliny. It is very extensively used by painters and in dyeing; it is also used to some extent in medicine. The best verdigris is made at Montpellier; the wines of Languedoc being particularly well suited for corroding copper, and forming this substance. It is generally exported in cakes of about 25 lbs. weight each. It is also manufactured in this country, by means of the refuse of cider, etc. The goodness of verdigris is judged of from the deepness and brightness of its color, its dryness, and its forming, when rubbed on the hand with a little water or saliva, smooth paste, free from grittiness.—*THOMSON'S Chemistry; REES' Cyclopædia.*

IMPORTS OF VERDIGRIS INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Pounds.	Value.
Hamburg.....	1,057	\$302
England.....	790	195
British American colonies.....	200	41
France.....	30,301	9097
Spain.....	220	55
Total.....	32,548	\$6,600

None of this was re-exported, so that the whole may be set down for home consumption.

Verjuice (Ger. *Agrest*; Fr. *Verjus*; It. *Agresto*; Sp. *Agraz*), a kind of harsh, austere vinegar, made of the expressed juice of the wild apple, or crab. The French give this name to unripe grapes, and to the sour liquor obtained from them.

Vermicelli (Ger. *Nudeln*; Du. *Meeleepen*, *Propen*; Fr. *Vermicelli*; It. *Vermicelli*, *Tagliolini*; Sp. *Aletrías*), a species of wheaten paste formed into long, slender, hollow tubes, or threads, used among us in soups, broths, etc.—*See MACARONI.*

Vermilion. *See CINNABAR.*

Vermont, one of the United States of America, lies between lat. 42° 44' and 45° 00' 30" N., and long. 73° 20' W., and contains an area of 8000 square miles. Population in 1790, 85,589; in 1800, 154,465; in 1810, 217,895; in 1820, 235,764; in 1840, 291,948; and in 1850, 313,611.

Physical Features, etc.—This State presents a very considerable variety of surface. It is traversed from north to south by the Green Mountain range, some summits of which rise to a height of 4279 feet above the sea. About the centre of the State they divide into two ridges, the principal of which passes in a north-northeast direction into Canada. The Green Mountains are from ten to fifteen miles wide, much intersected by valleys abounding with springs and brooks, and are mostly covered with evergreens to their summits, from which they have derived their name. The rivers are inconsiderable; most of those flowing east are merely small tributaries of the Connecticut; those on the west side are larger; and the three principal, viz.,

Lamoille, Missisquoi, and Winooski, rise on the east side of the principal mountain range, which they break through and enter Lake Champlain.

Lake Champlain, a considerable body of water between the States of New York and Vermont, and penetrating for a few miles into Canada. It is 140 miles in length, and from 1 to 10 in breadth, lying nearly north and south; and contains a great number of small islands, most of which belong to Vermont. The Champlain Canal, 63 miles in length, connects it with the Hudson, and large steamboats and vessels of 100 tons navigate the lake from end to end. The scenery along its shores is highly picturesque, and its waters abound in salmon, salmon-trout, sturgeon, and other fish. Lake Champlain is navigable for large vessels, and has several good harbors on the Vermont side. It is of the greatest importance to Vermont by giving her facilities for internal commerce. From the shape of the lake it gives the large amount of coast line and length of navigation, and makes up for the deficiency of navigable rivers. The American commerce of Lake Champlain in 1856 was over 20,000 tons. The climate varies according to differences of level and other circumstances. It is healthy, although the winters are severe. The soil is fertile, but more suitable for pasturage than tillage. Wool is the staple production; sheep, horses, and cattle are raised in great numbers; marble, granite, and slate are abundant, and valuable quarries of each are worked; iron ore abounds in several localities throughout the State, and from the sulphuret of iron, in Strafford and Shrewsbury, coppers are extensively manufactured. Several mineral springs occur.

There were in this State in 1850, 2,601,409 acres of land improved, and \$1,524,413 of unimproved in farms; cash value of farms, \$63,367,227, and the value of implements and machinery, \$2,739,282. *Live Stock.*—Horses, 61,057; asses and mules, 218; milch cows, 146,128; working oxen, 48,577; other cattle, 154,143; sheep, 1,014,122; swine, 66,296; value of live stock, \$12,643,228.

Agricultural Products, etc.—Wheat, 535,955 bushels; rye, 176,233; Indian corn, 2,032,396; oats, 2,307,784; barley, 42,150; buckwheat, 209,819; peas and beans, 104,649; potatoes, 4,951,014; value of products of the orchard, \$315,255; produce of market gardens, \$18,853; pounds of butter made, 12,137,980; of cheese, 8,720,834; maple-sugar, 6,349,357; molasses, 5997 gallons; beeswax and honey, 249,422 lbs.; wool, pounds produced, 3,400,717; flax, 20,852; silk cocoons, 268; hops, 288,023; tons of hay, 866,153; clover seeds, 760 bushels; other grass seeds, 14,936; flaxseed, 939 bushels; and were made 659 gallons of wine. Value of home-made manufactures, \$267,710; of slaughtered animals, \$1,861,336.

Manufactures, etc.—There were in the State in 1850, 11 cotton factories, with a capital invested of \$197,500, employing 123 males and 207 females, producing sheetings, etc., valued at 280,300; 96 woolen factories, with a capital of \$1,015,175, employing 800 males and 812 females, manufacturing 3,130,400 yards of cloth, valued at \$1,820,769; three establishments making pig-iron, with a capital of \$88,000, employing 133 persons, producing pig-iron, etc., valued at \$80,000; 26 establishments, with a capital of \$290,720, employing 331 persons, and making 5000 tons of castings, etc., valued at \$460,831; 8 establishments, with a capital of \$62,700, employing 57 persons, manufacturing 2045 tons of wrought iron, valued at \$163,986; 83 flouring and grist mills; 321 saw-mills; 156 tanneries, with a capital of \$411,150, employing 397 persons, valued at \$587,466; 30 printing-offices; 2 daily, 1 semi-weekly, 31 weekly, and 2 monthly publications. There were on the 1st January, 1856, 8 railroads, with 516 miles of road finished and in operation. Capital employed in manufactures, \$5,001,377; value of manufactured articles, \$8,570,920. The principal places in the State are Montpelier, the capital, Burlington, Middlebury, Brattleboro, Norwich, St. Albans, and Castleton.

FOREIGN COMMERCE OF THE STATE OF VERMONT, FROM OCTOBER 1, 1820, TO JULY 1, 1857, SHOWING ALSO THE DISTRICT TONNAGE IN 1821, 1831, 1841, AND 1851.

Years ending	Exports.			Imports.	Tonnage cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821.....	\$263,330	....	\$263,330	\$15,987	901	40	....	1274
1822.....	249,216	\$8,478	257,694	60,899	854	40	....	....
1823.....	236,140	....	236,140	62,242	....	....	....	....
1824.....	208,258	....	208,258	161,854	665	35	....	....
1825.....	396,166	....	396,166	109,021	605	35	....	....
1826.....	884,202	....	884,202	228,650	....	....	....	....
1827.....	1,259,441	....	1,259,441	144,078	....	....	....	....
1828.....	239,610	....	239,610	177,539	....	....	....	....
1829.....	808,079	....	808,079	205,392	24,101	....	....	....
1830.....	658,256	....	658,256	140,059	19,290	....	....	....
Total.....	\$5,203,698	\$8,478	\$5,211,176	\$1,305,719	40,506	140	....	....
Sept. 30, 1831.....	\$925,127	....	\$925,127	\$166,206	20,201	....	....	877
1832.....	349,820	....	349,820	214,672	14,680	....	....	....
1833.....	377,399	....	377,399	523,260	35,106	....	....	....
1834.....	334,372	....	334,372	322,806	35,700	....	....	....
1835.....	328,151	....	328,151	217,853	36,813	....	....	....
1836.....	188,165	....	188,165	456,846	30,045	....	....	....
1837.....	139,693	....	139,693	342,449	27,011	....	....	....
1838.....	132,650	....	132,650	258,417	28,480	....	....	....
1839.....	193,886	....	193,886	413,513	44,766	....	....	....
1840.....	305,150	....	305,150	404,617	52,084	....	....	....
Total.....	\$3,273,413	....	\$3,273,413	\$3,320,639	324,966	....	....	....
Sept. 30, 1841.....	\$264,005	\$13,982	\$277,987	\$249,739	15,500	....	....	4330
1842.....	550,293	7,216	557,509	209,868	....	....	....	....
9 mos., 1843*.....	141,834	28,137	169,971	38,000	15,359	....	....	....
June 30, 1844.....	196,574	216,793	413,367	97,183	56,336	....	....	....
1845.....	138,976	328,631	542,607	61,997	52,728	....	....	....
1846.....	215,316	188,504	403,820	127,223	79,766	....	....	....
1847.....	231,985	282,313	514,298	239,641	72,064	....	....	....
1848.....	299,269	234,833	534,102	306,005	74,416	....	....	....
1849.....	299,938	383,981	688,869	147,721	97,218	325	....	....
1850.....	404,749	26,157	430,906	463,092	81,073	1,733	....	....
Total.....	\$2,817,939	\$1,715,497	\$4,533,436	\$1,957,409	542,460	2,108	....	....
June 30, 1851.....	\$761,712	\$304	\$762,016	\$691,268	104,114	17,734	....	3932
1852.....	216,083	172,025	388,108	192,593	42,973	14,606	....	....
1853.....	182,376	11,741	194,117	184,512	14,492	6,644	....	....
1854.....	310,078	1,135,166	1,445,244	237,279	29,808	10,154	....	....
1855.....	322,544	2,572,924	2,895,468	501,593	11,080	8,462	....	....
1856.....	350,607	630,843	1,081,450	1,560,118	20,637	19,737	....	....
1857.....	2-3,009	365,461	648,470	2,709,193	21,542	21,034	....	....

* Nine months to June 30, and the fiscal year from this time begins July 1.

Burlington, Vermont, is the principal port of the State. Its commerce by Lake Champlain, on a bay of which the town is built, is important, and its connections by railroad and steamboat afford it every facility in its prosecution. The harbor of Burlington is the best on the lake, and more vessels navigating the lake are owned here than at any other place. It is easy of access from the north and south, and to protect it from the west winds a breakwater 900 feet long was erected. Juniper Island is distant four miles from the wharf, and contains eleven acres of ground. A light-house was erected on this island in 1826; it is in the form of a truncated cone, thirty feet high, eighteen feet in diameter at the base, and twelve at the top, and is kept lighted at night during the season of navigation, from the middle of April to the 1st of December. Burlington has an extensive and fertile back country, and the mercantile business of the place amounts to about \$1,000,000 annually. Tonnage in 1853, 5875; in 1856 it was 7448 tons.

Vessels. See articles SHIPS and TONNAGE.

Victoria (formerly called **Australia Felix** and **Port Philip**), a British colonial territory, comprising all the part of Australia south of the rivers Murrumbidgee and Murray, between lat. 34° and 39° S., and long. 141° and 150° E., having on the northeast New South Wales, on the west the colony of South Australia, and on the south the ocean and Bass's Strait, separating it from Tasmania. Area, 98,000 square miles. Population in 1851, 77,345, of which 46,202 were males, and 31,143 females; in 1855, 800,000, and of these it is estimated that 5000 are aborigines. The territory derived its former name from the fine bay of Port Philip, near the centre of its coast line; besides which, here are the inlets Western Port, Corner Inlet, Lake King, Port Fairy, and Portland Bay, most of which afford good anchorage, and are the seats of in-

cient towns. Surface mostly undulating or level, separated into different river basins by hill chains. Temperature at Port Philip ranges from 32° to 90° in the year, and may average about 61° Fahr. Soil more fertile generally than in New South Wales, though around the borders are extensive tracts of barren land. For about 50 miles from the coast the country is almost every where of high fertility; there is also much good land on the banks of the Hume and Hovell; and although hitherto the corn raised has been inadequate for home consumption, and a supply has been imported from Tasmania, this colony bids fair to become a thriving agricultural region. Sheep and cattle rearing are, however, the principal occupations of the population, and in 1851 the live stock in the province amounted to 5,000,000 sheep, 16,500 horses, and 390,000 horned cattle. In the same year, 100 acres were planted with vines, and 1300 gallons of wine were made, chiefly near Geelong. Wheat, oats, barley, potatoes, salt from the lakes, pumice-stone, lava, and other volcanic products abundant in the western plains, are other chief articles of produce. Some veins of coal, and ores of copper, lead, and manganese, have been met with near the coast; but few, if any, mines are at present wrought. The principal towns are Melbourne and Geelong. The colony was formerly called Australia Felix, and was attached to New South Wales. It was formed into a distinct colony in 1850, under the name of the Province of Victoria. It was first settled by the British about 1834.

The commercial relations of the United States with the British possessions in Australia, New Zealand, and the Cape of Good Hope, are regulated by the orders of the local governments, within the limits prescribed to their authority by the legislation of the Imperial Parliament. The repeal of the British navigation laws abolished all the restrictions upon foreign commerce, which before that period secured to the British merchant the

monopoly of supplying the markets of these distant colonies. The trade is now open to all flags, and the vessels of every nation having commercial treaties with the mother country can freely and upon equal terms enter in the race of commercial competition. Co-operating with this liberal policy of the mother country, the discovery of gold in some of the Australian possessions in 1851 contributed largely to infuse new commercial life and vigor into that distant part of the globe. Some estimate may be formed as to the extent of the wonderful advance of these colonies in commercial and colonial greatness, the increase of their imports and exports, and the augmentation of their resources generally, by glancing over the subjoined statistics.

In 1843 the value of the imports of the colony of Victoria was \$1,229,840; that of their exports, \$1,539,830. Of this latter sum wool covered nearly \$1,000,000, all of which was shipped to Great Britain. Value of imports in 1847, \$2,188,480; of which \$1,592,120 were from Great Britain. Value of exports in 1847, \$3,342,555; of which wool covered \$2,829,025, distributing the balance (\$513,530) between the articles of beef, pork, horses, horned cattle, and tallow. Number of vessels in 1847, 423, with a tonnage of 47,885.

The following tables will exhibit the trade of the colony of Victoria from 1851 to the end of the first half of 1854:

	Imports.	Exports.
In the year 1851.....	\$4,379,140	\$4,181,210
" 1852.....	17,524,365	35,685,775
" 1853.....	70,473,235	45,412,870
In the half year of 1854.....	42,780,340	24,509,400

Amount of flour from the United States imported in 1853, 15,036 tons; and more than one half of the whole quantity imported. Amount imported from the United States in the half year of 1854, 3720 tons; or more than one-third of all imported.

The total exports from the United States to Australia for the year ending June 30, 1857, were as follows:

Boards.....	\$214,892	Tobacco.....	\$235,128
Manufac. of Wool.....	251,209	Boots and shoes.....	140,465
Bacon.....	111,088	Other articles.....	1,451,279
Flour.....	893,070	Total.....	\$3,297,181

AMERICAN VESSELS WHICH ARRIVED AT MELBOURNE FROM JANUARY, 1853, TO SEPTEMBER, 1854.

From New York.

Ships.....	52; average passage, 121 days.
Barks.....	22; " " 118 "
Brigs.....	2; " " 140 "
Schooners.....	7; " " 120 "

From Boston.

Ships.....	25; average passage, 112 days.
Barks.....	29; " " 118 "
Brigs.....	2; " " 127 "
Schooners.....	5; " " 124 "

Vessels, 173; aggregate tonnage, 77,639.

Four American brigs made the passage in 90 days, and one schooner in 91 days. These vessels were laden with flour, provisions, lumber, and general cargo. When the market is not overstocked, as was the case in 1853, American flour of the best quality (and none else need be exported) brings from \$15 60 to \$16 80 per barrel. Twelve dollars can be laid as the fixed market price for first quality flour, at least until the Australians pay more attention to agricultural pursuits, which will hardly be the case so long as they can find gold nuggets weighing 98½ lbs. each. American provisions, hams, bacon, butter, cheese, beef, pork, preserves, furniture, wooden houses, carriages, wagons, boots, etc., are much sought for in the markets of Victoria, and always command remunerative prices. The facilities for discharging and dispatching ships have greatly increased within the past year. Before that period, 90 days was considered good dispatch; now from 12 to 30 days is the time; and, indeed, 30 days is considered unwarrantably long.

It may be interesting, and not altogether inappropri-

ate, to notice in this place the astonishing production of gold in this colony, compared with the aggregate mining operations in other parts of the world, especially in California. The gold diggings in Victoria extend from long. 142° 35' to 147° 30', and from lat. 36° 20' to 37° 40', over districts embracing more than 300,000 square miles, or more than half the area of the colony.

VICTORIA GOLD.

	Ounces.	Amount.
From the end of September, 1851, to December 31, 1852.....	4,608,188	\$88,707,620
From December, 1852, to December, 1853.....	3,090,342	59,499,080
From December, 1853, to September, 1854 (by escort only).....	1,130,519	22,610,380
Total.....	8,829,049	\$170,807,080

COMPARISON OF THE AVERAGE YEARLY PRODUCE OF GOLD.

Victoria.....	\$60,000,000
California.....	55,000,000
Russia (Ural Mountains).....	20,000,000
Aggregate amount (annual) of Victoria, California, and Russian mines.....	\$135,000,000

—See articles AUSTRALIA and MELBOURNE.

Vikings, or Sea Kings, among the Danes or Normans leaders of piratical squadrons, who passed their lives in roving the seas in search of spoil and adventures. The younger sons of the Scandinavian kings or earls, having no inheritance but the ocean, naturally collected around their standards the youth of inferior order, who were equally destitute with themselves. These were the same who in England and Scotland, under the name of *Danes*, and on the continent under that of *Normans*, at first desolated the maritime coasts, and afterward penetrated into the interior of countries, and formed permanent settlements in their conquests.

Vine. The vine was known to Noah. A colony of vine-dressers from Phocæa, in Ionia, settled at Marseilles, and instructed the South Gauls in tillage, vine-dressing, and commerce, about 600 B.C. Some think the vines are aborigines of Languedoc, Provence, and Sicily, and that they grew spontaneously on the Mediterranean shores of Italy, France, and Spain. The vine was carried into Champagne, and part of Germany, A.D. 279. The vine and sugar-cane were planted in Madeira in 1420. It was planted in England in 1552; and in the gardens of Hampton-court palace is an old and celebrated vine said to surpass any known vine in Europe.—See GRAPES and WINE. The following is a tradition in relation to the vine: "When Adam planted the first vine and left it, Satan approached it, and said, 'Lovely plant! I will cherish thee'; and thereupon taking three animals, a lamb, a lion, and a hog, he slayed them at the root of the tree, and their blood has been imbibed by the fruit to this day. Thus, if you take one goblet of wine, you are cheered by its influence, yet are mild and docile as the lamb; if you take two goblets, you become furious, and rave and bellow like the lion; and if you drink of the third goblet, your reason sinks, and, like the hog, you wallow in the mire."—ASHIE. See WINE.

Vinegar (Ger. *Essig*; Du. *Azyn*; Fr. *Vinaigre*; It. *Aceto*; Sp. and Port. *Vinagre*; Russ. *Ukhus*; Lat. *Acetum*).—See ACID (ACETIC), for a description of vinegar. Vinegar was known nearly as soon as wine. The ancients had several kinds of vinegar which they used for drink. The Roman soldiers were accustomed to take it in their marches. The Bible represents Boaz, a rich citizen of Bethlehem, as providing vinegar for his reapers, into which they might dip their bread, and kindly inviting Ruth to share with them in their repast: hence we may infer that the harvesters at that period partook of this liquid for their refreshment—a custom still prevalent in Spain and Italy. It is conjectured that the vinegar which the Roman soldiers offered to our Saviour at his crucifixion was that which they used for their own drinking. There was, however, a kind of potent vinegar which was not proper for drinking till diluted.

EXPORTS OF VINEGAR FROM THE UNITED STATES FOR THE
YEAR ENDING JUNE 30, 1857.

Whither exported.	Gallons.	Value.
Swedish West Indies.....	249	\$44
Danish West Indies.....	540	59
Dutch West Indies.....	5,074	665
Dutch Guiana.....	401	75
Canada.....	56,674	8,250
Other British North American Poss.....	33,149	8,749
British West Indies.....	29,337	3,318
British Honduras.....	1,805	243
British Guiana.....	15,560	1,669
British Possessions in Africa.....	3,525	569
Other ports in Africa.....	539	101
British East Indies.....	1,588	294
French West Indies.....	500	60
Cuba.....	18,354	2,381
Porto Rico.....	396	58
Haiti.....	2,850	437
Mexico.....	6,860	1,085
Central Republic.....	40	5
New Granada.....	6,387	918
Venezuela.....	890	133
Argentine Republic.....	6,345	818
Chili.....	10,750	1,684
Peru.....	15,167	2,586
Sandwich Islands.....	2,422	485
China.....	2,857	368
Whale-fisheries.....	7,754	734
Total, 1856-'57.....	280,065	\$30,788

There were no imports of vinegar into the United States for the year 1857.

Viol and Violin. As the lyre of the Greeks was the harp of the moderns, so the viol and vielle of the Middle Ages became the modern violin. The viol was of various sizes formerly, as it is at present, and was anciently very much in use for chamber airs and songs. That of three strings was introduced into Europe by the jugglers of the 13th century. The violin was invented toward the close of the same century.—**ABBÉ LENGLET.** The fiddle, however, is mentioned as early as A.D. 1200, in the legendary life of St. Christopher. It was introduced into England, some say, by Charles II. in 1684.

Virginia, one of the United States of America, lies between lat. 36° 33' and 110° 48' N., and between long. 75° 25' and 83° 40' W. It is 370 miles long, and 200 miles broad at its greatest breadth, containing 61,352 square miles. Population in 1790, 747,610; in 1800, 886,149; in 1810, 974,622; in 1820, 1,065,366; in 1830, 1,211,272; in 1840, 1,230,797; and in 1850, 1,421,661.

Early History.—The coast of the country which we now name Virginia is said to have been known to the old Northmen. One of them, Gudleif Gudlaugson, is said to have sailed in the year 1028 so far to the south. He is supposed to have called the country *Huitramannaland*, the Land of the Whitemen, which may be considered the oldest and first name under which these regions became ever known to the Europeans.

The Spaniards, since 1520, included the land under the names of *Terra de Ayllon* and *Florida*, and the French, since 1563, under the name of *Nouvelle France*. The English invented the name Virginia at first (1583) for the country lying round Pamlico and Albemarle Sound. They composed this name, it is said, for two reasons: first, because it was discovered in the reign of their Virgin Queen, Elizabeth; and, secondly, "because the country seemed still to retain the virgin purity and plenty of the first creation, and the people there the primitive innocence."

They extended this name at once over a great part of the east coast, and particularly over the vicinity of Chesapeake Bay, which was already discovered from the Roanoke settlements, and which we see included under the name of Virginia on the first map of Virginia, 1590.

When, since 1606, the Chesapeake Bay was better explored and settled, and when it became the principal centre of the English settlements on the east coast, this region was, par excellence, called Virginia, sometimes New Virginia, while the former settlements and country round Albemarle Sound, then forsaken, were sometimes (for instance, on a map of Captain J. Smith) called

Old Virginia. This was, however, more a popular manner of denomination. The official or legal name of the country was, in the year 1606, by King James I. thus confined: He called Virginia, or the Virginian territory or coast, the whole east coast of North America, from the thirty-fourth to the forty-fifth degree of north latitude. This whole territory was divided by the royal patent into two parts, a northern and a southern. The southern commenced in the south at 34° north latitude, and ended in the north at about 40° north latitude. It was called the First Colony, or the Southern Settlements in Virginia, or Virginia proper.

When Captain J. Smith and Prince Charles invented and introduced (1616) for Northern Virginia the new name of New England, the appellation Southern Virginia disappeared, and was changed to Virginia.

By the separation of the territories of Maryland (1632), of Carolina (1629), and of Carolina (1668), the name and province of Virginia lost a great deal of their former extension, and received at last their present limits, between 38° and 36½° north latitude, so far as our coast is concerned. The changes of the boundaries toward the interior regions have no interest here for us.—**KOHL.**

Physical Features, etc.—As regards surface and soil, this State may be divided into four sections. The eastern includes a tract of about 100 to 120 miles in width, and is generally low and level, and in some places marshy. It has a light sandy soil, mostly covered with pines. West of the line of the head of tide-water the country becomes undulating and hilly, until it attains one continuous mountain elevation known as the Blue Ridge, crossing the entire width of the State. The alluvial lands in this tract are for the most part very fertile, those of James River especially being unusually productive. The third section includes the valley between the Blue Ridge and the Alleghany Mountains. This tract, though in parts broken by mountains, is generally the most fertile and healthy part of the State. The fourth section includes the country between the Alleghany chain and the Ohio. This portion, though in many places wild and broken, has a great deal of fine fertile land, and vast deposits of coal, iron, salt, etc. Gold is found in Fluvanna and Buckingham counties and vicinity; and many valuable mineral springs exist.

There were in this State in 1850, 10,360,135 acres of land improved; and 15,792,176 unimproved land in farms; cash value of farms, \$216,401,543; and the value of implements and machinery, \$7,021,772. *Live Stock.*—Horses, 272,403; asses and mules, 21,483; milch cows, 317,619; working oxen, 89,513; other cattle, 669,137; sheep, 1,310,004; swine, 1,829,843. Value of live stock, \$33,656,659.

Agricultural Products, etc.—Wheat, 11,212,616 bushels; rye, 458,930; Indian corn, 35,224,319; oats, 10,179,143; barley, 25,437; buckwheat, 214,898; peas and beans, 521,579; potatoes, 1,816,933; sweet potatoes, 1,813,634; rice, 17,154 lbs.; value of products of the orchard, \$177,137; produce of market gardens, \$183,047; pounds of butter made, 11,089,359; of cheese, 436,292; maple-sugar, 1,227,665 lbs.; molasses, 40,322 gallons; beeswax and honey, 880,767; wool, 2,860,765 lbs. produced; cotton, 3947; flax, 1,000,450; silk cocoons, 517; hops, 11,506 lbs.; tobacco, 56,803,227; hay, 369,098 tons; hemp, 88 tons; clover seeds, 29,727 bushels; other grass seeds, 53,428; flax-seed, 52,318 bushels; and were made, 5408 gallons of wine; value of home-made manufactures, \$2,156,312; of slaughtered animals, \$7,502,986.

Rivers, etc.—The Potomac River separates Virginia from Maryland. James River is the largest which belongs to this State. It is 500 miles in length, and flows from the mountains in the interior behind the Blue Ridge, through which it passes. It is navigable for sloops 120 miles, and for boats much farther, and

flows into Chesapeake Bay. The Appomattox is 130 miles long, and enters James River 100 miles above Hampton Roads, and is navigable 12 miles to Petersburg. The Rappahannock, 180 miles long, and navigable 110 miles for sloops, rises in the Blue Ridge, and flows into the Chesapeake. York River enters the Chesapeake 30 miles below the Rappahannock, and is navigable 40 miles for ships. The Shenandoah enters the Potomac just before its passage through the Blue Ridge. Of the rivers west of the mountains, the Great Kanawha rises in North Carolina, passes through this State and enters the Ohio. The Little Kanawha also flows into the Ohio. The Monongahela rises in this State, though it runs chiefly in Pennsylvania. The lower part of Chesapeake Bay lies wholly in this State, is 15 miles wide at its mouth, and enters the Atlantic between Cape Charles and Cape Henry.

Manufactures, etc.—There were in the State in 1850, 24 cotton factories, with a capital invested of \$1,893,200, employing 1148 males and 1578 females, producing articles valued at \$1,438,109; 41 woolen factories, with a capital of \$324,700, manufacturing woolen goods val-

ued at \$690,802. Total capital invested in manufactures, \$18,108,793. Value of manufactured articles, \$20,000,000. There were in January, 1856, 21 railroads, with 1295 miles of railroad finished and in operation, and 1180 in course of construction.

Principal Ports.—Alexandria, 100 miles from the Chesapeake Bay, lat. 38° 48' N.; long. 0° 8' W. from Washington. It is finely situated on the right bank of the Potomac, which has a depth of water here sufficient for vessels of the largest class, being about 24 feet at the wharves, and 40 feet in the channel. The tonnage in 1856 was 7221 tons. Norfolk, situated on the Elizabeth River, eight miles from Hampton Roads, Chesapeake Bay, in lat. 37° 12' N., and long. 76° 40' W. Its harbor is capacious and deep, easy of access, and safe in all weathers. The Roads are formed by an enlargement of James River at its mouth, in Chesapeake Bay, and they offer an anchorage unsurpassed in the world. On the opposite side of the river is Portsmouth, in connection with which it is the chief naval station of the Union. The tonnage of Norfolk in 1856 was 27,757 tons.

FOREIGN COMMERCE OF THE STATE OF VIRGINIA, FROM OCTOBER 1, 1820, TO JULY 1, 1857, SHOWING ALSO THE DISTRICT TONNAGE IN 1821, 1831, 1841, AND 1851.

Years ending	Exports.			Imports.	Tonnage cleared.		District Tonnage.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.	Registered.	Enrolled and Licensed.
Sept. 30, 1821.....	\$8,036,170	\$55,040	\$8,079,210	\$1,078,400	33,545	6,488	12,215	45,537
1822.....	3,209,852	7,537	3,217,389	864,162	30,122	7,413	.....	.....
1823.....	4,000,914	5,874	4,006,788	681,810	28,866	9,320	.....	.....
1824.....	3,276,478	1,086	3,277,564	639,787	45,677	8,070	.....	.....
1825.....	4,122,340	7,180	4,129,520	553,562	41,309	7,610	.....	.....
1826.....	4,596,077	655	4,596,732	635,438	50,134	8,069	.....	.....
1827.....	4,646,737	11,201	4,657,938	431,765	53,335	7,543	.....	.....
1828.....	3,324,616	15,567	3,340,183	375,238	42,758	7,278	.....	.....
1829.....	3,738,493	3,985	3,742,478	395,352	40,620	6,771	.....	.....
1830.....	4,788,804	2,480	4,791,284	405,730	43,715	4,305	.....	.....
Total...	\$38,775,481	\$108,560	\$38,884,041	\$6,061,303	410,781	73,162	.....	.....
Sept. 30, 1831.....	\$4,149,986	\$489	\$4,150,475	\$488,522	48,719	11,879	12,369	24,953
1832.....	4,433,916	16,734	4,450,650	553,639	56,783	19,383	.....	.....
1833.....	4,459,534	8,053	4,467,587	690,391	46,627	21,960	.....	.....
1834.....	5,469,240	13,855	5,483,095	837,325	49,868	17,097	.....	.....
1835.....	6,054,445	9,618	6,064,063	691,255	43,692	13,957	.....	.....
1836.....	6,044,028	148,012	6,192,040	1,106,814	42,612	16,719	.....	.....
1837.....	3,699,110	3,604	3,702,714	813,862	29,897	16,562	.....	.....
1838.....	3,977,895	8,233	3,986,128	677,142	19,779	9,711	.....	.....
1839.....	5,183,424	3,772	5,187,196	913,462	41,494	7,595	.....	.....
1840.....	4,769,937	8,253	4,778,190	545,058	43,460	6,218	.....	.....
Total...	\$48,301,515	\$220,756	\$48,522,271	\$7,217,497	426,331	141,381	.....	.....
Sept. 30, 1841.....	\$5,628,910	\$1,376	\$5,630,286	\$377,237	53,910	9,333	13,155	32,202
1842.....	3,745,227	5,159	3,750,386	316,705	45,122	10,618	.....	.....
1843.....	1,954,510	2,665	1,957,175	187,062	34,943	4,353	.....	.....
June 30, 1844.....	2,923,238	19,041	2,942,279	267,654	44,100	7,343	.....	.....
1845.....	2,101,045	3,536	2,104,581	267,658	36,180	4,621	.....	.....
1846.....	3,528,963	336	3,529,299	209,004	43,571	7,103	.....	.....
1847.....	5,645,668	12,706	5,658,374	356,127	63,116	35,072	.....	.....
1848.....	3,679,858	1,574	3,681,432	215,081	48,420	16,972	.....	.....
1849.....	3,369,422	4,316	3,373,738	241,535	58,989	10,589	.....	.....
1850.....	3,413,158	2,488	3,415,646	426,539	49,091	23,367	.....	.....
Total...	\$35,989,999	\$53,167	\$36,043,166	\$2,855,062	475,442	129,171	.....	.....
June 30, 1851.....	\$3,037,444	\$2,624	\$3,040,068	\$552,933	34,161	31,136	16,337	52,462
1852.....	2,721,707	2,650	2,724,357	735,858	37,384	29,089	.....	.....
1853.....	3,302,561	4,230	3,306,791	809,004	35,004	27,006	.....	.....
1854.....	4,752,218	1,530	4,753,748	1,276,216	52,663	30,667	.....	.....
1855.....	4,346,329	33,599	4,379,928	855,405	43,790	22,942	.....	.....
1856.....	5,439,622	6,745	5,446,367	692,375	43,679	24,048	.....	.....
1857.....	7,234,330	15,379	7,249,709	1,630,154	60,224	22,506	.....	.....

* Nine months to June 30, and the fiscal year from this time begins July 1.

Vitriol. See COPPERAS.

Vitriol, Oil of. See ACID (SULPHURIC).

IMPORTS OF VITRIOL INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Blue or Roman.		Oil of.	
	Pounds.	Value.	Pounds.	Value.
Hamburg.....	17,320	\$1051	1480	\$55
Bremen.....	9,402	715	191	43
Belgium.....	2,040	135	.....	..
England.....	66,388	3904	.....	..
Canada.....	340	16	.....	..
British West Indies.....	200	13	.....	..
Total.....	15,690	\$5834	1671	\$18

Voyages. The first great voyage, or voyage prop-

erly so called, was by order of Necho, pharaoh of Egypt, when some Phœnician pilots sailed from Egypt down the Arabic Gulf, round what is now called the Cape of Good Hope, entered the Mediterranean by the Straits of Gibraltar, coasted along the north of Africa, and at length arrived in Egypt, after a navigation of about three years, 604 B.C.—BLAIR, HERODOTUS. The first voyage round the world was made by a ship, part of a Spanish squadron which had been under the command of Magellan (who was killed at the Philippines Islands in a skirmish) in 1519-'20. The era of voyages of discovery was the end of the 18th century.—See COMMERCE, *History of*; PACIFIC OCEAN, etc.

W.

Wages. The wages of sundry workmen in England were first fixed by act of Parliament, 25 Edward III., 1350. Hay-makers had but one penny a day. Master carpenters, masons, tilers, and other coverers of houses, had not more than 8d. per day (about 9d. of the present currency, sterling), and their servants 1½d. —*VINER'S Statutes.* By the 23d Henry VI., 1444, the wages of a bailiff of husbandry was 28s. 4d. per annum, and clothing of the price of 6s., with meat and drink; chief hind, carter, or shepherd, 20s.; clothing, 4s.: common servant of husbandry, 15s.; clothing, 40d.: woman-servant, 10s.; clothing, 4s. By the 11th Henry VII., 1495, there was a like rate of wages, only with a little advance; as, for instance, a free mason, master carpenter, rough mason, bricklayer, master tiler, plumber, glazier, carver, or joiner, was allowed from Easter to Michaelmas to take 6d. a day, without meat and drink; or with meat and drink, 4d.; from Michaelmas to Easter, to abate 1d. A master having under him six men was allowed 1d. a day extra. The following were the wages of harvest-men in England at different periods:

Years.	Per Diem. s. d.	Years.	Per Diem. s. d.
1350.....	0 1	1749.....	0 10
1460.....	0 2	1760.....	1 0
1568.....	0 4	1788.....	1 4
1632.....	0 6	1794.....	1 6
1683.....	0 8	1800.....	2 0
1716.....	0 9	1840.....	3 0

Wake, the track of a ship which she leaves in the water. A vessel directly astern of another is said to be in her wake.

Wales, a peninsular portion of South Britain, on its west side, between lat. 51° 28' and 53° 26' N., and long. 2° 41' and 5° 17' W., having on the east the English counties of Chester, Salop, Hereford, and Monmouth, and on other sides the Bristol and St. George's channels and the Irish Sea.

Agriculture is extremely backward. Barley and oats are the chief grains raised; the culture of potatoes and turnips is extending. Farms mostly small, averaging in South Wales only from 50 to 60 acres, where, however, the tenantry are far better lodged than in the north. Large numbers of cattle are reared for the English markets. The number of sheep is estimated at 1,250,000, and the annual produce of wool at 10,000 packs. A hardy small breed of ponies is reared, especially in the counties of Montgomery and Merioneth. The mining interest is highly important. Iron, copper, lead, silver, slate, limestone, and in the south large quantities of coal are raised, which last product is extensively exported, and used in large quantities on the spot for smelting both British and foreign ores. In 1840 South Wales had 132 furnaces in operation, consuming annually about 1,436,000 tons of coal, and producing 505,000 tons of iron; and North Wales 12 furnaces, consuming 110,000 tons of coal, and producing 26,500 tons of iron. The principal iron-works are at and around Merthyr-Tydvil, Tredegar, Aberdare, and Rhubabon; at Swansea large quantities of American and other copper ores are reduced. Manufactures of woolen fabrics, especially of flannel and hosiery, are very generally pursued in the cottages of the peasantry, particularly in North Wales, where Welshpool is the chief mart for these products. The cotton manufacture has extended into some of the northern counties; and in 1847, 1860 hands were employed in woolen, cotton, and silk factories. A manufactory of slate articles exists at Bangor. Trade principally in the export of mineral produce, cattle, and woolen goods. Principal ports, Swansea, Newport, Cardiff, Caernarvon, and Beaumaris; besides which Holyhead is a chief packet station for communication with Ireland, and Milford is a naval port, and the seat of a government dock-yard. —See articles ENGLAND and GREAT BRITAIN.

Walnuts, the fruit of the *Juglans*, or walnut-tree, of which there are several varieties. The walnut is a large, handsome tree, with strong spreading branches. The fruit is a pretty, large, smooth, ovate nut, containing an oily kernel divided into four lobes. The nut has been always held in high estimation; it was called by the Romans *Jovis glans*, the acorn or mast of Jove, and hence the name of the tree.

The walnut-tree is indigenous to Persia and the countries bordering on the Caspian Sea. Previously to the very general introduction of mahogany, the wood of the walnut-tree was generally, and is yet extensively used in making of furniture. It is much used by turners, and is superior to every other sort of wood for the mounting of guns. Great numbers of walnut-trees are annually consumed in the Haute Vienne and other departments of France, in the manufacture of the wooden shoes or clogs used by the peasantry. The nuts are either gathered when ripe, being served up at desserts without any preparation, or they are plucked green and pickled.—*POIRET, Histoire Philosophique des Plantes*, tome vii.; *REES'S Cyclopædia*, etc.

Wampum (from *Wampi* or *Wompi*, signifying, in the Massachusetts Indian language, *white*, the color of the shells most frequent in wampum belts), shells, or strings of shells, used by the American Indians as money. These, when united, form a broad belt, which is worn as an ornament or girdle. It is sometimes called *wampumpague*, or *wampeague*, or *wampampeague*, of which *wampum* seems to be a contraction.

Wanghees, sometimes called Japan canes, a species of cane imported from China. They should be chosen pliable, tough, round, and taper; the knots at regular distances from each other, and the heavier the better. Such as are dark-colored, badly glazed, and light, should be rejected.—*MILBURN'S Orient. Com.* See article CANE.

Warehousing System. By this system is meant the provisions made for lodging imported articles in public warehouses at a reasonable rent, without payment of the duties on importation till they be withdrawn for home consumption. If re-exported, no duty is claimed.

Expediency and Origin of the Warehousing System.—

It is laid down by Dr. Smith, in one of his justly celebrated maxims on the subject of taxation, that "every tax ought to be levied at the time and in the manner that is most likely to be convenient for the contributor to pay it."—*Wealth of Nations*. No one can doubt the soundness of this maxim; and yet it was very strangely neglected, down to 1803, in the management of the customs. Previously to this period, the duties on most goods imported had either to be paid at the moment of their importation, or a *bond*, with sufficient security for their future payment, had to be given to the revenue officers. The hardship and inconvenience of such a system is obvious. It was often very difficult to find sureties; and the merchant, in order to raise funds to pay the duties, was frequently reduced to the ruinous necessity of selling his goods immediately on their arrival, when, perhaps, the market was already glutted. Neither was this the only inconvenience that grew out of this system; for the duties having to be paid all at once, and not by degrees as the goods were sold for consumption, their price was raised by the amount of the profit on the capital advanced in payment of the duties; competition, too, was diminished in consequence of the greater command of funds required to carry on trade under such disadvantages; and a few rich individuals were enabled to monopolize the importation of those commodities on which heavy duties were payable. The system had, besides, an obvious tendency to discourage the carrying trade. It prevented this country from becoming the entrepôt for

foreign products, by hindering the importation of such as were not immediately wanted for home consumption; and thus tended to lessen the resort of foreigners to our markets, inasmuch as it rendered it difficult, or rather impossible, for them to complete an assorted cargo. And in addition to all these circumstances, the difficulty of granting a really equivalent drawback to the exporters of such commodities as had paid duty, opened a door for the commission of every species of fraud.

Warehouses, in which unclaimed and bonded merchandise shall be stored, will hereafter be known and designated as follows:

1st. Stores owned by the United States, or hired by them, prior to the date of these instructions, the leases of which have not yet expired or been canceled. All unclaimed goods must be stored in these stores when there are such at the port available for the purpose; and they are also to be used for the storage of other foreign merchandise, as hereinafter provided. All the labor in these stores shall be performed under the superintendence of the officer in charge, at the expense of the owner or importer of the merchandise; and all charges for storage, labor, and other expenses accruing on the goods, shall not exceed the regular rates for such objects at the port.

Stores of this description will be known and designated as Class 1.

2d. Stores in the possession of an importer and in his sole occupancy, which he may desire to place under the customs lock, in addition to his own lock (said locks to be of a different character), for the purpose of storing dutiable merchandise imported by himself only.

The entire store shall be appropriated to this sole purpose, under the regulations hereinafter provided; and for the time of the customs officer necessarily required in attendance at such store, the proprietor shall pay monthly to the collector of the port a sum equivalent to the pay of such officer. All the labor on goods so stored must be performed by the importer at his own expense, under the supervision of the officer in charge. Before any importer shall be permitted to use his own store for such purpose, he shall enter into a bond in such sum and with such securities as may be approved by the collector and this Department.

Stores of this description will be known and designated as Class 2.

3d. Stores in the occupancy of persons desiring to engage in the business of storing dutiable merchandise under the warehouse acts, and of performing the labor on such goods, in what is usually termed the storage business. The labor performed on the goods in stores of this class shall be under the control and expense of the owner or occupant; and the store shall be subject to such further rules as this Department may deem necessary, from time to time, for the safe-keeping of the goods and protection of the revenue, and to be discontinued as a bonded warehouse when the public interest may require. All arrangements as regards the rates of storage and the price of labor in these stores must be made between the importer and the owner or occupant of the store, and all amounts due for storage and labor must be collected by the latter, the collector looking only to the safe custody of the merchandise for the security of the revenue.

Before any person shall be permitted to open a store of this description, he shall enter into bond in such sum and with such securities as may be approved by the collector and this Department.

Unclaimed and seized goods may be stored in this class of stores on the order of the collector; and the proprietor or occupant shall look to the goods for the storage and charges, at the usual and customary rates, and shall be liable for the safe-keeping of the merchandise as for other storage. The collector shall give no permit to withdraw such goods without payment of the legal duties and charges; and, if sold, shall cause the

storage and charges to be paid out of the proceeds of the sale.

Stores of this description will be known and designated as Class 3.

These stores shall be placed in charge of an officer of the customs, under the separate and different locks of the custom-house, and the owner or occupant acting as agent for the importers warehousing their merchandise in such stores. Should the amount of business at any one store require, in the judgment of the collector, the services of more than one officer, the owner or occupant shall be required to pay monthly such additional sum as will be equivalent to the salary of such officer or officers.

4th. For the storage of wood, coal, mahogany, dyewoods, lumber, molasses, sugar in hogsheads and tierces, railroad, pig, and bar iron, anchors, chain cables, and other articles specially authorized, yards or sheds of suitable construction may be used, to be bonded in the manner herein before prescribed. These yards must be inclosed by substantial fences not less than twelve feet in height, with gates provided with suitable bars and other fastenings, so as to admit of being secured by customs locks, and must be used exclusively for the storage of the above-named merchandise, duly entered for warehousing by the owner or occupant, or for the purpose of general storage of warehoused goods; the purpose to be set forth in the application, and the bond to be taken accordingly, as in case of warehouses of the second and third classes. The sheds must be substantially constructed, with or without flooring or roofing, as this Department and the collector may require; and, when required, the roof or exterior shall be covered with slate or metal. The doors and other openings must be provided with suitable fastenings, and be secured by the different and separate locks of the occupant and the customs; and the occupant shall provide a proper room for the use of the officer in charge. Collectors of the customs may order unclaimed and seized merchandise of the description authorized (when duly entered), to be deposited in sheds or yards, to be placed in such sheds or yards under the same regulations and conditions as are provided for the deposit of unclaimed or seized goods in warehouses of Class No. 3.

Sheds and yards of the foregoing description will be designated and known as Class 4.

The owner or lessee of a store occupied for general business purposes may use the cellar or vault of such store, under the conditions hereinafter prescribed, as a bonded warehouse of Class 2, for the storage of wines and distilled spirits only, and exclusively of his own importation.

The entire cellar or vault shall be appropriated to this purpose, and shall have no opening or entrance except the one from the street, on which the separate and different locks of the customs and the owner or proprietor of the cellar shall be placed; and a bond shall be entered into by the owner according to the foregoing form of stores of Class 2.—For articles on Warehousing and Dock System, see HUNT's *Merchants' Magazine*, vii., xiv., xv.; DE BOW's *Rev.*, i.; NILES's *Register*, xxxv., xxxvi.

Warp, in weaving, the *longitudinal* threads of a woven fabric; they are crossed by the *transverse* threads, or *woof*. **Warp**, a rope or hawser employed occasionally to remove a ship from one place to another in a port, road, or river. Hence to *warp* is to change the position of a ship by pulling her from one part of a harbor, etc., to some other, by means of warps, which are attached to buoys, to other ships, to anchors sunk in the bottom, or to certain stations upon the shore, as posts, rings, trees, etc.

Washington, the capital of the United States of America, is situated on the left bank of the Potomac, at its confluence with the Anacostia, and at the termination of the Washington branch of the Baltimore and

Ohio Railroad. Lat. (of the National Observatory) $38^{\circ} 53' 39''$ N., long. $77^{\circ} 2' 48''$ W. from Greenwich, England. It is 295 miles from the ocean by the course of the river, 38 from Baltimore, and 225 from New York. The population in 1800 was 3210; in 1810, 8208; in 1820, 13,247; in 1830, 18,827; in 1840, 23,864; in 1850, 45,000; and in 1854, 46,000.

The *Navy Yard* is situated on the "Anacostia," a branch of the Potomac River, at the southern termination of Eighth Street, east. It covers an area of about twenty acres, and is inclosed by a substantial brick wall, having a principal entrance at the foot of Eighth Street, through a handsome arched gateway. The mechanical operations of this establishment are various and extensive, and the skill of the workmen and the excellence of the materials employed have been satisfactorily tested in every sea. Anchors of various sizes, for the naval service, are manufactured by the use of two heavy steam-hammers (termed the "Nasmyth Hammer"), one of which weighs 3600 lbs., the other 2240 lbs. The forges for this work are kept in blast by a fan-blower attached to the steam-engine in the machinist's department. There is also in operation, in the anchor department, a direct action steam-hammer (called the "Kirk Hammer"), in connection with a blast furnace for working up into looms and bars all the scrap iron of the navy. The massive chain cables are made in another shop, which is provided with a powerful hydrostatic press for testing their strength. —See article DISTRICT OF COLUMBIA for commerce of Washington.

Washington, a territory of the United States of America, lies between lat. $45^{\circ} 25'$ N., long. $108^{\circ} 30'$ and $124^{\circ} 30'$ W. Area, 113,821 square miles. It is between the Rocky Mountains on the east and the Pacific Ocean on the west, has Oregon on its south border, and the British possessions on the north. The entire population in 1850 was 1201; in 1854, estimated at 5000. It is divided into six counties, viz.: Clark, Lewis, Pacific, Pierce, Stevens, and Thurston. The country west of the Cascade Range is the only portion yet settled by a white population; it has a diversified surface, and the valleys bordering the streams have a luxuriant soil. The streams are small, the Cowlitz and other small streams entering the Columbia River on the south, the Chickeelas entering Gray's harbor on the west, and a number of other streams entering Puget Sound on the northwest. Puget Sound, Hood's Canal, and Admiralty Inlet abound with fine harbors. The Cascade Range crosses the territory from the south (at the Cascades, on the Columbia River) entirely across it to the north, rising in several peaks above the snow line, as Mount St. Helens (an active volcano), Mount Rainier, Mount Baker, etc. East of this range little is known of the capabilities of the country as an agricultural region, although there is no doubt of its being well adapted for stock raising. It is drained by the constituents of the Columbia, consisting of Kooskoosky and Peloose rivers of the Lewis Fork, and Spokane, Okonagan, Barrier, and Yakima rivers of Clark's Fork, and Cathalacades entering the Columbia River.

The Strait of *Juan de Fuca*, including the waters of Admiralty Inlet, Hood Canal, and Puget Sound, with the Archipelago of Arro up to the 49th parallel, were all surveyed by the United States Exploring Expedition. The whole is unsurpassed by any estuary in the world. They comprise many very fine harbors and safe anchorages, are entirely free from dangers, and cover an area of about 2000 square miles. The country by which these waters are surrounded is remarkably salubrious, and offers every advantage for the accommodations of a vast commercial and military marine, with conveniences for docks, and many sites for towns and cities, at all times well supplied with water, and capable of being provided with all needful supplies from the surrounding country, which is well adapted for agriculture. This strait is ninety-five miles in

length; average width eleven miles (entrance eight miles in width); no dangers exist, and it may be safely navigated throughout. This territory was separated from Oregon in the year 1853, and constituted a separate territory. —HARPER'S Gazetteer.

Watches (Ger. *Uhren*, *Taschenuhren*; Fr. *Montres*; It. *Oriuoli da tasca*, o *da succoccia*; Sp. *Relojos de faltriguera*; Russ. *Karmannie tschasui*), portable machines, generally of a small size, and round, flat shape, that measure and indicate the successive portions of time, having for the most part their motions regulated by a spiral spring. When constructed on the most approved principles, and executed in the best manner, a watch is not only an exceedingly useful, but a most admirable piece of mechanism. It has exercised the genius and invention of the most skillful mechanics, as well as of some of the ablest mathematicians, for nearly three centuries. And, considering the smallness of its size, its capacity of being carried about uninjured in every variety of position, the number and complexity of its movements, and the extraordinary accuracy with which it represents the successive portions of time as determined by the rotation of the earth on its axis, we need not wonder at Dr. Paley having referred to it as a striking specimen of human ingenuity. Spring watches are constructed nearly on the same principle as pendulum clocks. Instead of the pendulum in the latter, a spring is used in the former, the isochronism of the vibrations of which corrects the unequal motions of the balance.

Historical Notice.—The invention of spring watches dates from about the middle of the 16th century, and has been warmly contested for Huygens and Hooke. The English writers generally incline in favor of the latter. Dr. Hutton says (*Mathematical Dictionary*, art. WATCH) that the words "Rob. Hooke invenit, 1658," were inscribed on the dial plate of a watch presented to Charles II. in 1675. But Montucla affirms (*Histoire des Mathématiques*, tome ii. p. 413, ed. 1800) that Huygens made this "*belle découverte*" in 1656, and presented a spring watch to the states of Holland in 1657. Comparing these statements, it certainly appears that the claim of Huygens to the priority of the discovery is the better established of the two. We do not, however, believe that either of those distinguished persons owed, in this respect, anything to the other. The probability seems to be, that the happy idea of employing a spring to regulate the motion of watches occurred to them both nearly at the same time.

Improvement of Watches.—Owing to the facility with which the longitude may be determined by the aid of accurately going watches, it is of great importance to have them made as perfect as possible. In this view, liberal premiums have been given to the makers of the best marine watches, or chronometers. In the reign of Queen Anne, Parliament offered a reward of £20,000 to any one who should make a watch, or other instrument capable of determining the longitude at sea, within certain limits. This magnificent premium was awarded, in 1764, to the celebrated John Harrison, for a marine watch, which, being tried in a voyage to Barbadoes, determined its longitude with even more than the required accuracy. Other premiums, though of inferior amount, were subsequently given to Messrs. Mudge, Arnold, Earnshaw, etc. Since 1822, two prizes, one of £300 and one of £200, have been annually given to the makers of the two chronometers adjudged to be the best, after having been submitted to a twelve-month's trial at the Royal Observatory at Greenwich. And to such perfection has the manufacture attained, that some of the chronometers employed by navigators, though carried into the most opposite climates, have not varied to the extent of two seconds in their mean rate of going throughout the year.

Watch Manufacture.—The watch-making business is largely carried on in London; the artists of which have attained to a high degree of excellence in this de-

partment. There may be about 14,000 gold and 85,000 silver watches annually assayed at Goldsmiths' Hall, London (*Jacob on the Precious Metals*, vol. ii. p. 413), the aggregate value of which is, probably, not much under £600,000. The manufacture is also carried on to a considerable extent at Liverpool, Coventry, Edinburgh, etc. Watch movements used to be extensively manufactured at Prescot, in Lancashire; but latterly, we believe, the manufacturers have been withdrawing to Liverpool. On the Continent watches are principally manufactured in Paris, Geneva, and in Neuchâtel. Some of the French and Swiss watches, particularly the latter, are excellent; but, generally speaking, they are slight, and inferior to those made in London. Paris and Geneva watches are largely exported to foreign countries, and are every where in high estimation, particularly among the ladies. Watches impressed with any mark or stamp, appearing to be or to represent any legal British assay mark or stamp, or purporting by any mark or appearance to be of the manufacture of the United Kingdom, or not having the name and place of abode of some foreign maker abroad visible on the frame and also on the face, or not being in a complete state, with all the parts properly fixed in the case, may not be imported into the United Kingdom, even for the purpose of being warehoused. —3 and 4 Will. IV., c. 52, § 58.

Watches in China.—Large numbers of European watches are imported into China; and it may be worth mentioning, as a curious instance of the diversity of tastes, that the Chinese, as well as most other Eastern nations, who can afford it, uniformly wear watches in pairs! This sort of extravagance is not, however, confined to watches, but extends to a variety of other articles. Shawls, for example, are invariably worn in India in pairs of exactly the same pattern; and it is hardly possible, indeed, to find a native dealer who will sell a single shawl.

Watches and Clocks.—Out of thirty-one clock manufactories in New England in 1852, four have been destroyed by fire, nine have stopped by failure, and five have stopped manufacturing on account of small profits. There are still thirteen factories making clocks, but only six of them are running full time, and with a full complement of hands. These six will produce about 95,000 clocks this year. The remaining seven factories will make about 48,000 clocks, so that the total production of clocks this year will not exceed 143,000.

The Jerome Manufacturing Company, in 1853 and 1854, produced each year 444,000 clocks. Thus they must have produced more than an average of one clock per minute. The factory of J. C. Brown, during 1851 and 1852, issued from 80,000 to 100,000 clocks annually, making a total from the two establishments of over 500,000 clocks each year. The Ansonia Company manufactured about 150,000 last year. Thus it will be seen that all the thirteen factories now running will make hardly one-fourth of what was produced by three of the large factories now standing still. The question naturally arises, What shall we do for low-priced clocks in the future? There is still a large amount of fancy clocks on hand, but the wooden-frame "ogee" and "sharp-top Gothic" clocks are not being made, and there is comparatively none in the market. The wooden-frame clocks can not be made for the prices that they have been sold at. It is estimated that nearly half a million of dollars have been lost in selling clocks under the cost within the last three years. The clocks for exportation have amounted to about one million of dollars annually, which aided us in the exchanges with the old country. As an instance, we know one house that imports shawls, linen, collars, and lace goods from Scotland, and makes its exchange in clocks. But if they were to send a bill of exchange it would cost them from 7 to 8 per cent.; but sending out clocks at 5 per cent. profit or more, it makes them

at least 13 per cent. on the clocks, which is a paying business. There are doubtless many similar agents in the exportation of the article, which is an advantage to ourselves; and for this reason we desire to see it fostered, and again take its place among the industrial products of our country.—See HUNT's *Merchants' Magazine*, January, 1857.

The following table shows the value of clocks imported into and exported from the United States during the year ending June 30, 1855, derived from the annual report of the Secretary of the Treasury:

Countries.	Imported.	Exported.
Hamburg	\$684	.....
Bremen	1,481	.....
Belgium	163	.....
England	15,902	\$4200
Ireland	50	.....
Canada	5	1598
France	50,577	483
Papal States	17	.....
Mexico	141	.....
New Granada	4	.....
Venezuela	175	.....
China	59	.....
Total	\$63,258	\$6251

IMPORTS OF WATCHES AND PARTS OF WATCHES INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Watches and parts of.	Watch Crystals.	
		Gross.	Value.
Russian Poss. in N. Amer..	\$1,620	.....	.....
Hamburg	1,272	.....	.....
Bremen	193,029	.....	.....
Holland	66	.....	.....
Belgium	15	.....	.....
England	2,468,593	16,430	\$28,178
Scotland	3,718	.....	.....
Canada	309	.....	.....
France	1,155,654	1,390	3,902
Cuba	50	.....	.....
New Granada	2,118	.....	.....
Venezuela	140	.....	.....
Brazil	1,455	.....	.....
Total, 1856-57	\$3,823,039	17,820	\$32,170

Water. It may be thought unnecessary, perhaps, to say any thing in a work of this sort with respect to a fluid so well known and so abundant. But, besides being an indispensable necessary of life, water is, in most large cities, an *important commercial article*. It is in the latter point of view principally that we mean to consider it. Inasmuch, however, as the mode of supplying different places with water, and its price, necessarily vary in every possible way, we shall limit our remarks on these subjects to the metropolis only. The few remarks we intend to offer of a general nature will apply indifferently to any populous place, the supply of which with water occasions a considerable expense.

Quality of Water.—Dr. Ure has made the following statements with respect to the quality of water: "Water," says he, "is a very transparent fluid, possessing a moderate degree of activity with regard to organized substances, which renders it friendly to animal and vegetable life, for both which it is, indeed, indispensably necessary. Hence it acts but slightly on the organs of sense, and is therefore said to have neither taste nor smell. It appears to possess considerable elasticity, and yields in a perceptible degree to the pressure of air in the condensing machine. Native water is seldom, if ever, found perfectly pure. The waters that flow within or upon the surface of the earth contain various earthy, saline, metallic, vegetable, or animal particles, according to the substances over or through which they pass. Rain and snow water are much purer than these, although they also contain whatever floats in the air, or has been exhaled along with the watery vapors.

"The purity of water may be known by the following marks or properties of pure water: 1. Pure water is lighter than water that is not pure. 2. Pure water is more fluid than water that is not pure. 3. It has no color, smell, or taste. 4. It wets more easily than the

waters containing metallic and earthy salts, called hard waters, and feels softer when touched. 5. Soap, or a solution of soap in alcohol, mixes easily and perfectly with it. 6. It is not rendered turbid by adding to it a solution of gold in *aqua regia*; or a solution of silver, or of lead, or of mercury, in nitric acid; or a solution of acetate of lead in water.

"Water was, till modern times, considered as an elementary or simple substance; but it is now ascertained to be a compound of oxygen and hydrogen."

To evaporate water enough annually from the ocean to cover the earth, on the average, five feet deep with rain; to transport it from one zone to another; and to precipitate it in the right places, at suitable times and in the proportions due, is one of the offices of the grand atmospherical machine. This water is evaporated principally from the torrid zone. Supposing it all to come thence, we shall have encircling the earth a belt of ocean three thousand miles in breadth, from which this atmosphere evaporates a layer of water annually sixteen feet in depth. And to hoist up as high as the clouds, and lower down again all the water in a lake sixteen feet deep, and three thousand miles broad, and twenty-four thousand long, is the yearly business of this invisible machinery. What a powerful engine is the atmosphere! and how nicely adjusted must be all the cogs, and wheels, and springs, and compensations of this exquisite piece of machinery, that it never wears out nor breaks down, nor fails to do its work at the right time and in the right way!

In his annual report to the society (*Transactions of the Bombay Geographical Society* from May, 1849, to August, 1850, vol. ix.), Dr. Buist, the secretary, states, on the authority of Mr. Laidly, the evaporation at Calcutta to be "about fifteen feet annually; that between the Cape and Calcutta it averages, in October and November, nearly three-fourths of an inch daily; between 10° and 20°, in the Bay of Bengal, it was found to exceed an inch daily. Supposing this to be double the average throughout the year, we should," continues the doctor, "have eighteen feet of evaporation annually."—MAURY, *Phys. Geog.*

Water for Ships.—Various improvements have been made in the art of preserving water on board ships. Of these the principal are the charring the inside of the casks in which the water is kept, and the substitution of iron tanks for casks. The latter, being made of the required shape, may be conveniently stowed into any part of the ship. In men-of-war the iron tanks serve as ballast, the water being brought up by a forcing-pump. Water is found to preserve better in them than in any other sort of vessel. Drip-stones may be employed with much advantage in the purification of water. When water is taken on board from a river into which the tide flows, it should, of course, be raised at low ebb.—See article **AQUEDUCT** for an account of the supply of water in New York given by the Croton Aqueduct. See articles **GULF STREAM**, **HARBORS**, **OCEAN**, **TIDES**, etc.

Water-clocks. The first instruments used to measure the lapse of time, independently of the sunshine, were *clepsydra*, or water-clocks. These were most probably vessels of water, with a small hole through the bottom; through this hole the water ran out in a certain time, possibly an hour; after which the vessel was again filled, to be emptied as before. This invention was a manifest improvement on the old sun-dials, whose perpendicular gnomon gave hours of different length at the various seasons of the year. Something similar to the hour-glass was occasionally used; and Alfred the Great, probably ignorant of these methods, adopted the burning of a taper as a measure of time.—HAYDN.

Water-line, the boundary of any horizontal section of the bottom of a ship. The uppermost one is called the load water-line; the lowest the light water-line.

Water-logged, a nautical term, denoting the state of a ship when a quantity of water having been received into the hold by leaking, etc., she has in a great measure lost her buoyancy, and yields to the effect of every wave passing over the deck.

Water-mills, used for grinding corn, invented by Belisarius, the general of Justinian, while besieged in Rome by the Goths, A.D. 555. The ancients parched their corn, and pounded it in mortars. Afterward mills were invented, which were turned by men and beasts with great labor; and yet Pliny mentions wheels turned by water.—HAYDN.

Water-ways, strong pieces of wood extending round the ship, at the junction of the decks with the sides, to carry off the water.

Wave. The common cause of waves is the friction of the wind upon the surface of the water. Little ridges or elevations first appear, which, by continuance of the force, gradually increase until they become rolling mountains, where the winds sweep over a great extent of water. In rounding the Cape of Good Hope, waves, or rather a swell, are met with so vast, that a few ridges and a few depressions occupy the extent of a mile. But these are not so troublesome to ships as a short swell with more perpendicular waves. The slope in the former is so gentle that the rising and falling are scarcely felt, while the latter, by the sudden plunging of the vessel, is often destructive. The velocity of waves has relation to their magnitude. The large waves just mentioned proceed at the rate of from thirty to forty miles an hour. It is a common error to suppose that the water itself advances with the speed of the wave; but, in fact, the form only advances: the substance, with the exception of a little spray, remains rising and falling in the same place with the regularity of a pendulum. When a wave, however, reaches a shallow bank or beach, the water becomes really progressive; because then, as it can not sink directly down, it falls over forward. No wave rises more than ten feet above the level of the water, which, with the ten feet of descent, gives twenty feet for the whole height of the wave above the next depression. A wave coming against any obstacle may be dashed up to a much greater elevation.—E. A. See *American Journal of Science*, ix. (W. SCORESBY). See also articles **OCEAN**, **TIDES**, **WATER**, etc.

Wax (Ger. *Wachs*; Fr. *Cire*; It. and Sp. *Cera*; Russ. *Wosk*), a vegetable product. Several plants contain wax in such abundance as to make it worth while to extract it from them. But all that is known in commerce consists of beeswax. The honey is first pressed from the comb, and the wax is then melted into cakes. It has a slight odor of honey, is insipid, and of a bright yellow hue. It is brittle, yet soft, and somewhat unctuous to the touch. It is often adulterated with earth, pea meal, resin, etc. The presence of the former may be suspected when the cake is very brittle, or when its color inclines more to gray than to yellow; and the presence of resin may be suspected when the fracture appears smooth and shining, instead of being granulated. Wax, when bleached or purified, is white, perfectly insipid, inodorous, and somewhat translucent; it is harder, less unctuous to the touch, heavier, and less fusible than yellow wax. It is sometimes adulterated with the white oxyd of lead to increase its weight, with white tallow, and with potato starch. The first is detected by melting the wax in water, when the oxyd falls to the bottom; the presence of tallow is indicated by the wax being of a dull opaque white, and wanting the transparency which distinguishes pure wax; and starch may be detected by applying sulphuric acid to the suspected wax, as the acid carbonizes the starch, without acting on the wax.—THOMSON'S *Chemistry*, and Dr. A. T. THOMSON'S *Dispensatory*.

Beeswax is prepared by draining and washing the honey-comb, which is then melted in boiling water,

strained, and cast into cakes. English and foreign wax are found in the market; the latter being chiefly imported from the Baltic, the Levant, and the coast of Barbary. Fresh wax has a peculiar honey-like odor: its specific gravity is .96. At about 150° it fuses, and at a high temperature volatilizes, and burns with a bright white flame. It is bleached by being exposed in thin slices or ribbons to light, air, and moisture, or more rapidly by the action of chlorine; but in the latter case it does not answer for the manufacture of candles, which is one of its principal applications. Wax candles are made by suspending the wicks upon a hoop over the cauldron of melted wax, which is successively poured over them from a ladle till they have acquired the proper size, so that the candle consists of a series of layers of wax; the upper end is then shaped, and the lower cut off. Attempts have been made to cast wax candles in moulds, but when thus made they burn irregularly. Bleached or white wax is generally adulterated with more or less spermaceti, and sold at different prices accordingly; in this case it has not the peculiar lustre of pure wax, and is softer and more fusible. It is also largely adulterated with stearin or stearic acid, which is detected by the odor of fat or tallow which it evolves when highly heated, and by its crumbly texture; it may also be separated to a certain extent by ether or alcohol. Wax is insoluble in water, and scarcely acted upon by the acids, so that it forms a good lute or cement: boiling alcohol and ether act partially upon it, and deposit the portion which they had dissolved, on cooling. Some varieties of vegetable wax appear to contain two distinct principles, which Dr. John has termed *cerin* and *myrcin*; the former soluble, and the latter insoluble, in alcohol. Heated with the fixed alkalies, wax forms a difficultly soluble soap.

EXPORTS OF WAX FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Pounds.	Value.
Bremen	10,492	\$3,112
Holland	7,409	1,889
Belgium	18,437	5,338
England	81,508	22,100
Gibraltar	1,046	303
Malta	1,405	400
Canada	125	8
France on the Atlantic	105,277	30,362
France on the Mediterranean	5,000	1,566
Spain on the Atlantic	8,475	2,367
Cuba	11,000	2,906
Portugal	600	171
Austrian Possessions in Italy	1,967	590
New Granada	12,737	5,179
Venezuela	4,906	1,772
Brazil	38,736	11,508
Peru	5,120	2,048
Sandwich Islands	48	14
China	1,000	350
Total, 1856-'57.	315,378	\$91,983

Way, the sea term for progress. A ship in progress is said to have *way* upon her; when stationary, to have no *way*.

Wealth. This is a relative term; for as there is only a certain amount of property in a country, so the possession of a large share by one man is the poverty of others. The instances of wealth in the early ages are many and most extraordinary. The mightiest conflagration of wealth on record is that of Sardapanulus, where riches amounting to one thousand four hundred millions sterling were destroyed.—*ATHENÆUS*. Cæcilius Isidorus died at Rome possessed of 4116 slaves, 3600 oxen, 200,000 head of other cattle, and money equal to three millions sterling, 8 B.C.—*Univ. Hist.* See articles BANKS, COINS, GOLD MONEY, etc.

Wear, to put the ship on the other tack by turning her round with her stern to the wind.

Wearing Apparel, generally considered to include only the clothes and personal property actually worn upon the person, and as such it is admitted free of duty into the United States.

EXPORTS OF WEARING APPAREL FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Value.
Asiatic Russia	\$2,231
Russian Possessions in North America	3,433
Danish West Indies	558
Hamburg	8,324
Bremen	5,003
Holland	180
Belgium	1,250
England	1,618
Scotland	200
Malta	350
Canada	47,121
Other British North American Possessions	14,278
British West Indies	179
British Honduras	52
British Guiana	306
British Australia	6,501
British East Indies	890
France on the Atlantic	5,778
France on the Mediterranean	600
Spain on the Atlantic	100
Cuba	4,382
Porto Rico	449
Sardinia	402
Two Sicilies	150
Turkey in Asia	164
Ports in Africa	1,681
Hayti	782
Mexico	2,451
Central Republic	650
New Granada	116,848
Venezuela	2,365
Brazil	241
Argentine Republic	1,335
Chili	11,484
Peru	1,098
Ecuador	150
Sandwich Islands	59,748
Other islands in the Pacific	3,773
China	2,294
Whale-fisheries	29,138
Total	\$333,442

Weaving, the art of forming cloth in a loom by the union or intertexture of threads. The art of weaving appears to have been practiced in China from the earliest antiquity—more than a thousand years before it was known in Europe or Asia. Poets assign the art to the spider. Women originally spun, wove, and dyed; and the origin of these arts is ascribed, by ancient nations, to different women as women's arts. The Egyptians ascribed it to Isis; the Greeks to Minerva; and the Peruvians to the wife of Manco Capac. In most Eastern countries, the employment of weaving is still performed by the women. Our Saviour's vest, or coat, had not any seam, being woven from the top throughout, in one whole piece. Perhaps, says Dr. Doddridge, this curious garment might be the work and present of some pious women who attended him, and ministered unto him of their substance, *Luke*, viii. 3. The print of a frame for weaving such a vest may be seen in *CALMET's Dictionary*, under the word *Vestments*. Two weavers from Brabant settled at York, where they manufactured woolens, which, says King Edward, "may prove of great benefit to us and our subjects," 1331. Flemish dyers, cloth-drapers, linen-makers, silk-throwsters, etc., settled at Canterbury, Norwich, Colchester, Southampton, and other places, on account of the Duke of Alva's persecution, 1567.—See articles COTTON MANUFACTURES, WOOLEN MANUFACTURES, and MANUFACTURES.

Weights and Measures. Weights are used to ascertain the gravity of bodies—a quality depending partly on their magnitude, and partly on their density. Measures are used to determine the magnitude of bodies, or the space which they occupy.—For an account of the weights and measures used in foreign countries, see articles under these heads.

Weights and measures, and the stamping of gold and silver money, were invented by Phylon, tyrant of Argos, 895 B.C. *et seq.*—*Arundelian Marbles*. Weights were originally taken from grains of wheat, the lowest being still called a grain.—*CHALMERS*. The standard measure was originally kept at Winchester by the law of King Edgar, A.D. 972. Standards of weights and

measures were provided for the whole kingdom of England by the sheriffs of London, 8 Richard I., 1197. A public weighing-machine was set up in London, and all commodities ordered to be weighed by the city officer, called the weigh-master, who was to do justice between buyer and seller, statute 3d Edward II., 1309.—**Stowe.** The first statute, directing the use of avoirdupois weight, is that of 24 Henry VIII., 1532.—*Philosophical Transactions*, vol. 65, art. 3. The French adopt the metre of 3·28084, or the 10-millionth part of the distance from the pole to the equator, as the standard of measure; and the kilogram, equal to 2255 lbs. avoirdupois, as the standard of weight.—**HAYDN.**

Neither the magnitude nor the weight of any body can be determined, unless by comparing it with some other body selected as a standard. It is impossible, indeed, to form any idea in respect of magnitude or weight, except in relation to some definite space or weight with which we are acquainted. We say that one article weighs 1 lb., another 2 lbs., a third 3, and so on; meaning not only that these weights are to each other as 1, 2, 3, etc., but also that the weight or specific gravity of the first is equal to the known and determinate weight denominated a lb., that the second is equal to 2 lbs., and so on.

Standards of Weight and Measure.—Standards of lineal measure must have been fixed upon at the earliest period, and appear to have consisted principally of parts of the human body—as the cubit, or length of the arm from the elbow to the tip of the middle finger; the foot; the *ulna*, arm, or yard; the span; the digit, or finger; the fathom, or space from the extremity of one hand to that of the other, when they are both extended in opposite directions; the pace, etc. Large spaces were estimated by measures formed out of multiples of the smaller ones; and sometimes in day's journeys, or by the space which it was supposed an ordinary man might travel in a day, using a reasonable degree of diligence. But lineal measures can only be used to determine the magnitude of solid bodies; the magnitude of bodies in a liquid or fluid state has to be determined by what are called measures of capacity. It is probable that, in the infancy of society, shells, or other hollow instruments afforded by nature, were used as standards. But the inaccuracy of the conclusions drawn from referring to them must soon have become obvious; and it early occurred that to obtain an accurate measure of liquids nothing more was necessary than to constitute an artificial one, the dimensions, and consequently the capacity, of which should be determined by the lineal measures previously adopted. The determination of the gravity or weight of different bodies supposes the invention of the balance. Nothing is known of the steps which led to its introduction; but it was used in the remotest antiquity. It seems probable that, at first, cubes of some common lineal measure, as a foot, or the fraction of a foot, formed of copper, iron, or some other metal, were used as standards of weight. When the standard was selected, if it was desired to ascertain the specific gravity or weight of any given article, all that was necessary was to put it into one of the scales of the balance, and as many cubes or parts of cubes on the other as might be necessary to counterpoise it. Weights have, however, been frequently derived from grains of corn. Hence in this, and in some other European countries, the lowest denomination of weight is a *grain*; and 32 of these grains are directed, by the ancient statute called *Compositio Mensurarum*, to compose a pennyweight, whereof 20 make an ounce, 12 ounces a pound, and so upward.

In every country in which commercial transactions are extensively carried on, the importance of having weights and measures determined by some fixed standard becomes obvious to every one. But as the size of different parts of the human body differs in different individuals, it is necessary to select some durable article

—a metallic rod, for example—of the length of an ordinary cubit, foot, etc., and to make it a standard with which all the other cubits, feet, etc., used in mensuration shall correspond. These standards have always been preserved with the greatest care: at Rome they were kept in the temple of Jupiter, and among the Jews their custody was intrusted to the family of Aaron.—**PAUCTON**, *Métrologie*, p. 223. The principal standards used in the ancient world were the cubit of the Jews, from which their other measures of length, capacity, and weight were derived; and the foot of the Greeks and Romans. In England, ancient historians tell us that a new, or rather a revived, standard of lineal measure was introduced by Henry I., who ordered that the *ulna*, or ancient ell, which corresponds to the modern yard, should be made of the exact length of his own arm, and that the other measures of length should be raised upon it. This standard has been maintained, without any sensible variation. In 1742 the Royal Society had a yard made, from a very careful comparison of the standard ells or yards of the reigns of Henry VII. and Elizabeth kept at the Exchequer. In 1758 an exact copy was made of the Royal Society's yard; and this copy having been examined by a committee of the House of Commons, and reported by them to be equal to the standard yard, it was marked as such; and this identical yard is declared, by the act 5 Geo. IV., c. 74, to be the standard of lineal measure in Great Britain.

Uniformity of Weights and Measures.—The confusion and inconvenience attending the use of weights and measures of the same denomination, but of different magnitudes, was early remarked; and there is hardly a country in which efforts have not been made to reduce them to the same uniform system. Numerous efforts have been made having this object in view, and enjoining the use of the same weights and measures, under very severe penalties. But, owing to the inveteracy of ancient customs, and the difficulty of enforcing new regulations, these statutes have always had a very limited influence, and the greatest diversity has continued to prevail, except in lineal measures.—*See article DECIMAL WEIGHTS and MEASURES*, p. 510.

Invariable or Natural Standards.—As the standards adopted in most countries have been in a great degree arbitrary, it has long been the opinion of scientific men that, to construct a more perfect system of weights and measures, some natural and unchangeable basis should be adopted. It has, indeed, been contended that the measures of the ancients were deduced from a basis of this sort; and that the *stadium* always formed an aliquot part of the earth's circumference, that part differing among different nations and authors. But no learning or ingenuity can induce any one to believe what is so obviously incredible. The ancients had no means of determining the earth's circumference with any thing like the accuracy required to render it the great unit of a system of measures; and, what is equally decisive, no ancient author ever makes the slightest allusion to any such standard.

In modern times, however, the idea of seeking for a unit of weight and measure in some unchanging natural object has been practically carried into effect. The standards that have been usually proposed for this object have been some aliquot part of the quadrant of the meridian, or the length of a pendulum vibrating seconds in some given latitude. The standard of the second pendulum has been in so far adopted into the existing system of weights and measures established in Great Britain by the act of 1823, that the length of the standard yard, as compared with that of a pendulum vibrating seconds in the latitude of London, is specified in the act as follows:

"Whereas it has been ascertained by the commissioners appointed by his majesty to inquire into the subject of weights and measures, that the said yard hereby declared to be the imperial standard yard,

when compared with a pendulum vibrating seconds of mean time in the latitude of London, in a vacuum at the level of the sea, is in the proportion of 36 inches to 39 inches and 1393 ten-thousandth parts of an inch; be it therefore enacted and declared, that if at any time hereafter the said imperial standard yard shall be lost, or shall be in any manner destroyed, defaced, or otherwise injured, it shall and may be restored by making, under the direction of the Lord High Treasurer, or the commissioners of his majesty's treasury of the United Kingdom of Great Britain and Ireland, or any three of them for the time being, a new standard yard, bearing the same proportion to such pendulum as aforesaid, as the said imperial standard yard bears to such pendulum."

"The brass Troy pound weight procured by the minister of the United States at London in 1827," was declared by act of Congress, May 19, 1828, to be "the standard Troy pound of the Mint of the United States, conformably to which the coinage thereof shall be regulated." But no direct legislation appears to have taken place in the adoption of any general standards of weights and measures. On the 29th of May, 1830, a resolution passed the Senate directing a comparison to be made, under the authority of the Secretary of the Treasury, of the weights and measures used at the principal custom-houses. This comparison was intrusted to a gentleman in every way qualified to undertake it, the late Professor Hassler, and, as might have been expected, great discrepancies were found to exist. The mean, however, corresponded nearly with the standards, as fixed by the English laws previously to, and at the epoch of, the Declaration of American independence. Measures were then taken by the Secretary of the Treasury to have uniform and accurate weights and measures, and authentic standards, made under the immediate personal superintendence of Mr. Hassler, and supplied to all the custom-houses.

While this was being done, on the 14th June, 1836, a joint resolution of Congress directed the Secretary of the Treasury "to cause a complete set of all the weights and measures adopted as standards, and now either made or in the progress of manufacture, for the use of the several custom-houses, and for other purposes, to be delivered to the governor of each State in the Union, or such person as he may appoint, for the use of the States respectively, to the end that a uniform standard of weights and measures may be established throughout the United States;" and on the 7th July, 1838, a section in the "act (chap. 169) to provide for the support of the Military Academy of the United States" provided "that the Secretary of the Treasury cause to be made, under the superintendence of Mr. Hassler, one standard balance for each state; and, when completed, that he cause them to be delivered to the respective governors for the use of the respective States."

The distribution of these standard balances, weights and measures, to the several States has been in a great measure, if not entirely, accomplished. By an act of the Legislature of Massachusetts, April 23, 1847, chap. 242, it is provided that they shall be hereafter used as the sole authorized public standard of weights and measures of this Commonwealth.

The standards of weights and measures, made in part or in whole under the direction of Mr. Hassler, says Professor Bache, have the following origin:

1. The actual standard of length is a brass scale of 82 inches in length, prepared for the survey of the coast of the United States, by Troughton, of London, and deposited in the office of weights and measures at Washington.

2. The units of capacity measure are the gallon for liquid, and the bushel for dry measure. The gallon is a vessel containing 58372.2 grains (8.3389 lbs. avoirdupois) of the standard pound of distilled water at the temperature of maximum density of water, the vessel

being weighed in air in which the barometer is 30 inches at 62° Fahrenheit.

The bushel is a measure containing 543391.89 standard grains (77.6274 lbs. avoirdupois) of distilled water, at the temperature of maximum density of water, and barometer 30 inches at 62° Fahrenheit.

The gallon is thus the wine gallon of 231 cubic inches nearly, and the bushel the Winchester bushel nearly.

3. The standard of weight was the Troy pound, copied by Captain Kater, in 1827, from the imperial Troy pound, for the United States Mint, and preserved in that establishment. The avoirdupois pound is derived from this; its weight being greater than that of the Troy pound in the proportion of 7000 to 5760; that is, the avoirdupois pound is equal in weight to 7000 grains Troy.

WEIGHT AND MEASURE SYSTEMS OF THE WORLD.

I. AFRICA.—*Abyssinia*.—Weights: 1 rotl or rottolo = 12 wakea = 120 dirhems. Dry Capacity: At Gondar, in the interior, 1 ardeb = 10 madağa; at Masuah, on the Red Sea, 1 ardeb = 24 madağa. The other measures are those of Cairo and Alexandria. There is no knowledge of any local system.

Algeria.—Since the acquisition of this territory by France, the French metrical system is legalized, and may be expected gradually to come into use. As yet, however, the old usances are retained.

Weights: The theory appears to be as follows:

24 carob seed	= 1 mitkal or metical, the weight for gold, etc.
8 mitkal	= 1 wakea or ounce.
27 wakea	= 1 rotl khebir or market pound.
18 wakea	= 1 do. gheddari, for fruits.
16 wakea	= 1 do. attari, for spices.
14½ wakea	= 1 do. feuddi, for silver.
100 of each of these rotl	= 1 quantar or cantaro corresponding.

The values of these denominations in the Dictionary are from reported observations, and fall below what would be derived otherwise by ascending from the actual mitkal. Liquid Capacity is measured by the khoulé and its fractions, $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, etc.; as Dry Capacity, by the saa. Length is measured by two different pic, the Turkish and Arab; the latter of which is used for cloth. Each is subdivided by its rob, or eighth part. There are no itinerary or agrarian measures indigenous.

Cape of Good Hope (Colony).—English standards are legalized and used here. The same may be said, it is supposed, of the British colonies in Senegambia and at Sierra Leone, and the smaller establishments on the Gold Coast, as well as of St. Helena and their other islands in the Atlantic. As for Mauritius, on the other side of the continent, that retains still a considerable admixture of its former French usances.

Canary Islands.—In these islands, the originals of the weights and measures are from Spain; and the variations of the actual standards, which (except in the case of the vana) seem to be in the sense of degradation, are not more than occur in continental Spain itself.

Cape Verd Islands.—This Archipelago, as well as the continental territory under the same Governor-Generalship, uses the weights and measures of Portugal. The same may be said of the Madeira Group under the same domination; of the Portuguese possessions in Angola and Benguela; and of the colonies which dwell on the other ocean, along the coasts of Sofala and Mozambique.

Egypt.—The difference between the weights and measures actually used in Cairo and Alexandria, the principal markets of Egypt, is so small as to indicate a common original. The great variety which has been stated to exist among the cantaros (or quintals), according to the various articles intended to be weighed, is probably the result of carelessness or fraud; nor is it clear, as yet, whether this variety affects the hundred-weight or the unitary pound. It may be supposed that the weights by which the articles of greatest consumption—the necessities of life—are determined, were

the standard from which accident or negligence has deviated. *Weight*: 1 cantaro = 36 oke = 100 rotl = 14400 drachma. The rotl does not appear to be systematically subdivided. The harsela, applied to weighing silk, is evidently the oke, under a special name. *Dry Capacity*: 1 ardeb = 24 rob. *Length*: 1 gasab = 4 derah. The Turkish pic is generally used for cloths; it is very little longer than the derah, but not correlative. *Agrarian*: 400 square gasab = 1 feddan al risach, or unitary acre.

Guinea.—*Weight*: 1 benda = 2 benda-offa = 3 eggeba = $5\frac{1}{2}$ seron = 8 piso or uzan = $10\frac{1}{2}$ quinto = 16 aguiraes = 32 media-tabla = 48 akey. The last denomination, which is the special weight for gold dust, is only theoretically connected here; its actual value as reported is nearly half a grain less than the $\frac{1}{15}$ of the benda.

Liberia.—This Anglo-American negro colony at Cape Mesurado, as well as the independent one of Maryland at Cape Palmas, uses, it may be supposed, standards from the United States.

Morocco.—All the dependencies of this empire, along the western coast of Barbary, use the weights and capacity measures of Spain. There are several indigenous measures of length given in the Dictionary, but they are without uniformity.

Tripoli.—In this appanage of the Turkish empire, as well as in the dependencies of Fezzan and Barca, the weights and measures appear to be of European derivation. *Weights*: 1 cantaro = 100 rotl = 1600 uzan = 12800 termini. The metical, a special weight for gold and silver, has no connection with the others, unless it be derived in theory from an ancient rotl or pound of 12 uzan or ounces. The actual weight is reported as being exactly $\frac{1}{100}$ of the Venetian pound, from which it may have originated. *Liquid Capacity*: The mataro for oil is given by gallons in the Dictionary; from its reported weight compared with the average specific gravity, at ordinary temperatures, of that substance. *Dry Capacity*: 1 cafiso = 20 tiberi.

Tunis.—*Weight*: 1 cantaro = 100 rotl = 1600 uzan = 12800 metical or termini. In this system, where the same denominations appear to be lighter than the Tripolitan, the metical and uzan are specific weights. *Liquid Capacity* is determined by weight. *Dry Capacity*: 1 cafiso = 16 quiba = 192 saha or zah. *Length*: 1 pic (woolen) = $1\frac{1}{5}$ pic (silk) = $1\frac{4}{5}$ pic (linen). But these last proportions appear altogether accidental. In this enumeration, the remaining European settlements, viz., those of France on opposite sides of the continent in Senegambia and the Isle of Bourbon, and those of Denmark and Holland in Guinea and Ashanti, have been omitted; partly because the weights and measures of the mother countries would be naturally accepted among the settlers, but chiefly because of the insignificance in population and trade of the actual establishments. The insular appanages of the Imam of Muscat (viz., Quiloa, Zanzibar, Socotra, etc.), on the eastern side of the continent, are passed over for similar reasons; while the native powers, from Morocco through and around Madagascar, are too uncivilized or too inaccessible, to have or to yield any thing of interest in respect to weights and measures.

II. AMERICA.—This continent, for the present purpose, is best divided (instead of the usual distinctions of North, Central, and South) into Independent and Colonial America.

Brazil.—In this empire the originals of weights and measures are from Portugal; and the actual standards are in general identical, though there are a few variations, both in value and denomination, shown in the Dictionary.

Hayti or San Domingo.—This island, which, in the numerous revolutions of policy that it has undergone, has been recently modified from a republic into a form more absolute, and nominally an empire, retains the impress of its double colonization from Spain and France, as well as in the names of localities—on the

western side French, on the eastern Spanish—as in the weights and measures used there.

Mexico.—Under this republic, as well as under the numerous governments which are continually shifting or springing up in the territories of Central and South America, and which it would require a special and contemporaneous research to signalize and verify, the weights and measures of Spain have been throughout and are still recognized; with only such local variations as other causes, besides the cessation of European control and intercourse with a parent power, might be expected naturally to produce. Of course, this comprehensive field for the influence of the Spanish system does not include vast territories (such as Patagonia, for instance) which, although claimed by foreign or domestic powers, are yet, in fact, domineered over by various indigenous tribes, more or less nomadic and uncivilized. Of systematic weights and measures in those territories, there are none in modern times; and ancient ones (such as in Mexico and Peru), which recent researches have partially systematized, are omitted, as neither certain nor of practical application.

United States of America.—*Weight*: 1 Mint or Troy pound = 12 ounces = 240 pennyweight = 5760 grains; 1 apothecary pound = 12 ounces = 96 drachms = 288 scruples = 5760 grains; 1 commercial pound = 16 ounces = 256 drams = 7000 grains; 1 long ton = 20 cwt. = 80 quarters = 2240 commercial pounds; 1 short ton = 20 cwt. = 2000 commercial pounds. In the actual government standards the ounce Troy is divided decimally, down to the $\frac{1}{10000}$ part. These weights are identical with those of England. In both countries, they repose, in fact, upon actually existing masses of metal (brass) which have been individually declared by law to be the units of the system. In scientific theory, they are supposed to rest upon a permanent and universal law of Nature—the gravitation of distilled water at a certain temperature and under a certain atmospheric pressure. And in this aspect, the origination is with the grains; which must be such that 252,458 of these units, in brass, will be in just equilibrium with a cubic inch of distilled water, when the mercury stands at 30 inches in a barometer, and in a thermometer of Fahrenheit at 62 degrees both for the air and for the water. Unfortunately, the expounders of this theory in England used only the generic term *brass*, and failed to define the specific gravity of the metal to be employed: the consequence of this omission is to leave room for an error of $\frac{1}{100000}$ in every attempt to reproduce or compare the results. This is the *minimum* possible error: the *maximum* would be a function of the difference in specific gravity between the heaviest and lightest brass that can be cast.

Liquid Capacity: 1 gallon = 2 half gallons = 4 quarts = 8 pints = 16 gills. The gill is not among existing standards of public authority, though it is used in commerce. There are other denominations higher than the gallon, such as barrels, hogsheads, pipes, etc.; but these are only *vessels*, not *measures*, and are always gauged and sold by their actual capacity in gallons. The gallon, in fact, is almost exactly equivalent to a cylinder 7 inches in diameter and 6 inches high. In theory, it must contain just 231 cubic inches; and, filled with distilled water at the temperature of maximum density (say 39°·8 Fahr.), weighs, according to the official report, at that temperature and at 30 inches of the barometer, 8·339 commercial or avoirdupois pounds; or more nearly 58372·1754 grains. It is in the temperature only that this unit differs from the former wine gallon of Great Britain. The apothecaries use the same gallon, but divide it differently, as follows: 1 gallon = 8 pints = 128 fluid ounces = 1024 fluid drachms = 61440 minims (or drops) = 231 cubic inches. These are graduated measures; they also use sometimes the following approximate ones from vessels in domestic use: 1 tea-cup = 2 wine glasses = 8 table-spoons = 32 tea-spoons = 4 fluid ounces.

Dry Capacity: 1 bushel = 2 half bushels = 4 pecks = 8 gallons. There are also in this, as in the former measure, higher denominations (barrels, sacks, etc.) known in commerce, whose capacity is intended to be constant. They are, however, always gauged by the bushel. This bushel is the old Winchester bushel of England. In fact, it is a cylinder 18.5 inches in diameter, and 8 inches deep. In theory, it must contain 2150.42 cubic inches; and holds of distilled water, at the temperature of maximum density and at 30 inches of the barometer, 77.6274 commercial or avoirdupois pounds; or more nearly 548391.89 grains.

Length: 1 yard = 3 feet = 36 inches = 432 lines = 5184 seconds = 62208 thirds. In the actual government standards, at the custom-houses, the yard is divided decimally into tenths and hundredths. In the measurement of cloths, muslins, linens, cotton, silk, and in general of what are termed *dry goods*, the yard only is used; subdivided into halves, quarters, eighths, sixteenths, and half sixteenths. This lowest denomination = 1.125 inch. Surveyors and engineers employ neither the yard nor the inch, but use the foot and its decimal divisions. Architects and artificers reckon by the foot and subdivisions as given above. Nevertheless, the most usual and most recent workman's scales bear the foot divided into inches, and eighths and sixteenths of an inch. Mariners measure by cable lengths and fathoms: 1 cable length = 120 fathoms = 240 yards = 720 feet. The unit of length—the yard, upon whose subdivisions all the weights and capacity measures repose for verification—is, in fact, derived from ancient arbitrary standards of England. In theory, the inch—the $\frac{1}{36}$ of the yard—is presumed to be contained 39.13929 times in the length of a pendulum that, in a vacuum and at the level of mid-tide, in the latitude of London, vibrates seconds of mean time.

Itinerary: 1 statute mile = 2 half miles = 4 quarter miles = $7\frac{1}{2}$ cable-lengths = 8 furlongs = 80 chains = 320 perches or poles = 880 fathoms = 1760 yards = 5280 feet = 8000 links = 63360 inches; 1 nautical league = 3 equatorial miles = 8.457875 statute miles. Chains and links are denominations employed by land-surveyors, thus: 1 chain = 4 poles = 66 feet = 100 links.

Agrarian and Superficial: 1 square mile = 640 acres; 1 acre = 4 roods = 10 square chains = 160 square perches = 4840 square yards = 43560 square feet; 1 square yard = 9 square feet = 1296 square inches. Architects and builders reckon 1 square = 100 square feet.

Solid: 1 cubic yard = 27 cubic feet = 46656 cubic inches; 1 cubic foot = 12 reduced feet (plank measure) = 1728 cubic inches; 1 reduced foot (plank measure) = 1 square foot \times 1 inch thick = 144 cubic inches. In practice, all planks and scantlings less than an inch in thickness are reckoned at an inch. 1 perch of masonry = 1 perch ($16\frac{1}{2}$ feet) long \times 1 foot high \times $1\frac{1}{2}$ feet thick = 25 cubic feet. In fact, the dimensions given for the perch do not result in 25 cubic feet; but this last number has been adopted for convenience. 1 cord of fire-wood = 8 feet long \times 4 feet high \times 4 feet deep = 128 cubic feet.

Danish Possessions.—These include Greenland, Iceland, and three of the Leeward Islands in the West Indies; viz., Santa Cruz or St. Croix, St. Thomas, and St. John. In all these the weights and measures of Denmark prevail, though in the islands the English length measures are also used.

Dutch Possessions.—Holland holds on the continent of America, the government of Surinam, which includes nominally a territory of something less than 40,000 square miles, under the name of Dutch Guiana; on the coast of Venezuela, the islands of Curaçoa and Bonaire, with some lesser islets; and among the Leeward Antilles, St. Eustatius, the south part of St. Martin, and Saba. In all these, the weights and measures of Holland prevail; except in Curaçoa, where the weights are, in fact, and the length measures, both in fact and name, those of Spain.

English Possessions.—Over the immense territories of British North America the weights and measures of England are legalized; but in Lower Canada the French settlers still use their former denominations to a great extent.

In the southern peninsula, where the general name of English Guiana covers the former Dutch colonies of Berbice, Demerara, and Essequibo, the reckoning is by the weights and measures of Holland.

The settlements in Patagonia and the adjoining Archipelago, made chiefly with a view to the whaling, recognize the English standards. And as much may be said for the Falkland Isles.

Of the numerous islands and islets in the West Indies, among the Antilles and Lucayas, only the chief ones need be mentioned. The weights and measures of a few are still traceable to the source of their earlier colonization.

In the following islands the English weights and measures are used: Antigua, the Bahamas, Barbadoes, Barbuda, St. Christopher's or St. Kitts, Dominica, Grenada, Jamaica, St. Lucia (French), Montserrat, Nevis, Tobago, Tortola, Trinidad (Spanish), and St. Vincent.

In the Bermuda Group, English weights and measures are employed. All these English measures are those before the change in 1825. It would be, therefore, more literal to say, weights and measures of the United States.

French Possessions.—France holds on the continent only what used in part to be Cayenne, and is now on the maps as French Guiana; and among the West India islands, Martinique, Guadeloupe with its dependencies, Desadea or Desirade, Marie-galante, and the group of Les Saintes, together with about two-thirds (on the northern side) of St. Martin.

In Guiana, the new metrical system is legalized; but the older one continues to be used.

St. Martin reckons by the weights and measures of Holland, and Les Saintes by those of England.

The others employ the old French system, with some modifications. Thus the former English wine gallon seems to be the standard for liquids, divided as follows: 1 gallon = 2 pots = 4 pintes = 8 chopines = 16 roquilles = 32 muges; of agrarian measure, 1 carré = 10,000 paces carrés. Besides these, France owns the isles of St. Pierre and Miquelon, to the south of Newfoundland, where the old system prevails.

Russian Possessions.—The extensive territories which Russia holds in the northwest corner of America across Behring's Straits are, it may be supposed, under the domain of Russian customary measures. The establishment which that empire had for nearly forty years in Upper California, at Bodega, has been some time since abandoned.

Spanish Possessions.—The magnificent appanage, continental and insular, which Spain formerly held in America has now dwindled to the islands of Cuba and Porto Rico, where the weights and measures are still those of Spain.

Swedish Possessions.—The only territory of Sweden is the small island of St. Bartholomew or St. Bart's; which, though originally colonized from France, has been so long ceded (now nearly seventy years) as to have adopted Swedish weights and measures.

III. ASIA.—*An-nam*.—Weights: 1 quan = 5 ta = 10 binh = 50 yen = 500 cân; 1 cân (or pound) = 1.6 nen = 16 luong = 160 dong = 1600 ly. From the ly, the subdivisions are regularly decimal; viz., the hao, hot, châu, huy, tran, and ai, which last is the atom or millionth part of the ly. The most of these are purely theoretical, for the hao is itself only 0.06 of a grain, very nearly.

Capacity: In these there is no uniformity nor authenticity, each province using different measures. In Hué there appears to be the following theoretical system: 1 hoc = 10 dau = 100 thang = 1000 hap = 10000

thuoc; 1 thuoc=1200 grains of millet=10 sao; 1 sao (or a handful)=120 grains of millet; and 1 toat=250 grains of millet. The division of the thuoc into 10 sao and 4·6875 toat would seem to indicate two different systems; but as the Tonquin millet and our own are not of the same size, we have no standard of comparison or determination.

Length: There are two thuoc, or cubits; one for general use, the other, which is $\frac{1}{2}$ longer than the former, exclusively for cloths, silks, and other woven fabrics. 1. Mercers'.—1 gon=10 that=30 truong=300 thuoc; 1 thuoc (or ell)=10 tac=100 phan=1000 ly. 2. Builders', etc.—1 mau=10 sao=30 ngu=150 thuoc; 1 thuoc (or cubit)=10 tac=100 phan=1000 ly.

Agrarian: This last series is also used by land-measurers in giving the square content of land. They sometimes use another series (called *ruong luc*, in contradistinction to the *ruong ngu*, just given), in which the sao is equal to $16\frac{1}{2}$ thuoc. The mau is, therefore, 10 per cent. longer in this last series; and its superficial content, when squared, 21 per cent. greater.

Itinerary: These are very vague and only approximate: 1 dam=2 ly=rather less than half a mile.

Birmah.—*Weight:* 1 vis=3 catty=100 tical. *Length:* 1 bambou=28 taim=504 palgat. *Itinerary:* 1 taing=250 bambou=7000 taim. But these are by no means certain.

China.—*Weight:* Almost every thing in China (timber, liquids, live stock, etc.) is sold by weight, actual or nominal. 1 shik= $1\frac{1}{2}$ tam=4 kwan=60 yin=120 kan or catty; 1 kan=16 leung or tael=364 chu=3840 lui=38400 shu, or kernels of grain. The weights above the yin are only nominal and for account; and those below the tael are generally denoted by the adjuncts *li*, *ho*, *tsin*, *fat*, etc., i. e., one tenth, one hundredth, one thousandth, etc.

Capacity: This is regulated, as before said, by weight; the existing *dry measures*, which have been adopted for the convenience of commerce for grain and seeds, vary considerably in consequence of the irregularity of the material (bamboo) of which they are made. The theory is supposed to be as follows: 1 ping=5 yu=16 hok=32 shik=80 tau; 1 tau=10 shing=100 kop=200 yeuk=1000 cheuk=10000 chau=100000 tsut=1000000 kwai=6000000 suk, or grains of maize. Of all these, there are only four actual measures; viz., the tau, the shing, the half-shing, and the kop. These are also upon two different modules, distinguished by the adjuncts *shi* and *tsong*; and in proportionate capacity as 100 to 65 respectively. It may be supposed that the latter were intended for *liquid measures*; and their average contents are so reduced accordingly in the Dictionary.

Length: 1 yan=10 cheung=100 chik=1000 tsun=10000 fan. The chik, fixed by the Mathematical Board at Pekin=13·125 inches; used by tradesmen in Canton=14·625 to 14·81 inches; employed by engineers of public works=12·7 inches; and that by which distances are usually measured=12·1 inches.

Itinerary: 1 to=25 fan=125 tsun=250 li or miles; 1 li=1826 English feet. This is the count since the intervention of European mathematicians at Pekin. The former used to be 1 to=192 $\frac{1}{2}$ li=79300 po=396500 chik; 1 li=1897 $\frac{1}{2}$ English feet. Some ambiguity arises from the use of the same word, li (probably from European ignorance of the language in not discriminating between similar but not identical terms), as a lower measure, the $\frac{1}{10}$ of the fan. The same ambiguity extends itself also to the following series.

Agrarian: 1 king=100 mau=400 kok=1000 fan=24000 po. But these are so uncertain that they have not been given.

Solid Measures are products of the cheung, which is generally in this series 14·6 English feet.

Hindustan.—The weights and measures of the indigenous governments of this vast country (such as, for instance, Sindh, Nepaul, and the confederated

Sikhs, etc.), are either too little known or too uncertain to admit of any system. All that will be done is to give the relations of the principal measures in common use, where European domination prevails or European commerce has established itself.

British Possessions: Bombay.—*Weight:* 1 candy=20 maunds or maons=800 seer=24000 pica. *Dry Capacity:* 1 candy=8 para=128 adoulie. *Calcutta.*—*Weight:* 1 maon or maund=40 seer=640 chattac=3200 sicca. *Dry Capacity:* 1 pallie=4 raik=64 khoonké=320 chattac. *Length:* 1 haut or coid=8 gheria=72 jacob. *Itinerary:* 1 coss=4000 haut. *Agrarian:* 1 biggah=20 cottah=320 chattack=6400 square coid. The chattack is, in fact, a surface 5 coid in length by 4 coid in width. *Madras.*—*Weight:* 1 garcé=20 candy or barauy=400 maund or maon=3200 visay; 1 visay=40 pollam=400 varahun. *Dry Capacity:* 1 garcé=80 para=400 marcal=3200 puddy=25600 ollock. *Liquid Capacity*, like the dry, is determined by weight; and the denominations are the same as in the latter. *Agrarian:* 1 casseney=24 maony=240 square coid.

Danish Possessions: Serampore and Tranquebar.—The weights and measures here are legally those of Denmark, and by custom those of Calcutta and Madras respectively.

French Possessions: Pondichéry.—The colonial denominations and divisions are identical with those of Madras, although the values are different.

Portuguese Possessions: Goa.—Here Portuguese weights and measures are employed.

Japan.—*Weight:* 1 picul=100 catty=1600 tael=16000 mas=160000 condorine. The connection of the other measures is not known.

Ottoman Asia: Aleppo, Smyrna, etc.—The weights and measures here are so variant, or are rather so mixed up with the units and values of foreign commerce, as not to admit of satisfactory classification.

Persia.—*Weight:* 1 batman=6 ratel=300 dirhem=600 mascais. This is the batman of Tauris; that of Shiraz, which is twice the value; appears properly to be part of the same system. The other measures are unsystematic.

Siam.—*Weight:* 1 picul=100 catty=2000 tael=8000 tical. *Dry Capacity:* 1 cohi=40 cesti=1600 sat. *Length:* 1 vouah=2 ken=sok. *Itinerary:* 1 roéneng=2000 vovah.

IV. EUROPE.—*Austrian Empire: Vienna.*—*Weight:* 1 pfund=2 mark=4 vierling or vierding=16 unze=32 loth=128 quent=512 pfennig. Apothecaries: 1 pfund= $1\frac{1}{2}$ mark=12 unze=96 drachma=288 scrupel=5760 gran. The mark is identical in both series, and is the unit of gold and silver weight. 1 centner=5 stein=100 pfund. *Liquid Capacity:* 1 fuder=82 eimer=128 viertel=1312 (imperial) mass; 1 mass=2 kanne=4 seidel=8 pfiff. *Dry Capacity:* 1 muth=80 metze=120 viertel=240 achtel; 1 achtel=2 mühl-massel=8 futtermassel=16 becher=128 probmetze. *Length:* 1 klafter=6 fuss=72 zoll=864 linie=10368 punkt. *Itinerary:* 1 meile=4000 klafter=24000 fuss. *Agrarian:* 1 joch or jochart=3 metze=576 square ruthe=1600 square klafter=57600 square fuss. *Prague.*—*Weight:* 1 centner=6 stein=120 pfund. The lower subdivisions are as in Vienna; but their values, as well as of the terms just given, correspond with a lighter pound than the imperial standard. *Liquid Capacity:* 1 fass=4 eimer=128 pinte=512 seidel. *Dry Capacity:* 1 strich=4 viertel=16 massel=192 seidel. *Agrarian:* 1 joch of Vienna=2 strich.

Venetian Lombardy: Milan.—*Weight:* Peso grosso: 1 libbra=4 quarto=28 oncia. Peso sottile: 1 libbra=12 oncia=288 denaro=6912 grano. Gold and silver are by the marco, subdivided as follows: 1 marco=8 oncia=192 denaro=4608 grano. Apothecary: 1 libbra peso sottile=12 oncia=96 drachma=288 scrupolo=6912 grano. In 1803 the French kilogram, with decimal subdivisions, was introduced; which is the

new Italian pound or metrical pound of the Dictionary. 1 rubbio=10 libbra metrica=100 oncia=1000 grosso=10000 denaro=100000 grano. *Liquid Capacity:* 1 brenta=3 staja=6 mina=12 quartaro=16 bassa=48 pinta=96 boccale. *Dry Capacity:* 1 moggio=8 stajo=16 starello=32 quartaro=128 meta=512 quartino. In the new metrical system capacity is reckoned as follows: 1 soma=10 mina=100 pinta=1000 coppo. *Length:* 1 braccio=12 oncia=144 punto=1728 atomo. New measure in 1803: 1 metro or braccio=10 palmo=100 dito=1000 atomo. *Itinerary* since 1803: 1 miglio=1000 metro. The old mile of Milan is not correlative; but appears, in theory, to be equivalent to 3000 braccio. *Agrarian:* 1 pertica=24 tavola=96 square cavezzo=3456 square piede. The *piede*, or foot, used here is not employed in any other part of the system. It seems to have been originally $\frac{1}{2}$ of the braccio. Since 1823: 1 tornatura=100 square palmo. The tornatura is identical with the French *are*. *Venice.*—*Weight:* *Peso grosso:* 1 libbra=2 marco=12 oncia=72 saggio=2304 carato=9216 grano. *Peso sottile:* 1 libbra=12 oncia=72 saggio=1728 carato=6912 grano. The *peso grosso* is used in general commerce; the *marco* and its subdivisions are for gold and silver and precious stones; the *peso sottile* for drugs, colors, coffee, tea, sugar, silk, rice, and butter. This last is estimated at $\frac{1}{16}$ of the former. When used for medicines, it is subdivided as the Austrian apothecary pound. *Liquid Capacity:* 1 anfora=4 bigonzio=8 concia or mastello=48 secchio=192 bozza=512 boccale=768 quartuccio; 1 botta=5 bigonzio. *Dry Capacity:* 1 moggio=4 stajo or staro=16 quarto=64 quartarolo. *Length:* 1 braccio=2 piede. This braccio is for woollens, etc.; that for silk is shorter. *Itinerary:* 1 miglio=1000 passo=6000 piede. *Agrarian:* 1 campo=640 tavola, or square pertica, or square cavezzo=25920 square piede. New measure: 1 migliajo=1000 square passo=25000 square piede. The metrical weights and measures, described under Milan, are also employed here as there in all governmental transactions. Otherwise the local measures are still in use. In the other parts of the Austrian dominions, such as Dalmatia, Hungary, Moravia, etc., local systems, if they ever existed, are now only discernible in the names and values of a few disconnected and apparently arbitrary measures.

Baden.—*Weight:* Old measure: 1 pfund=32 loth=128 quentchen. New measure: 1 pfund=10 zehning=100 centass=1000 pfennig=10000 ass. The new measure was established in 1810, when the value of the *pfund* was taken at $\frac{1}{2}$ kilogram, and a decimal division adopted; but the old division is still retained, and is applied both to the old unit and to the new. The mark of Cologne is employed for gold and silver; and the value and subdivisions of the Nürnberg apothecary pound for drugs and medicines. *Liquid Capacity:* 1 fuder=10 ohm=100 stütze=1000 mass=10000 glas; 1 ohm=15 decalites of France. *Dry Capacity:* 1 zuber=100 malter=100 sester=1000 müsslein=10000 becher; 1 sester=15 decalites of France. *Length:* 1 ruthe=10 fuss=100 zoll=1000 linie=10000 punkt; 1 ruthe=3 mètres of France. The old fuss was 3 per cent. shorter, but has been merged into the new one. *Itinerary:* 1 meile=2 stunden=8 $\frac{1}{2}$ kilometres of France. *Agrarian:* 1 morgen=4 viertel or quart=400 square ruthe=40000 square fuss. *Solid:* 1 klaffer, for fire-wood=6 feet long×6 feet high×6 feet deep=128 cubic fuss. What is here called deep signifies in every case the length of the billet or log.

Bavaria.—*Weight:* 1 pfund=16 unze=32 loth=128 quentchen. A uniform value was established for the unit in 1811, corresponding with the new French weight. The apothecary pound was at the same time defined at $\frac{3}{16}$ of the unit, and is divided like the Nürnberg apothecary pound. Gold and silver are by the mark of Cologne. *Liquid Capacity:* 1 eimer=60 masskanne=240 quartel. *Dry Capacity:* 1 scheffel=6

metze=12 viertel=48 massel or achtel=96 müsslein=192 dreissiger; 1 scheffel=208 liquid masskanne, in actual content. *Length:* 1 fuss=12 zoll=144 linie=1728 punkt. This unit was established in 1809, and defined in terms of the old French measure, at 129.58 *lignes* of Paris. The near approach of this value to 3 décimètres in the new French system allows the *fuss*, as is frequently done, to be decimally divided. Thus the *elle* of Rhenish Bavaria is 4 fuss of this count, or 12 décimètres of France. The legal *elle* is 2 fuss 10 $\frac{1}{2}$ zoll of the legal value above. *Itinerary:* 1 meile=2400 ruthe=24000 fuss; 1 meile of Anspach=2 stunde=2880 ruthe=28800 fuss. *Agrarian:* 1 juchart, morgen, or tagwerk=400 square ruthe=40000 square fuss. *Solid:* 1 klaffer, for fire-wood=6 feet long×6 feet high×3 $\frac{1}{2}$ feet deep=126 cubic fuss. In Rhenish Bavaria generally, the billets are 4 feet long, which makes the klaffer=144 cubic fuss. *Augsburg: Nürnberg.*—The denominations and values of local measures retained in both of these places, and elsewhere in Bavaria, are given in the Dictionary. The apothecary weight of Nürnberg, which is general over all Germany for medicines (as the mark of Cologne is for specie), is $\frac{1}{2}$ of the old Nürnberg money pound, which last is divided as follows: 1 pfund=2 mark=16 unze=16 loth=128 quart=512 pfennig=8220 as-ducat. The apothecary pound, as under: 1 pfund=12 unze=96 drachma=228 scrupel=576 obolus or heller=5760 gran.

Belgium.—*Weight:* Old measure of Brussels. Commercial: 1 livre or pond=4 quarteron=16 once=64 satin=128 gros=9216 grains. Specie: 1 livre or pond=2 mark=16 once=320 esterlin=1280 felins=10240 as=1 pond Troy of Holland. The new weight is the kilogram and its decimal subdivisions, established since 1816. The apothecaries' unitary pound, subdivided like that of Nürnberg, is, since 1817, $\frac{2}{3}$ of the kilogram of France; but in this respect there is not entire uniformity. The other measures are all in value corresponding with the metrical system of France, and decimally subdivided. Thus the unit for liquids (the *vat*) and that for dry (the *mudde*) are each=100 litres of France. The unitary *el* or *aune*=1 mètre; the agrarian unit (the *vierkantebunder*)=1 are of France, or nearly 4 square perches English; the metrical *mil* or mile=1 kilomètre. Other terms remaining from the old systems, but now disconnected, are given in the Dictionary.

Bremen.—*Weight:* 1 pfund=2 mark=16 unze=32 loth=128 quentchen=512 ort=498.69 grammes of France, since 1818. There is another pfund used in retail commerce, which is 6 per cent. lighter than the standard. Gold and silver are weighed by the mark of Cologne, and medicines by the apothecary pound of Nürnberg. 1 schiffpfund=20 liespfund=290 pfund; 1 frachtpfund or pfundschwer=300 pfund; 1 centner=116 pfund. *Liquid Capacity:* 1 fuder=4 oxhoft=6 ohm=24 anker=120 viertel=270 stübchen=1080 quartier=4320 mingel. *Dry Capacity:* 1 scheffel=4 viertel=16 pint. *Length:* 1 elle=2 fuss=24 zoll=240 linie. Surveyors divide the fuss decimally. *Itinerary:* 1 ruthe=2 $\frac{1}{2}$ klaffer=8 elle=16 fuss. The usual meile contains 20000 Rhenish feet. *Agrarian:* 1 morgen=120 square ruthe=30720 square fuss. *Solid:* 1 faden=6 feet long×6 feet high×2 feet deep=72 cubic fuss. Fire-wood is also sometimes measured by the *reep* or *reif*, a circular pile 17 $\frac{1}{2}$ fuss in circumference, the billets varying from 4 $\frac{1}{2}$ to 6 fuss in length. The *reif* yields from 1 to 2 faden, accordingly.

Brunswick.—*Weight:* 1 pfund=2 mark=32 loth=128 quentchen=512 pfennig=1024 heller; 1 schiffpfund=20 liespfund=280 pfund. Gold and silver by the mark of Cologne, medicines by the apothecary pound of Nürnberg. 1 fuder=4 oxhoft=6 ohm=240 stübchen=960 quartier=1920 nössel; 1 fass of beer=4 tonne=108 stübchen=432 quartier=864 nössel; 1 fass of mum=100 stübchen=400 quartier=900 nössel. *Dry Capacity:* 1 scheffel=10 himt=40 vierfass=160

becher or löcher. *Length*: 1 elle=2 schuh=24 zoll. *Itinerary*: 1 ruthe=8 elle=16 schuh. The usual meile contains 34424 Rhenish feet. *Agrarian*: 1 morgen=120 square ruthe=30720 square schuh.

Cracow.—*Weight*: 1 funt=2 mark=48 skoyciec. Apothecary weight is that of Nürnberg. *Liquid Capacity*: 1 stangiew=2 becška=72 garniec=28 kwart. *Dry Capacity*: 1 korzec=2 polkorzow=4 cwierc=32 garcy or garniec. *Length*: 1 stopa=12 calow=144 linow=1728 punkt. The other measures are those of Poland.

Denmark.—*Weight*: 1 pund=2 mark=16 unze=32 lod=128 quintin=512 ort; 62 pund=weight of 1 cubic fod of rain-water at 16½° centigrade. Gold and silver is weighed by a pund nearly 6 per cent. lighter than, but not aliquot with, the commercial pund, and is subdivided like this last, only more minutely, into 8192 as=65536 gran. The royal Mint, however, uses the mark of Cologne. Apothecaries' weight is that of Nürnberg. 1 last=16½ skippund=144½ waag=325 lispond=433½ bismerspund=5200 pund; 1 skippund=20 lispond=320 pund. *Liquid Capacity*: 1 aam=4 anker=20 viertel=40 stübchen=77½ kande=155 pot=620 pägel. *Dry Capacity*: 1 toende=4 fjerding=8 skieppe=32 fjerdingkar=144 pot. *Length*: 1 aln=2 fod=24 tomme=288 linie. The fod represents $\frac{1}{38}$ of the pendulum beating seconds, in a vacuum, at the level of the sea, under the mean parallel of 45° north latitude. *Itinerary*: 1 mill=2400 rode=4000 favn=12900 aln=24000 fod. *Agrarian*: 1 pfug=8 toende (hartkorn)=32 toende (sädeland)=64 skieppe=256 fjerdingkar=768 album=3072 penge=17920 square rode=1792000 square fod. The measures of Holstein are chiefly those of Hamburg, and those of Norway differ only locally, not systematically, from the Danish.

France.—*Weight*: 1 kilogram=100 hectogram=100 decagram=1000 gram=10000 decigram=100000 centigram=1000000 milligram. The unit, or kilogram, is the weight of a cubic decimetre of distilled water at the temperature of maximum density, taken at 4° centigrade, or 39°·2 Fahrenheit. 1 tonneau=10 quintal=100 myriagrams=1000 kilograms. Apothecary weight has not been so symmetrically and uniformly constructed. In the French pharmaceutical Codex, the *gramme* has been adopted as the key of the system, and is considered as equivalent to $\frac{1}{4}$ of the old *drachme*. The *once*, habitually of 8 drachmes, is then 32 grams. But as this number is irrational with a decimal division, a compromise has been made as follows: 1. 1 double livre (kilogram)=2 livre=4 demi-livre=8 quarterons (of 4 onces)=1000 grams. 2. 1 once=8 gros, or drachme=640 grain=1280 demi-grain=32 grams, instead of 31½ grams, as it must have been, if the same binary division had been carried through.

Liquid and Dry Capacity: 1 kilolitre=10 hectolitre=100 decalitre=1000 litre=10000 decilitre=100000 centilitre=1000000 millilitre. The unit or litre is the cubic decimetre; the kilolitre is therefore a cubic metre. The myrialitre=10 kilolitre.

Length and Distance: 1 myriametre=10 kilometre=100 hectometre=1000 decametre=10000 metre=100000 decimetre=1000000 centimetre=10000000 millimetre. The metre, or unit, is assumed to be the ten-millionth of the quadrant, or the forty-millionth of the whole circumference of the globe, measured over the poles. The actual value assigned to it, in spite of the pains taken in the geodetical and artistical operations, is, after all, owing to the nature of the very operations, to be considered as only a near approximation. The provisional metre of 1795 is, in fact (as more recent investigations show), nearer the most probable value aimed at than the one adopted in the law of 1799. But the utmost error is only about $\frac{1}{500}$ of the length, or absolutely less than $\frac{1}{5000}$ of an inch.

Agrarian: 1 hectare=100 are=10000 centiare or square metres. This part of the system admits the

same decimal multiplication and subdivisions as the others in theory; but, in point of fact, the intermediate terms have been rejected.

Solid: 1 decastere=10 sters=100 decistere. The sters is the cubic metre; and its content, therefore, is the same as the capacity of the kilolitre. The terms given are all that are retained in the nomenclature. The names even of the old measures of France having been interdicted since 1840 by law, their relations and combinations are of no remaining practical interest. The terms and values will be found in the Dictionary.

Frankfort.—*Weight*: 1 pfund=2 mark=16 unze=32 loth=128 quentchen=512 pfennig=1024 heller. There is also a commercial pound for retail, called *silber-pfund*, about 8 per cent. lighter than the former, but similarly divided. Flour and malt are weighed by a pound of 32½ loth *silber-pfund*, meat and butter by 33 loth of the same system, and fish by one of 35 loth. Gold and silver are reckoned by Cologne weight, and drugs and medicines by the apothecary pound of Nürnberg. *Liquid Capacity*: 1 fuder=6 ohm=120 viertel=480 eich-mass=540 neu-mass; 1 mass=4 schoppen. *Dry Capacity*: 1 malter or achtel=4 simmer=8 metze=16 sechter=64 gescheid=256 mäschen or viertel=1024 schrott. A malter of wheat weighs from 175 to 190 lbs. flour weight; rye, 165 to 480 lbs. flour weight; barley, 150 to 165 lbs. flour weight; oats, 95 to 110 lbs. flour weight; flour, 143 lbs. flour weight. This includes the tare of the sack, which is reckoned at 3 flour pounds. *Length*: 1 werkschuh=12 zoll=144 linie; 1 ruthe=12½ werkschuh=10 feldfuss=100 zoll=1000 linie. *Agrarian*: 1 hufe=80 morgen=4800 square ruthe=480000 square feldfuss. *Solid*, for fire-wood: 1 klafter=6 W. long×7 W. high×3 W. deep=126 cubic werkschuh; 1 stecken=8½ werkschuh, cubed=49½ cubic werkschuh.

Great Britain.—The imperial standards adopted since 1825 altered only the value of the capacity measures. The weights and the long, agrarian, and solid measures are identical with those of the United States. Capacity measures are the same, both for liquids and things dry. The origination of these is with the *gallon*, which contains 10 pounds avoirdupois of distilled water at 30 inches of the barometer and 62° Fahrenheit both for the air and the water. Eight of such gallons make the bushel. The old subdivisions and nomenclature, as far as applicable, are retained.

Weight: Troy and apothecary have been given under the head UNITED STATES. Avoirdupois: 1 ton=20 hundred-weight=80 quarter=2240 pound=35840 ounce=573440 dram. Wool: 1 last=12 sack=24 vey=156 tod=812 stone=624 clove=4368 pound.

Liquid Capacity: Old wine measure: 1 tun=2 pipe=3 puncheon=4 hogshead=6 tierce=8 quarter-casks=252 gallon=1008 quart=2016 pint. Old beer measure: 1 butt=1½ puncheon=2 hogshead=3 barrel=6 kilderkin=12 firkin=108 gallon. Ale measure was the same as to the gallon and its subdivisions; but the firkin of ale was only 8 gallons, and the hogshead of ale 48 gallons, instead of 9 and 54 gallons respectively.

Dry Capacity: Old measure: 1 last=2 wey=10 quarter=20 coom=80 bushel=320 peck=640 gallons=5120 pint.

Length: 1 yard=3 feet=36 inches=108 barley-corn=432 line. Cloth measure: 1 French ell=1½ English ell=1½ yard=2 Flemish ell=6 quarters=27 nail=54 inch.

Hamburg.—*Weight*: 1 pfund=2 mark=16 unze=32 loth=128 quentchen=512 pfennig. Gold and silver are weighed by the mark of Cologne, and medicine by Nürnberg apothecary weight. 1 schiffpfund=2½ center=20 liespfund=280 pfund. This is sea freight; wagon weight is also called schiffpfund, but=320 pfund. *Liquid Capacity*: 1 fuder=4 oxhoft=5 tonne=6 ahm=24 anker=30 eimer=120 viertel=240 stübchen=480 kanne=960 quartier=1920 ossel; 1 fass, for whale-oil=1½ tonne=7½ stechkanne=120

margel=160 quartier. *Dry Capacity*: 1 last, for wheat and grain generally; and seeds=3 wispel=30 scheffel=60 fass=120 himt=480 spint; 1 stock, for oats and barley=1½ last, and similarly subdivided. The scheffel is hardly used; the fass is the principal measure. The indications of the steelyard used for weighing grain, and quoted in the *Price Current*, is upon 1½ fass of such grain respectively. The established weight of the fass is: of barley, 68 pfund; beans, 108 pfund; oats, 52 pfund; peas, 100 pfund; rye, 81 pfund; wheat, 86 pfund. *Length*: 1 elle=2 fuss=24 zoll=192 achtel. Ship-builders, for the measurement of spars, etc., divide the fuss into 3 palm. Engineers and surveyors use the Rhenish foot and inch, decimally divided. *Itinerary*: 1 meile=200 ruthe=24000 Rhenish fuss. *Agrarian*: There are two ruthe or perches in land measure, the marschruthe equal to 7 ell, and the geestruthe to 8 ell. Of course, 1 square geestruthe=13³/₈ marschruthe=256 square fuss; 1 morgen=600 square marschruthe=117600 square fuss. *Solid*: 1 klafter or faden=6³/₈ F. long × 6³/₈ F. high × 2 F. deep=88³/₈ cubic fuss; 1 messbergerfaden=6³/₈ F. long × 8 F. high × 2 F. deep=106³/₈ cubic fuss.

Manöver.—*Weight*: 1 pfund=2 mark=16 unze=32 loth=128 quentchen=512 örtchen. Gold and silver are weighed by the mark of Cologne. The apothecary pound is $\frac{3}{4}$ of the commercial pfund, subdivided like that of Nürnberg, which last is itself frequently used. *Liquid Capacity*: 1 fuder=4 oxhoft=6 ahm=15 eimer=24 anker=120 viertel=240 stübchen=480 kanne=960 quartier=1920 nössel; 1 fass for beer=4 tonne=104 stübchen=208 kanne=416 quartier. *Dry Capacity*: 1 last=2 wispel=16 malter=96 himt=288 drittel=384 vierfass. *Length*: 1 elle=2 fuss=24 zoll=192 achtel=288 linie. *Itinerary*: 1 meile (since 1818)=1462³/₈ ruthe=11700 elle=25400 fuss. The old or polizei-meile was 2274 ruthe. *Agrarian*: 1 morgen of Calenberg=1½ drohn=2 vorling=120 square ruthe=30720 square fuss.

Hesse Cassel.—*Weight*: 1 pfund=16 unze=32 loth=128 quentchen. In retail the pfund of Berlin (which is about 3 per cent. lighter) is employed, subdivided as above. Gold and silver are by the Cologne; medicine, etc., by the Nürnberg weight. *Liquid Capacity*: 1 fuder=6 ohm=120 viertel=480 mass=1920 schoppen. *Dry Capacity*: 1 scheffel=2 himt=8 metze=32 mäschen. *Length*: 1 waldfuss or standard=12 zoll=144 linie. *Itinerary*: 1 ruthe=7 elle=14 landfuss, or surveyors' foot. The ruthe is sometimes divided decimally into 10 fuss, etc. *Agrarian*: 1 acker=150 square ruthe=29400 square landfuss. *Solid*: 1 klafter=5 F. long × 5 F. high × 6 F. deep=150 cubic waldfuss.

Hesse-Darmstadt.—The old weights and measures were those of Frankfurt. Those established in 1821 are as follows: *Weight*: 1 pfund=32 loth=128 quentchen=512 richtpfennig= $\frac{1}{2}$ kilogram of France. Gold and silver are still reckoned by the mark of Cologne, and Nürnberg furnishes the apothecary weight. *Liquid Capacity*: 1 fuder=6 ohm=120 viertel=480 mass=1920 schoppen. The schoppen= $\frac{1}{2}$ litre of France. *Dry Capacity*: 1 malter=4 simmer=16 kümpf=64 gescheid=256 mäschen=128 litre of France. *Length*: 1 klafter=10 fuss=100 zoll=1000 linie. The fuss is $\frac{1}{2}$ metre of France; the elle is $\frac{2}{3}$ metre. *Agrarian*: 1 morgen=4 viertel=400 square klafter=40000 square fuss. *Solid*: 1 stecken=5 F. long × 5 F. high × 4 F. deep=100 cubic fuss. The old stecken was 6 × 6 × 4=144 cubic feet, old measure.

Holland.—Since 1817 the values and divisions of the weights and measures have been according to the metrical system of France, retaining more or less of the old nomenclature, as will be found under that head.

Ionian Isles.—Since 1817, when the new Constitution of these isles was ratified by the English Parliament, the standard weights and measures have been those of Great Britain. There still remain, however, several

detached usances of Turkish and Venetian origin, which will be found under their proper heads.

Lübeck.—*Weight*: 1 pfund=2 mark=16 unze=32 loth=128 quentchen=512 pfennig. Gold and silver weight is that of Cologne; apothecary weight of Nürnberg. The schiffpfund and tonne are divided as at Hamburg. *Liquid Capacity*: 1 fuder=4 oxhoft=6 ahm=24 anker=30 eimer=120 viertel=240 stübchen=480 kanne=960 quartier=1920 plank=3840 ort. *Dry Capacity*: 1 last=8 drömt=24 tonne=96 scheffel=384 fass. *Length*: 1 elle=2 fuss=24 zoll=144 linie=1728 punkt. Other usances here are the same as at Hamburg.

Lucca.—The weights and measures of this territory are, in system, the same as those of Tuscany, of which it will hereafter form a part.

Mecklenburg Schwerin.—What is under this will also apply to the other Grand Duchy of Mecklenburg Strelitz, both of whose systems of weights and length measures are those of Hamburg; while the capacity measures are, in fact, those of Lübeck.

Modena.—*Weight*: 1 libbra or lira=12 oncia=192 ferlino; 1 libbra, for gold and silver=12 oncia=96 ottava=192 ferlino=1920 carato=7680 grano. Apothecary: 1 libbra=12 oncia=96 drachma=288 scrupolo=6912 grano. *Liquid Capacity*: 1 barile=20 fiasco=40 boccale. *Dry Capacity*: 1 sacco=2 stajo. *Agrarian*: 1 biolca=72 tavola=288 square cavezzo=10368 square piede. The piede of Reggio has the same relations, but a different value, with that of Modena, the city. The other measures appear arbitrary.

Ottoman Empire, or Turkey in Europe.—Neither our knowledge nor, perhaps, the actual state of weights and measures in this empire, allow of their being arranged in any satisfactory, systematic exhibition; and the same may be said of the modern kingdom of Greece. The value and denominations of isolated units have been given before.

Parma.—*Weight*: 1 libbra=12 oncia=288 denaro=6912 grano. Gold and silver are weighed by the marco of Milan, or by the new Italian pound. The apothecary pound is identical with the commercial libbra. The rubbio is 25 libbra. *Liquid Capacity* is measured as at Milan. *Dry Capacity*: 1 stajo=2 mina=16 quartarole. *Length*: 1 pertica=6 braccio di legno=72 oncia=864 punto=10368 atomo. *Agrarian*: 1 biolca=6 staro=72 tavola=288 square pertica=10368 square braccio.

Portugal.—*Weight*: 1 arratel=2 marco or meo-arratel=4 quarta=16 onça=128 outava=384 escropalo=9216 grao. This weight, from the onça down, answers for all purposes. Gold and silver are reckoned by the marco of 8 onças, and medicines are weighed by a libbra of 12 onças, which is therefore $\frac{2}{3}$ arratel. 1 tonelada=13¹/₂ quintal=54 arroba=1728 arratel. *Liquid Capacity*: 1 almude=2 alqueire or cantaro=12 canada=24 meia-canada=48 quartilho=96 meio-quartilho; 1 tonelada=2 pipa or bota=52 almude=104 alqueire. *Dry Capacity*: 1 moio=15 fanga=60 alqueire=120 meio-alqueire=240 quarto=480 outava=960 maquia or meia-outava. *Length*: 1 covado=3 palmo da craveira=24 pollegada=36 dedo=144 grao=288 linha=3456 ponto. The commercial covado, called *covado avantejado*, has 24¹/₂ pollegadas. *Itinerary*: 1 braça=1¹/₂ passo=2 vara=6³/₈ pe=10 palmo da craveira; 1 legoa=3 milha=24 estadio. *Agrarian*: 1 geira=4840 square vara.

Prussia.—The weights and measures were reformed here in 1816. *Weight*: 1 pfund=2 mark=16 unze=32 loth=128 quentchen. The unitary pfund is $\frac{1}{16}$ of a cubic foot of distilled water, weighed, and reduced to a vacuum at the temperature of 15° Reaumur (65 $\frac{1}{2}$ ° Fahrenheit). Gold and silver are still reckoned by the mark of Cologne, to which the Prussian mark is considered as equivalent; and the apothecary pound, divided like that of Nürnberg, is $\frac{3}{4}$ pfund. 1 schiffpfund=3 centner=15 stein=20 liespfund=330 pfund.

Liquid Capacity: 1 fuder = 6 ohm = 12 eimer = 24 anker = 720 quart = 1440 össel. The eimer contains 3840 cubic zolle or inches. *Dry Capacity:* 1 last, for wheat and rye = 4 wispel = 6 malter = 72 scheffel = 288 viertel = 1152 metze = 4508 müsschen; 1 last, for barley and oats = 48 scheffel. The scheffel is $\frac{1}{2}$ of the eimer in absolute capacity, or 3072 cubic zolle. *Length:* 1 fuss (rheinfuss) = 12 zoll = 144 linie = 1728 scrupel. This unit has been established at 139, 13 lignes de Paris. The elle is $25\frac{1}{2}$ zolle. *Itinerary:* 1 ruthe = 10 landfuss = 12 rheinfuss. The landfuss is also subdivided decimally into 10 zoll = 100 linie = 1000 scrupel; 1 postmeile = 2000 ruthe = 24000 rheinfuss. *Agrarian:* 1 morgen = 180 square ruthe = 25920 square rheinfuss. *Solid:* 1 klafter = 6 F. long \times 6 F. high \times 3 F. deep = 108 cubic rheinfuss; 1 haufen = $4\frac{1}{2}$ klafter = 18 F. long \times 9 F. high \times 3 F. deep = 486 cubic rheinfuss. The old values and denominations which are still retained, as well in the capital as in several principal cities, are given under those heads.

Roman States.—Under this name is intended what has, until recently, been known as the State of the Church. Late events have shown this last title to be uncertain. Two principal cities comprehend all that is systematic in weights and measures. *Bologna.*—*Weight:* 1 libbra = 12 oncia = 96 ottava = 192 ferlino = 1920 carato = 7680 grano. This weight serves also for gold and silver, though the new Italian metrical pound (the kilogram) is also employed, as well as the libbra of Rome. In Ferrara, use is still had of the marco of Milan. *Apothecary:* 1 libbra = 12 oncia = 96 drachma = 288 scrupolo = 6912 grano. This libbra weighs $11\frac{1}{2}$ commercial oncie. *Liquid Capacity:* 1 corba = 2 mezzacorba = 4 quarterone or quarterole = 60 boccale = 240 foglietta. *Dry Capacity:* 1 corba = 2 stajo or staro = 8 quarterone = 32 quarticino or quartuccione. These two corbe are of the same capacity. *Agrarian:* 1 tornatura = 140 square pertica = 14000 square pié. *Rome.*—*Weight:* 1 libbra = 12 oncia = 288 denaro = 6912 grano. The same weight serves for gold and silver, and for medicine. *Liquid Capacity:* 1 botta = 16 barile = 512 boccale = 2048 foglietta = 8192 quartuccio. The barile for oil contains only $\frac{1}{4}$ of the above, or 28 boccale. But oil has a proper measure, viz.: 1 soma = 2 mastello or pelle = 20 cugnatello = 80 boccale. *Dry Capacity:* 1 rubbio = 2 rubbiatella = 4 quarta = 8 quartarella = 12 staja = 16 starello = 22 scorzo = 88 quartuccio. *Length and Distance:* 1 canna (ordinary) = 2 braccio = 6 pié = 8 palmo = 24 linea; 1 canna (architects', etc.) = $7\frac{1}{2}$ pié = 10 palmo = 120 oncia = 600 minuto = 1200 decimo; 1 canna di ara = $1\frac{1}{2}$ braccio di ara = 9 palmo di ara; 1 catena = 10 stajolo = $57\frac{1}{2}$ palmo (architects'). *Agrarian:* 1 rubbio = 4 quarta = 7 pezza = 16 scorzo = 32 quartuccio = 112 square catena = 11200 square stajolo = 370300 square palmo (architects').

Russia in Europe: St. Petersburg.—*Weight:* 1 funt = 12 lana = 32 loth = 96 zolotnic = 9216 doli. This is used for gold and silver also, and the Nürnberg weight by apothecaries. 1 packen = 3 berkowitz = 30 pud = 1200 funt. *Liquid Capacity:* 1 vedro = 4 tschetwerk = 8 osmushka = 88 tscharkey. Since 1819 the vedro = 100 tscharkey. 1 sarokowaja = $13\frac{1}{2}$ anker = 40 vedro. *Dry Capacity:* 1 tschetwert = 2 osmin = 4 pajak = 8 tschetwerik = 32 tschetwerka = 64 garnetz. *Length and Distance:* 1 archine = 2 stopa = 24 verschok = 32 paletz. This was the old measure. Within the last twenty years, both the English foot and the Rhine foot have come into use; and since 1881 the former has furnished, it is believed, the normal standard of value. At present the archine is divided into 16 verschok. 1 verst = 500 sachine = 1500 archine = 24000 verschok. The sachine is 7 feet exactly. Besides the verst, the meile of Lithuania is also used, equivalent to 28530 rheinfuss. *Warsaw.*—The legal weights and measures of Poland are supposed to be, since 1881, subordinate to those of the Russian empire, of which it forms a part. The establishment in 1819, while

Poland had still its own Legislature, and which rested upon the French metrical system, is nearly as follows: *Weight:* 1 funt = 16 lana = 32 loth = 48 skoyciec = 128 drachme = 384 skrupulow = 9216 granow = 50688 granikow = 405504 milligrammow. The milligrammow is exactly the milligram of France. The apothecary pound is $358\frac{1}{2}$ grams of France, and divided like Nürnberg weight. The old funt of Warsaw proper was $\frac{1}{10}$ lighter; and the old quintal was of 5 kaminieck, or 160 funt. The new kaminieck is of 25 funt. *Liquid Capacity:* 1 stangiew = 2 becza = 50 garniec = 200 kwarti = 800 kwaterki. The kwarti is the litre of France, and the becza, therefore, the hectolitre. Formerly the becza was divided into 36 garniec, and 144 kwarti. *Dry Capacity:* 1 korzec = 4 cwierc = 32 garniec or garcy = 128 kwarti = 612 kwaterki. The kwarti is the same for all capacity; and the korzec is, therefore, 128 litres of France. *Length:* 1 lokiec = 2 stopa = 4 cwierc = 24 calow = 288 liniow = 576 millimetrow = 576 millimetre of France; 1 sznurow = 10 pretow = 100 precikow = 150 stopa = 1000 lawek = 1800 calow. The precikow is the geometrical foot, used by surveyors. Itinerary distances are measured by the verst of Russia, 8 of which (= 29633 stopa) make the unitary league. *Agrarian:* 1 wloka = 30 morgow = 90 square sznurow = 9000 square pretow = 900000 square precikow.

Sardinia.—The weights and measures of the island of Sardinia, which can not be called systematic, will be found in the Dictionary. *Duchy of Genoa.*—*Weight:* 1 libbra (peso scarso) = 12 oncia = 288 denaro = 6912 grano. This is the ordinary weight of commerce, which is used also by apothecaries. The rotolo is $1\frac{1}{2}$ libbra. The peso grosso is 10 per cent. heavier than the peso scarso, and has sometimes its rotolo. Gold and silver are weighed by the marco of Turin. The rubbio, or quarter of the centinajo, has 25 libbra in either weight. *Liquid Capacity:* 1 mezzaruola = 2 barile = 100 pinta = 180 amola. *Dry Capacity:* 1 mina = 8 quarto = 96 gombetta. *Length:* 1 piede liprando = 12 oncia = 144 punto = 1728 atomo; 1 piede manuale = 8 oncia; 1 canna = $4\frac{1}{2}$ braccio = 10 palmo = $6\frac{3}{4}$ piede manuale. But this last is hypothetical. The land surveyors use a canna of 12 palmo, which is properly a canella. But canne are found of all lengths, from 8 to 12 palmi. *Turin.*—*Weight:* 1 libbra = $1\frac{1}{2}$ marco = 12 oncia = 96 ottavo = 288 denaro = 6912 grano = 165888 granottino. For gold and silver the marco is divided as under: 1 marco = 8 oncia = 192 denaro = 1152 carato = 4608 grano = 110592 granottino. The apothecary pound is $1\frac{1}{2}$ marco, and is divided like the same weight at Bologna. *Liquid Capacity:* 1 carro = 10 brenta = 360 pinta = 720 boccale = 1440 quartino. *Dry Capacity:* 1 sacco = 8 stajo = 6 mina = 12 quartiere = 48 copello = 960 cucchiaro. *Length:* The smaller measures are divided as at Genoa. 1 pertica = 2 trabucco = $10\frac{1}{2}$ raso = 12 piede liprando. *Itinerary:* 1 miglio = 1300 tesa = 4333 $\frac{1}{3}$ piede liprando = 6500 piede manuale. *Agrarian:* 1 giornata = 100 tavola, or square pertica = 400 square trabucco = 14400 square piede liprando.

Saxony.—For the weights and measures of this kingdom, where there has been no recent establishment, will be taken what prevails at Leipsic. *Weight:* 1 pfund = 2 mark = 16 unze = 32 loth = 128 quantlein = 516 pennig = 7680 gran. Gold and silver are by the mark of Cologne. Apothecary weight is that of Nürnberg. The centner, or hundred-weight, consists generally of 110 pfund, but for live stock it is only 102 pfund; that called *berg-gewicht* at the mines, is 114 pfund; and *stahl-gewicht*, for iron and steel, is 118 pfund. *Liquid Capacity:* 1 fuder = $2\frac{1}{2}$ fass = 4 tonne = 6 ahm = 12 eimer = 14 anker = 756 kanna = 1512 nüssel = 6048 quartier. The fuder of Dresden is similarly divided, but is smaller, containing only 672 kanne of Leipsic. *Dry Capacity:* 1 wispel = 2 malter = 24 scheffel = 96 viertel = 384 metze = 1536 müsschen. *Length:*

1 elle=2 fuss=24 zoll=240 linie. The fuss is also decimally divided. 1 ruthe=10 elle=16 fuss. *Itinerary*: 1 polizei-meile=2000 ruthe=16000 elle=32000 fuss; 1 post-meile=1500 ruthe=12000 elle=24000 fuss. *Agrarian*: 1 morgen=300 square ruthe=76800 square fuss.

The Two Sicilies.—The weights and measures of the island of Sicily are given in the Dictionary, corresponding to the localities of Messina, Palermo, and Syracuse; they are too unsystematic to be detailed here. What follows belongs properly to the city and district of Naples. *Weight*: 1 libbra=12 oncia=360 trapeso=7200 accino. This weight is for gold and silver, for silk, for spices, for drugs and colors. All other articles are weighed by the rotolo of $2\frac{1}{2}$ libbre, or $3\frac{1}{2}$ oncie. The apothecary unit is the same libbra, but divided as follows: 1 libbra=12 oncia=120 drachma=360 scrupolo=7200 accino. *Liquid Capacity*: 1 carro=2 botta=24 barilo=1440 caraffa; 1 salma, for oil=16 staja=256 quarto=320 pignata=1536 misurella. *Dry Capacity*: 1 carro=86 tomolo=864 misura. *Length and Distance*: 1 canna=8 palmo=96 oncia=480 minuto; 1 pertica or passo=7 $\frac{1}{2}$ palmo; 1 miglio=933 $\frac{1}{3}$ passo=7000 palmo. *Agrarian*: 1 morgia=900 square passo=50625 square palmo.

Spain.—The weights and measures given for this kingdom apply especially to Castille, and are recognized at Madrid. Considerable differences in value, and some also in nomenclature, will be found existing in several of the great provinces of Spain; as, for example, in Valencia, where long comparative independence naturally led to a result of this kind, which is further contributed to elsewhere by the remarkable number of distinct races by which Spain is peopled. But these variations are not sufficiently material to be detailed here.

Weight: 1 libra=2 marco=16 onza=128 ochava=256 adarme=768 tomine=9216 grano. Gold and silver are by the same weight; but the marco is the unit, and is divided for gold only, as follows: 1 marco=50 castellano=400 tomine=4800 grano. This division has been, to be sure, interdicted by law; but it still remains, and is especially exemplified in the former South American dependencies of Spain. In apothecary weight: 1 libra=1 $\frac{1}{2}$ marco=12 onza=96 drachma=288 escrúpulo=576 obolo=1728 carater, or quilate=6912 grano; 1 tonelada=20 quintal=80 arroba=2000 libra; 1 quintal macho=6 arroba=150 libra. *Liquid Capacity*: 1 arroba mayor, or cantara=4 quartilla=8 azumbre=32 quartillo=128 copa. This arroba, in theory, should contain 35 libras of distilled water, at the ordinary pressure and temperature. The arroba menor for oil is divided in the same manner, but weighs only $27\frac{1}{2}$ libras, as before. *Dry Capacity*: 1 cahiz=12 fanega=144 almude, or celemine=288 medio=576 quartillo=2304 racion=9216 ochavillo. *Length*: 1 vara=3 pie or tercia=4 palmo or quarta=6 sesma=36 pulgada=48 dedo=432 linea=5184 punto. *Distance*: 1 estadal=2 estado, toesa, or braza=2 $\frac{1}{2}$ paso=4 vara=8 codo=12 pie. There is also a former estadal (before 1801), which still serves as a basis for an agrarian measure, and=11 pie. 1 cuerda=8 $\frac{1}{2}$ vara=24 $\frac{1}{2}$ pie=33 palmo mayor. But in Valencia: 1 cuerda=20 braza=40 vara; 1 legua (till 1568)=3 milla=24 estadio=3000 paso=5000 vara=15000 pie; 1 legua (of Philip V.)=7605 vara=22815 pie. This was a league of which 17 $\frac{1}{2}$ were supposed to make a degree, and was directed to be used on all maps. 1 legua (since 1766)=4800 paso=8000 vara=24000 pie. It is by this that the distances along the great roads are marked. But there is also a legua frequently used, estimated at 800 cuerda=6600 vara=19800 pie. *Agrarian*: 1 yugada=50 fanegada=600 celemin=2400 quartillo=28800 square estadal=460800 square vara. But in Valencia: 1 yugada=6 cahizada=36 fanegada=7200 square braza, and is but the $\frac{1}{13}$ nearly of the legal yugada. 1 arançada (for vineyards and crops of

oats)=400 square estadal=48400 square pie: the estadal being here but 11 pie.

Sweden.—*Weight*: 1 skålpund (viktualievägt)=16 untz=32 lod=128 qwintin=8848 as. There are several commercial pounds in this kingdom, applicable under different circumstances and to different articles; but none are commensurable with the skålpund, except that called *jernvägt*, or the iron pound, which is $\frac{4}{5}$ of the other. They are all to be found in the Dictionary under the word skeppund, by which multiple, indeed, they are usually counted. Gold and silver is weighed by the mark of Stockholm, which is incommensurable with the skålpund, but very nearly half of it. It is divided as follows: 1 mark=8 untz=16 lod=64 qwintin=4384 as. The apothecary pound, or libra=7416 as, and is subdivided like the Nürnberg pound: 1 skeppund=20 lispund=400 pund. *Liquid Capacity*: 1 tunna=48 kanna=96 stop=384 qwarter=1536 ort, or jungfru. *Dry Capacity*: 1 tunna=2 spann=4 half-spann=8 fjerding=32 kappe=56 kanna=112 stop=448 qwarter=1792 ort. *Length*: 1 famn=3 aln=6 fot=72 tum=864 linie. But in late times the foot is divided decimally for all purposes. 1 stång=8 aln=16 fot; 1 mil=2250 stång=6000 famn=18000 aln=36000 fot. *Agrarian*: 1 tunna=2 spannland=4 half-spannland=8 fjerding=32 kappland=56 kannland=218 $\frac{1}{2}$ square stång=14000 square aln=56000 square fot. *Solid*: 1 vedfamn=6 F. long \times 6 F. high \times 3 F. deep=108 cubic fot.

Switzerland.—Nearly every one of the twenty-two cantons of which this confederation is composed appears to present some variety in the values, subdivisions, and nomenclature of its weights and measure. To explain them summarily is impossible; to expose them in detail would occupy a space manifestly disproportionate to their practical interest. What prevails at Bern, Lucerne, and Zurich (the three legislative capitals, biennially in rotation, of the Swiss confederacy), is all that need be given here. *Bern*.—*Weight*: 1 pfund=16 unze=32 loth=128 quent=512 pfennig. This is the ordinary commercial weight; that for gold and silver, etc., is divided into 2 marks, and then like the preceding. The mark in this weight is the old marc of France; the ordinary pfund=17 ounces poids de marc of France. The apothecary weight is, in fact, about $\frac{1}{4}$ of 1 per cent. lighter than the Nürnberg; it is, no doubt, in theory the same, and is divided similarly. *Liquid Capacity*: 1 landfass=6 saum=24 eimer or brenter=600 mass=2400 vierteli=4800 becher. *Dry Capacity*: 1 mütt=12 mäss=24 mässli=48 immi=96 achterli=192 sechszehnerli. *Length*: 1 fuss=12 zoll=144 linie=1728 secunde. The *steinbrecher fuss*, used for quarrying and building stone=13 zoll. The elle happens to be exactly $1\frac{88}{100}$ of the fuss; but this is an accidental coincidence, as they are not used commensurably. *Itinerary*: 1 ruthe=1 $\frac{1}{2}$ klafter=3 $\frac{1}{2}$ wald-schritt=4 feld-schritt=10 fuss. The ordinary Swiss meile is no longer commensurable with any Swiss foot. It seems to have been originally 2666 $\frac{2}{3}$ fuss, for its length would not differ materially from that multiple of the fuss. *Agrarian*: 1 juchart, or feld acker=400 square ruthe=40000 square fuss. For woodland, the juchart is 450; for gardens, 360; for meadow land, 350 and 320; and, finally, for suburban mensuration, 312 $\frac{1}{2}$ square ruthe. *Solid*: 1 klafter=6 F. long \times 5 F. high \times 8 $\frac{1}{2}$ F. deep=108 solid fuss. *Lucerne*.—*Weight*: 1 pfund=36 loth=144 quentchen. This is the division of Lucerne proper; but the weights of Zurich are also in use. Gold and silver are weighed by the mark of Zurich; but the apothecary pound is the old medicinal weight of France. *Liquid Capacity*: 1 saum=3 $\frac{1}{2}$ ohm=100 mass=400 schoppen=4000 prima. *Dry Capacity*: 1 malter=4 mütt=16 viertel=32 halb-viertel=160 immi=256 becher=2560 prima. *Length*: 1 elle=2 schuh, or rheinfuss. The carpenters' foot (tischler-schuh) is nearly 3 per cent. shorter; and the builders' and surveyors' foot (feld-schuh) 10

per cent. shorter than the rheinfuss. Other measures are those of Zurich. *Zurich*.—*Weight*: 1 pfund=18 unze=36 loth=144 quenten; 1 pfund (of Antorf, for gold and silver, etc.)=2 mark=16 unze=82 loth=128 quent=512 pfennig. This weight is $\frac{3}{8}$ of the commercial weight. The apothecary pound is that of Lucerne. *Liquid Capacity*: 1 eimer (lauter-mass)=4 viertel=30 kof=60 mass=120 quärtli=240 stotzen. The eimer (stadt-mass) for wine in retail is subdivided in the same manner, but is 10 per cent. smaller. 1 eimer (trübes mass)=4 viertel=32 kof=64 mass=128 quärtli=256 stotzen. This eimer (which, as its name implies, is for wine unrefined, as the lauter-mass is for fined wine) is $\frac{1}{16}$ larger than the latter. *Dry Capacity*: 1 malter=4 mütt=16 viertel=64 vierling=256 müssli=576 immi. The malter for grain generally, and all dry seeds and fruits (*glatte frucht*), contains 12 $\frac{1}{2}$ cubic feet; that for oats and for green articles (leguminous growth, *rauhe frucht*) contains 12 $\frac{1}{2}$ cubic feet. *Length*: 1 fuss=12 zoll=144 linie=133 lignes de Paris. The same fuss is divided decimally by surveyors. The architectural foot, since 1820, is $\frac{6}{1330}$ longer, but divided like the ordinary fuss. 1 ruthe=2 elle=10 fuss. *Agrarian*: The ordinary juchart=400 square ruthe=4000 square fuss. There are also juchart in the same variety (except the very smallest), and similarly applicable as at Bern. *Sold*: 1 klaf-ter, for fire-wood=6 F. long×6 F. high×4 F. deep=144 cubic fuss. There are also klaf-ter of 72 and 108 cubic fuss, the billets being 2 and 3 feet long respectively. The klaf-ter for turf (torb-klaf-ter) contains 12 korb of 6 cubic fuss, each=72 cubic fuss. In 1828 a new system of weights and measures was proposed and adopted for the Cantons of Aarau, Basle, Bern, Frei-burg, Lucerne, Solothurn, and Vaud, which rested upon the metrical system of France; but, except in the Canton of Vaud, it has not been generally carried out.

Tuscany.—*Weight*: 1 libbra=12 oncia=96 drachma=288 denaro=6912 grano. The same weight answers for gold and silver, and for apothecary use. The legal centinajo or cantaro (as in all the cases hitherto not specially mentioned) is 100 libbre; but the cantaro for wool, meat, and salt fish is yet 160 libbre. *Liquid Capacity*: 1 barile=20 fiasco=40 boccale=80 mezzetta=160 quartuccio, weighing 133 $\frac{1}{2}$ libbra; 1 barile for oil, or olio=16 fiasco=32 boccale=64 mezzetta=128 quartuccio, weighing 120 libbre. The soma for oil is 2 barile. The barile of alcohol, brandy, and rum weighs 120 libbre. *Dry Capacity*: 1 moggio=8 sacco=24 stajo=48 mina=96 quarto=384 metadella=768 mezzetta=1536 quartuccio=3072 bussolo. *Length*: 1 canna=4 braccio=8 palmo=80 soldo=960 denaro; 1 canna (architects' and surveyors') or pertica=2 $\frac{1}{2}$ passetto=5 braccio=10 palmo=60 crazia=100 soldo=300 quattrino=1200 denaro. *Itinerary*: 1 cavizzo=2 passo=6 braccio; 1 miglio=566 $\frac{2}{3}$ canna (architects')=2833 $\frac{1}{3}$ braccio=5666 $\frac{2}{3}$ palmo. *Agrarian*: 1 saccato=10 stajolo=13 $\frac{1}{2}$ storo=165 panoro=660 square pertica=16500 square braccio.

Württemberg.—*Weight*: Divided as the Prussian, from which it differs but slightly in value. Gold and silver are weighed by the mark of Cologne, and medicine by the apothecary weight of Nürnberg. *Liquid Capacity*: 1 fuder=6 eimer=96 immi=960 mass=3840 schoppen. The eimer is of a different capacity, according as it is for clear or unrefined wine. The latter is nearly 4 $\frac{1}{2}$ per cent. larger than the former. *Dry Capacity*: 1 scheffel=8 simri=32 vierling or viertel=64 achtel=128 mässlein=256 ecklein=1024 viertelein. *Length*: 1 fuss=10 zoll=100 linie=1000 punkt. This measure was established in 1806, when the fuss was fixed at 127 lignes de Paris. The elle is not aliquot with the fuss, being 21 $\frac{1}{4}$ lignes de Paris. 1 ruthe=1 $\frac{1}{2}$ klaf-ter=10 fuss. This is the modern division. In the older habits there was 1 $^{\circ}$, a ruthe of 16 fuss; 2 $^{\circ}$, one of 12 rheinfuss; and 3 $^{\circ}$, one of 15

rheinfuss. These different lengths affected, of course, the value of the acre. *Agrarian*: 1 morgen=4 vier-telmorgen=384 square ruthe=38400 square fuss. This is the legal measure, which corresponds in value with the old count of 150 square ruthe (of 16 fuss in length) to the morgen. There is also the little morgen (old measure) of 150 square ruthe (No. 3)=38750 square rheinfuss; and the great morgen (old measure) containing 400 square ruthe (No. 2)=57600 square rheinfuss. 1 juchart or jauchert=1 $\frac{1}{2}$ morgen.

The variations in the computation of the mile, the gallon, the bhd., and the barrel, are so great in various countries, that we give a list by way of comparison.

MILE.		
Miglio, since 1803...	Austr. Lombardy.	0.6214 miles.
" d'Italia....	Milan	1.1336 "
"	Naples	1.1593 "
"	Rome	0.9252 "
"	Turin	1.5744 "
"	Tuscany	1.0276 "
"	Venice	1.1397 "
Mil	Denmark	4.68 "
Mijl, old measure....	Holland	3.6804 "
" marine	"	3.4521 "
" legal, Netherl.	"	0.6214 "
Mil	Sweden	6.6355 "
" of Norway	"	6.9216 "
Mile, legal	Great Britain	1 "
" marine	"	1.1428 "
"	Ireland	1.2727 "
"	Scotland	1.273 "
"	United States	1 "
" of land	England and U. S.	640 acres.
Milha	Portugal	1.2758 miles.
" marine	"	1.1507 "
Milla	Spain	0.8648 "
" marine	"	1.1530 "
Mille, old measure..	France and Belg..	1.2111 "
" marine	"	1.1597 "
" metrical	"	0.6214 "

GALLON.		
Imperial, since 1825...	Great Britain	1.20060 gallons.
For wine, Saxon	England, 1000....	0.93506 "
" Rurnford	" 1266	0.93506 "
" Winchester	" 1266	1 "
" Guildhall	" after 1496	0.96970 "
For ale and beer, 1803...	" till 1825	1.22078 "
For wine	Ireland	0.94199 "
For liquids	Scotland	3.58109 "
For wine	E. and W. Indies..	1 "
For liquids	United States	1 "
For corn, Saxon	England	0.12556 bushels.
" Rurnford	"	0.12359 "
" Winchester	"	0.12451 "
" Guildhall	"	0.12660 "
Imperial, since 1825...	Great Britain	0.12834 "
For corn	United States	0.12500 "

BARREL.		
For lamp oil	Cincinnati	48 gallons.
For wine and brandy..	Great Britain	31.5 "
For beer, before 1803..	"	32.0 "
For ale, etc.	"	36.0 "
Barcelona wine	London	80.0 "
Claret	"	39.0 "
Lisbon	"	35.0 "
Madeira	"	27.5 "
Port	"	34.5 "
Sherry	"	32.5 "
Brandy, etc.	United States	31.5 "
For corn	Maryland	5 bushels.
For fish	"	220 pounds.
For flour	"	196 "
For lime	"	320 "
For salted provisions ..	"	31.2 gallons.

HOGSHEAD.		
For wine, etc. ...	England	63 gallons.
Of claret	"	58 "
For ale	"	58.59744 "
For beer	"	65.92213 "
Old measure....	Scotland	57.29745 "
For liquids	United States	63 "
For tobacco, net	Kentucky, mean. 1200	pounds.
"	Maryland, "	800 "
"	Missouri "	1200 "
"	Ohio "	750 "
"	Virginia "	1200 "

For the greater part of the preceding article we are indebted to the able work of J. H. Alexander, Esq., entitled *Universal Dictionary of Weights and Measures, Ancient and Modern, reduced to the standards of the U. S.*, to which we refer for more extended information.

Ancient Weights and Measures.—This subject is involved in considerable difficulty, and to enter fully into it would be quite inconsistent with our objects and limits. But the following details, abstracted from the best authorities, may be useful to such of our readers as have occasion to look into the ancient authors.

TABLE OF VARIOUS ANCIENT WEIGHTS (according to different Authorities).

Attic obolus	English Troy Grains.	82	Christiani.
		91	Arbuthnot.
Attic drachma		51.0	Christiani.
		54.6	Arbuthnot.
Lesser mina		69	Paucon.
		3992	Christiani.
Greater mina		5183	Christiani.
		5464	Arbuthnot.
		6900	Paucon.
Medical mina		6924	gr. Arbuthnot.
Talent=60 minae=1 cwt. English.			
Old Greek drachm	146.5 Eng. Troy gr. Arb.	62.5	Roman denarius, Arbuthnot.
Old Greek mina	6425	do.	
Egyptian mina	8396	do.	
Ptolemaic mina of Cleopatra	8385	do.	
Alexandrian mina of Dioscorides	9992	do.	
Roman denarius	51.9	Rom. oz. Chr.	
Denarius of Nero	62.5	Rom. oz. Arb.	
" Papyrius	54	Paucon.	
	61.7	do.	
Ounce	415.1	Christiani.	
	437.2	Arbuthnot.	
	431.2	Paucon.	
Pound of 10 oz.	4159	Christiani.	
	4981	Christiani.	
" 12 oz.	5246	Arbuthnot.	
	5174.4	Paucon.	

SCRIPTURE MEASURES OF LENGTH.—(Arbuthnot and Hutton.)

Digit	Inches.	0.7425
Palm		2.97
Span		8.91
	English Feet.	
Lesser cubit		1.485
Sacred cubit		1.7825
	Yards.	
Fathom		2.31
Ezekiel's reed		3.465
Arabian pole		4.62
Schoenus		46.2
Stadium		231
Sabbath day's journey		1155
	Miles.	
Eastern mile		1.836
Parasang		4.158
Day's journey		33.264

GREEKIAN MEASURES OF LENGTH.—(Arbuthnot and Hutton.)

Dactylos	Inches.	0.75346
Doron		3.02187
Dechme		7.55468
Dichas		83.1015
Orthodoron		9.06568
Spithame		12.0875
Pous		1.00729
	English Feet.	
Pygme		1.13203
Pygon		1.25711
Pechys		1.51093
	English Paces.	
Orgya		1.00729
Stadios		100.72916
Dulos		805.8333
Milion		

ROMAN MEASURES OF LENGTH.—(Arbuthnot and Hutton.)

Digitus transversus	English Inches.	0.72525
Uncia, the ounce		0.967
Palmus minor		2.901
Pes, the foot		11.604
	English Feet.	
Palmipes		1.20875
Cubitus		1.4505
Gradus		2.4175
	Paces.	
Pasenus		0.967
Stadium		120.875
Millare		967

ROMAN DRY MEASURES.—(Arbuthnot and Hutton.)

Hemina	English Pints.	0.5074
Sextarius		1.0143
	English Peck.	
Modius		1.0141

ATTIC DRY MEASURES.

Xestes	English Pints.	0.4903
Chenix		1.496
	Winch. Bushel.	
Medimus		1.0406

JEWISH DRY MEASURES (according to Josephus).

Gachal	English Pints.	0.1949
Cab		3.874
Gomer		7.0152
	English Peck.	
Seah		1.4615
	Winch. Bushels.	
Ephah		1.0061
Latech		5.4807
	Quarter.	
Coron		1.8702
Chomer		

ROMAN MEASURES FOR LIQUIDS.—(Arbuthnot and Hutton.)

Hemina	English Pints.	0.50759
Sextarius		1.01518
Congius		7.1712
	Wine Gallons.	
Urna		3.5357
Amphora		7.1712
	Hhds.	
Culeus		2.2766

ATTIC MEASURES FOR LIQUIDS.

Cotylus	English Pints.	0.5742
Xestes		1.1483
Chous		6.800
	Wine Gall.	
Metretes		10.3350

JEWISH MEASURES FOR LIQUIDS.

Caph	English Pints.	0.8619
Log		1.1483
Cab		4.5033
	Wine Gall.	
Hin		1.7225
Seah		3.4450
Bath		10.3350
	Hhds.	
Coron		1.6495

The following table shows the number of pounds of various articles to a bushel:

Wheat	60 pounds.	Onions	57 pounds.
Corn, shelled	56 "	Beans	60 "
Corn on the cob	70 "	Bran	20 "
Rye	56 "	Clover seed	64 "
Oats	36 "	Timothy seed	45 "
Barley	46 "	Flax-seed	45 "
Buckwheat	52 "	Hemp-seed	45 "
Irish potatoes	60 "	Blue grass seed	14 "
Sweet potatoes	50 "	Dried peaches	33 "

—For further information the reader is referred to the *Dict. of Weights and Measures*, by J. H. ALEXANDER, 8vo. Balt., 1855; *Bankers' Magazine*, iii. 299 (J. H. ALEXANDER); *North American Rev.*, xlv. (PERCIVAL), xiv. (FARRAR); *Westminster Rev.*, xvi.; *Edinb. Rev.*, lxxvii. 121; *HUNT'S Merchants' Magazine*, xii. 549, iv. 333, 434 (D. J. BROWNE); *NILES'S Register*, xiv., xv., xx., xxii., xxx., xl.; *Report of Mr. J. Q. ADAMS*, 8vo.

Weld, or **Dyer's Weed** (Ger. *Wau*; Du. *Wouw*, *Wouwe*; Fr. *Gaude*; It. *Guadarella*; Lat. *Luteola*), is an imperfect biennial, with small fusiform roots, and a leafy stem from one to three feet in height. It is a native of Great Britain, Italy, and various parts of Europe; and is cultivated for the sake of its stalk, flowers, and leaves, which are employed in the dyeing of yellow, whence its botanical name *Reseda luteola*. Weld requires the growth of nearly two summers before it comes to maturity; and the crop is liable to fail from so many causes, and is besides so exhausting, that its cultivation is by no means profitable. Weld is preferred to all other substances in giving the lively green lemon yellow. It is, however, expensive; and it is found, when employed in topical dyeing, to de-grade and interfere with madder colors more than other yellows, and to stain the parts wanted to be kept white. Hence quercitron bark is now employed in calico-printing, to the almost total exclusion of weld. It is still, however, employed in dyeing silk a golden yellow, and in paper-staining.—*LOUDON'S Encyclopaedia*.

West Indies (*Antilla* or *Antilles*), an Archipelago of islands which extend from the Gulf of Florida to the Gulf of Paria, and form part of the division Central America, between lat. 10° and 23° N., and long. 59° and 85° W.; bounded on the north and east by the Atlantic, and on the south by the Caribbean Sea, which separates them from the north coast of South America. The northwest group contains the largest islands, or Greater Antilles, as Cuba, San Domingo, Jamaica, and Porto Rico. The other group, or Lesser Antilles, stretching from north to south, consists of Guadeloupe, Martinique, Barbadoes, Trinidad, etc. The Bahamas form a third group. The Lesser Antilles, from Porto Rico to the Gulf of Paria, are by some writers called the Windward Islands, and the smaller group along the coast of Venezuela, the Leeward Islands; but in British charts the *Windward Islands* comprise those between lat. 10° and 15° N., and the *Leeward* those between lat. 15° and 19° N.

LEEWARD ISLANDS.

Virgin Isles.....	Redonda.
Anguilla.....	Montserrat.
St. Martin.....	Antigua.
St. Bartholomew.....	Barbuda.
Saba.....	Guadeloupe.
St. Eustatius.....	The Saintes.
St. Christopher.....	Desada.
Nevis.....	Marie-Galante.
Dominica.....	

WINDWARD ISLANDS.

Martinique.....	Curaçoa.
St. Lucia.....	Buen Ayre.
Barbadoes.....	Los Roques.
St. Vincent.....	Orchilla.
Bequia.....	Blanca.
The Grenadines.....	Tortuga.
Grenada.....	Salada.
Tobago.....	Margarita.
Trinidad.....	Cubagua.
Cuba.....	Coele.

The total area of the Archipelago is 95,100 square miles. Population, 3,684,000. The Lesser Antilles are of volcanic origin. Climate of the whole tropical, but modified by the surrounding ocean and the elevated land of many of the islands. Sugar, coffee, cotton, dye-woods, and spices, are the chief products and exports. Of these islands, France possesses Guadeloupe, Martinique, Desada, Marie-Galante, and part of St. Martin; to Spain belong Cuba and Porto Rico; to Denmark, Santa Cruz, St. Thomas, and St. John; to Holland, St. Eustatius, Saba, Curaçoa, and part of St. Martin; to Sweden, St. Bartholomew; Hayti is governed by rulers chosen from the citizens of each of its two governments; Margarita and adjacent isles belong to the republic of Venezuela; and Anguilla, Antigua, Barbadoes, Dominica, Grenada, Jamaica, Montserrat, Nevis, St. Christopher, St. Lucia, St. Vincent, Tobago, Tortola, Trinidad, Bahamas, and Bermudas, belong to Great Britain. Columbus landed on St. Salvador, Bahama group, in October, 1492; and the Archipelago, under the erroneous impression, at the time of discovery, that it formed part of Asia, was called the *West Indies*.

Particular descriptions are given under the heads of the various islands, and we shall therefore limit this article to the statistics of the trade between the United States and the several West Indies.

AREAS OF THE WEST INDIES.

Islands.	Area in Sq. Miles.
San Domingo.....	29,000
Spanish { Cuba.....	42,383
{ Porto Rico.....	3,865
{ Trinidad.....	2,020
British { Jamaica.....	6,250
{ Leeward Islands.....	864
{ Windward Islands.....	778
{ Bahamas.....	3,982
{ Turks Island and Caicos.....	494
French { Guadeloupe.....	681
{ Martinique.....	382
Dutch West Indies.....	600
Danish West Indies.....	192
Swedish West Indies.....	25
Total square miles.....	91,496

British West Indies.—There are several small islands in the West India group, but they are, in a commercial point of view, too unimportant to require a separate or more special notice, being all comprised under some of the consular districts for which full returns of trade, port regulations, etc., are given in the preceding pages. American trade with the West Indies is placed on an equal footing with that of the most favored nations. Indeed, in some of the islands, as in Canada, American vessels are allowed privileges that are not sanctioned, if not expressly withheld, by the colonial regulations of the mother country. In both these divisions of the British North American possessions they are admitted, to a certain extent, to the benefits of the coasting trade; thus proving how impossible it is for the mother country to frame commercial regulations adapted, in all respects, to the wants and necessities of her colonies in distant quarters of the globe, the effect, if not the design, of which would be to embarrass and clog their intercourse with the neighboring markets.

The act of the Imperial Parliament, 13 Victoria, chap. xxix., secs. 4, 5, 6, clothes the governor-general of the East India possessions with ample powers to admit to the coasting trade, in that part of the globe, all foreign vessels, whenever, in his opinion, the requirements of commerce or the interests of her majesty's subjects in the East Indies may demand such a concession. By virtue of this authority, the coasting trade of these vast possessions is now thrown open to every flag. A similar act in favor of the West India and North American possessions would seem to be more imperatively demanded, even as a boon to British subjects in these parts, particularly in the West Indies, where but few of the staple articles of food are produced, and such as are imported are necessarily burdened with the taxes and imposts incident to reshipment coastwise, and transportation into the interior, before they reach the consumer. Such a measure would be productive of the happiest results; and, while it would impart additional stimulus to American enterprise, it would, at the same time, cheapen all the necessaries of life to the North American subjects of Great Britain, who, by reason of their geographical proximity and their different staples of trade, are the natural customers of the United States.

Official returns received at the Department of State represent American commercial intercourse with the British West Indies generally as being on the most satisfactory footing. Indeed, nothing seems wanting to render that intercourse wholly unembarrassed, save a modification, if not a total repeal, of the protective tariff now in force in Great Britain, in favor of some of the staple productions of these islands.

Danish West Indies.—The colonial possessions of Denmark are the Færoe Islands, Iceland, Greenland, and the islands of Santa Cruz, St. Thomas, and St. John, in the West Indies. Tranquebar and Serampore, in the East Indies, were sold to the English East India Company in 1846. The extent and population of these, in 1850, were as follows:

	Sq. Miles.	Population.
Færoe Islands.....	495	8,150
Iceland.....	38,200	60,000
Greenland.....	3,950	9,400
West Indies:		
Santa Cruz.....	74	23,720
St. Thomas.....	23	18,666
St. John.....	21	2,223
Total.....	42,763	117,164

Dutch West Indies.—The principal island is Curaçoa, or Curaçoa, in the Caribbean Sea, belonging to the Dutch, off the north coast of Venezuela. Lat. 12° N., long. 69° W. Length, forty miles; breadth, six to ten miles. Population (1849) of Curaçoa and St. Eustache, 26,811. Shores bold; surface hilly; soil not rich, and deficient in water, yet a good deal of sugar, indigo, tobacco, and maize are raised. Principal port is Santa Anna, on the southwest side of the island, the entrance to which is narrow, but the harbor secure.

COMMERCE OF THE UNITED STATES WITH THE BRITISH WEST INDIES, FROM OCTOBER 1, 1920, TO JULY 1, 1937.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1921.....	\$264,632	\$470	\$265,102	\$927,346	.....	\$801,139	22,093	.....
1922.....	44,601	2,540	45,141	835,537	\$2,200	474,562	28,720	.....
1923.....	1,617,945	10,122	1,627,967	1,844,031	7,319	520,730	68,350	8,654
1924.....	1,759,702	20,305	1,779,007	2,758,067	12,150	828,199	81,037	7,567
1925.....	1,635,574	11,472	1,647,046	2,437,122	480	638,210	63,967	6,807
1926.....	2,073,871	81,931	2,155,802	2,204,412	7,848	618,559	99,732	8,120
1927.....	683,105	7,470	690,575	895,297	.....	313,386	26,706	7,753
1928.....	26,149	2,706	28,855	123,291	2,655	84,551	7,974	.....
1929.....	1,463	5,053	6,516	240,224	4,873	70,490	5,418	.....
1930.....	149	1,761	1,910	168,379	1,761	66,736	2,395	.....
Total.....	\$3,508,033	\$93,835	\$3,601,918	\$11,934,716	\$39,291	\$4,076,162	447,072	38,901
Sept. 30, 1931.....	\$1,417,291	\$23,962	\$1,441,253	\$1,303,301	\$1,660	\$429,446	40,922	17,937
1932.....	1,655,443	33,823	1,689,276	1,422,237	10,879	411,824	66,769	19,357
1933.....	1,754,305	59,760	1,814,065	1,353,239	4,215	380,491	64,659	21,775
1934.....	1,532,100	64,439	1,596,539	1,163,509	3,306	432,384	51,329	18,288
1935.....	1,765,437	82,840	1,848,277	1,151,347	7,740	403,972	50,544	15,134
1936.....	1,748,855	97,631	1,846,486	1,285,287	12,062	200,226	56,295	16,276
1937.....	2,074,798	43,866	2,118,664	1,451,302	5,850	661,045	63,687	16,098
1938.....	2,080,634	120,218	2,200,852	1,635,848	81,947	1,256,795	56,760	11,245
1939.....	2,472,833	90,642	2,563,475	941,639	80,731	273,295	76,749	11,258
1940.....	2,907,534	58,000	2,965,534	1,043,165	5,350	552,001	73,224	13,364
Total.....	\$19,399,385	\$675,186	\$20,074,571	\$12,760,984	\$213,740	\$5,001,479	614,947	160,688
Sept. 30, 1941.....	\$3,191,633	\$40,311	\$3,231,944	\$855,122	\$5,181	\$271,306	91,587	18,632
1942.....	3,204,346	23,367	3,227,713	826,431	2,816	394,330	86,691	16,670
9 mos., 1943*.....	2,392,303	25,671	2,417,974	837,836	1,780	647,407	75,962	14,388
June 30, 1944.....	4,114,218	21,828	4,136,046	687,906	1,412	345,294	123,501	26,354
1945.....	4,037,500	36,720	4,124,220	752,580	22,345	249,740	121,504	28,122
1946.....	4,915,033	32,474	4,947,507	833,678	4,000	332,581	124,135	23,342
1947.....	3,973,252	20,147	3,993,399	947,932	.....	474,167	91,900	21,172
1948.....	4,344,536	40,347	4,384,883	1,158,563	78,633	403,254	114,848	24,416
1949.....	3,935,834	203,037	4,138,871	997,865	212,884	229,204	101,704	34,147
1950.....	3,612,302	178,644	3,790,946	1,126,968	119,911	289,152	93,833	39,071
Total.....	\$37,711,563	\$622,599	\$38,334,162	\$3,024,931	\$443,962	\$3,641,826	1,033,715	246,814
June 30, 1951.....	\$3,943,530	\$153,949	\$4,103,500	\$1,003,871	\$594,803	\$76,575	88,534	42,437
1952.....	3,512,133	79,956	3,592,089	1,030,637	62,502	96,161	99,470	38,097
1953.....	4,056,527	106,081	4,162,608	1,044,264	2,300	53,332	101,808	45,424
1954.....	4,756,393	153,277	4,909,670	1,126,417	232,156	56,740	97,333	39,675
1955.....	4,738,151	232,932	4,971,083	1,513,670	166,300	96,781	92,030	32,292
1956.....	4,433,008	51,644	4,484,652	2,235,243	34,000	46,534	61,139	29,490
1957.....	5,032,055	52,863	5,084,918	2,653,638	130,000	51,100	106,361	24,970

COMMERCE OF THE UNITED STATES WITH THE DANISH WEST INDIES, FROM OCTOBER 1, 1920, TO JULY 1, 1937.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1921.....	\$1,316,296	\$455,433	\$1,801,779	\$1,933,574	\$14,681	\$301,564	46,299	633
1922.....	1,603,949	628,256	2,232,205	2,514,174	.....	177,559	43,288	220
1923.....	1,231,152	631,002	1,862,154	1,800,504	.....	342,097	32,932	561
1924.....	1,141,641	693,302	1,834,943	2,110,666	.....	581,522	36,458	326
1925.....	1,231,243	568,177	1,849,420	1,432,765	56,724	156,093	37,720	712
1926.....	1,311,604	676,001	2,067,605	2,067,900	.....	156,542	43,584	1,070
1927.....	1,463,611	538,190	2,001,801	2,290,349	47,350	263,312	44,363	810
1928.....	2,202,405	608,034	2,810,439	2,256,129	65,209	175,007	67,932	2,411
1929.....	1,942,010	282,401	2,224,411	2,053,266	61,200	154,732	56,738	1,239
1930.....	1,688,022	220,723	1,908,745	1,665,834	20,187	247,326	52,535	849
Total.....	\$15,269,023	\$5,336,569	\$20,605,592	\$19,744,155	\$265,351	\$2,513,754	461,889	8,899
Sept. 30, 1931.....	\$1,421,075	\$224,502	\$1,645,577	\$1,651,641	\$40,303	\$242,479	41,730	2,708
1932.....	1,393,490	282,341	1,675,831	1,119,366	38,645	97,937	39,762	3,803
1933.....	1,279,670	267,200	1,546,870	1,138,700	24,783	115,783	33,642	3,512
1934.....	1,034,202	354,808	1,439,010	1,621,826	12,114	88,873	38,767	1,727
1935.....	1,255,880	201,316	1,457,196	1,282,902	27,655	71,867	35,976	581
1936.....	1,326,332	210,092	1,536,424	1,826,369	31,543	11,675	32,965	3,231
1937.....	1,124,642	233,850	1,358,492	1,164,087	18,434	20,335	31,657	5,199
1938.....	949,769	227,417	1,177,186	1,617,747	100,467	203,841	33,168	719
1939.....	1,014,331	303,154	1,317,535	1,465,761	165,237	48,997	33,563	3,607
1940.....	918,931	180,518	1,099,449	969,177	21,429	140,187	27,700	1,197
Total.....	\$11,768,432	\$2,435,198	\$14,203,630	\$13,856,576	\$480,605	\$1,220,464	348,920	26,284
Sept. 30, 1941.....	\$769,903	\$92,537	\$862,440	\$1,075,530	\$10,931	\$33,303	20,464	427
1942.....	791,828	157,260	949,088	584,231	55,588	105,492	26,740	700
9 mos., 1943*.....	672,153	74,540	746,693	483,285	4,290	167,224	23,036	353
June 30, 1944.....	738,192	87,130	825,322	624,447	11,980	102,113	24,543	363
1945.....	833,593	160,926	994,519	760,803	67,995	32,877	28,920	1,457
1946.....	950,452	166,464	1,116,916	752,614	100,270	61,620	27,964	1,875
1947.....	836,672	152,631	989,303	846,748	48,000	127,256	22,156	4,313
1948.....	876,963	76,874	953,837	535,738	34,016	131,831	25,579	4,065
1949.....	727,197	54,149	781,346	330,141	8,943	12,379	25,517	5,420
1950.....	867,149	114,818	981,968	267,459	273,880	58,600	19,375	2,600
Total.....	\$8,118,019	\$1,127,379	\$9,245,398	\$6,272,092	\$615,973	\$930,725	253,379	21,676
June 30, 1951.....	\$902,637	\$125,602	\$1,028,239	\$235,304	\$243,580	\$13,834	13,233	4,175
1952.....	810,439	120,637	931,076	191,745	160,987	9,143	20,438	6,581
1953.....	913,431	41,160	954,591	184,437	338,325	7,915	14,032	9,571
1954.....	923,924	34,026	957,950	286,044	235,754	8,412	22,846	7,984
1955.....	843,111	45,353	888,464	225,308	.....	22,155	24,247	5,120
1956.....	817,200	86,511	903,711	225,628	43,100	5,030	21,875	965
1957.....	1,419,013	97,677	1,516,690	281,559	469,946	2,250	21,834	2,157

* Nine months to June 30, and the fiscal year from this time begins July 1.

COMMERCE OF THE UNITED STATES WITH THE DUTCH WEST INDIES, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	\$533,259	\$14,784	\$548,043	\$860,950	\$34,360	\$105,576	18,228	823
1822.....	921,072	157,704	1,078,776	1,491,023	22,457	137,323	25,642	827
1823.....	655,763	157,065	812,828	950,757	3,700	98,262	16,753	1244
1824.....	59,775	111,984	171,759	907,800	8,000	24,408	19,071	1406
1825.....	497,144	77,092	574,236	823,097	.....	74,687	14,809	.....
1826.....	434,126	57,426	491,551	554,217	2,400	87,141	12,753	611
1827.....	337,573	44,102	381,735	519,706	.....	107,510	13,374	212
1828.....	415,343	41,616	456,959	478,376	17	59,013	11,506	323
1829.....	379,874	18,667	398,541	438,132	.....	148,027	12,217	363
1830.....	81,455	42,298	123,753	286,599	2,260	127,306	11,043	124
Total...	\$5,183,473	\$857,798	\$6,041,271	\$7,401,248	\$68,187	\$1,029,563	155,406	5,333
Sept. 30, 1831.....	\$370,857	\$45,274	\$416,131	\$343,799	\$70	\$73,327	11,430	14
1832.....	357,520	46,644	404,164	323,332	.....	35,072	9,511	80
1833.....	285,205	54,038	339,243	330,371	.....	4,162	11,478	80
1834.....	284,552	62,136	346,688	354,192	.....	63,494	11,266	181
1835.....	319,432	84,110	403,542	431,340	56,000	69,181	3,215	.....
1836.....	46,453	67,427	113,880	521,906	22,868	25,510	3,524	223
1837.....	291,777	30,876	322,653	419,107	.....	49,372	6,243	563
1838.....	204,234	46,155	250,389	382,591	23,430	35,315	2,948	163
1839.....	282,042	70,975	353,017	532,284	47,625	33,766	4,020	441
1840.....	259,438	42,916	302,354	396,479	17,137	32,342	3,740	1153
Total...	\$3,084,517	\$551,311	\$3,635,828	\$4,191,401	\$167,130	\$471,959	67,385	3083
Sept. 30, 1841.....	\$218,699	\$34,194	\$252,893	\$500,197	\$20,668	\$62,663	6,666	720
1842.....	251,650	15,531	267,231	331,270	5,455	46,084	4,254	523
9 mos., 1843.....	204,937	10,819	215,756	230,571	.....	53,804	3,794	243
June 30, 1844.....	303,433	1,943	305,376	396,233	942	64,250	4,811	89
1845.....	304,080	33,703	337,783	363,324	17,906	27,560	5,035	.....
1846.....	264,647	14,507	279,154	398,056	6,332	24,150	5,047	.....
1847.....	217,214	16,355	233,569	279,083	6,225	13,847	4,370	113
1848.....	316,666	22,147	338,813	453,615	8,009	99,857	7,344	589
1849.....	317,066	50,252	367,318	453,099	34,018	39,446	14,193	357
1850.....	364,335	56,633	420,968	530,146	41,294	43,037	9,233	161
Total...	\$2,342,732	\$274,094	\$2,616,826	\$3,025,599	\$141,719	\$484,116	65,007	2305
June 30, 1851.....	\$366,378	\$138,039	\$504,417	\$572,470	\$169,544	\$26,859	7,687	806
1852.....	291,679	17,766	311,445	552,561	1,800	20,097	4,977	715
1853.....	251,253	18,739	270,047	409,135	4,090	28,076	5,983	400
1854.....	371,330	22,065	393,395	534,978	11,425	11,912	7,925	690
1855.....	232,640	7,616	240,256	433,841	6,200	15,941	9,222	96
1856.....	323,654	6,323	329,977	536,875	6,500	5,854	7,816	664
1857.....	369,517	16,779	386,296	518,254	7,320	4,033	8,051	435

COMMERCE OF THE UNITED STATES WITH THE FRENCH WEST INDIES, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	\$346,597	\$49,338	\$395,935	\$300,619	.....	\$36,363	43,366	.....
1822.....	918,699	42,303	961,002	969,509	\$4,800	26,548	45,229	.....
1823.....	804,218	63,377	867,595	938,613	1,576	95,127	30,112	2,526
1824.....	770,515	41,717	812,232	894,084	.....	174,508	36,882	.....
1825.....	937,368	74,588	1,011,956	848,468	8,000	160,338	43,589	5,087
1826.....	904,115	52,057	956,172	973,270	2,361	165,555	43,947	4,143
1827.....	979,673	61,156	1,040,829	921,330	4,110	223,438	50,031	4,536
1828.....	1,000,437	15,334	1,015,771	876,651	600	205,963	54,643	4,137
1829.....	1,056,639	15,768	1,072,407	777,992	3,405	286,327	65,019	4,317
1830.....	792,241	13,528	805,769	518,637	.....	267,574	47,129	4,325
Total...	\$9,019,526	\$429,108	\$9,448,634	\$8,620,723	\$24,852	\$1,041,731	459,947	28,376
Sept. 30, 1831.....	\$704,333	\$13,044	\$717,377	\$671,842	\$3,842	\$181,124	35,334	2,254
1832.....	605,713	19,132	624,845	578,837	1,123	152,116	26,677	4,443
1833.....	613,719	24,346	638,065	511,242	4,529	93,664	27,367	6,716
1834.....	561,179	19,034	580,213	416,072	800	70,556	26,900	5,314
1835.....	549,453	34,369	583,822	447,208	16,822	153,063	22,024	2,633
1836.....	471,927	30,173	502,100	417,335	13,865	92,627	18,455	2,057
1837.....	505,063	57,705	562,768	414,203	9,995	122,170	21,514	2,276
1838.....	420,008	38,839	458,847	310,050	14,200	70,604	25,193	1,371
1839.....	585,916	105,905	691,821	702,738	53,966	43,269	34,353	1,223
1840.....	433,595	30,656	464,251	335,251	1,494	161,423	25,612	1,255
Total...	\$5,511,486	\$375,353	\$5,886,839	\$4,804,853	\$120,639	\$1,160,016	261,419	30,103
Sept. 30, 1841.....	\$381,556	\$40,066	\$421,622	\$193,216	.....	\$99,808	22,154	467
1842.....	495,397	23,609	519,006	199,160	.....	116,261	39,790	1,180
9 mos., 1843.....	281,328	13,108	294,436	135,921	\$4,056	92,666	24,006	1,03
June 30, 1844.....	581,568	35,973	617,541	374,695	6,445	256,165	37,375	2,253
1845.....	542,455	21,643	564,098	415,032	4,990	191,344	33,150	1,204
1846.....	613,112	17,509	630,621	343,236	.....	215,431	31,093	1,731
1847.....	561,126	34,038	595,164	151,366	.....	114,513	22,716	2,527
1848.....	469,353	20,571	489,924	127,039	.....	106,099	21,143	2,170
1849.....	180,731	14,267	194,998	71,469	.....	39,750	7,455	2,730
1850.....	260,377	13,291	273,668	75,034	.....	59,636	11,227	211
Total...	\$4,380,503	\$239,955	\$4,620,458	\$2,092,818	\$15,491	\$1,292,323	240,743	14,752
June 30, 1851.....	\$289,579	\$20,702	\$310,281	\$22,909	.....	\$18,694	10,888	871
1852.....	429,846	25,598	455,444	46,237	.....	49,702	16,455	2,119
1853.....	362,513	35,738	398,251	52,340	\$1,000	23,161	13,262	4,741
1854.....	551,525	60,592	612,117	161,035	7,475	37,518	13,576	6,097
1855.....	376,837	12,664	389,501	44,434	.....	42,537	17,287	1,672
1856.....	472,119	8,025	480,144	56,133	100	51,736	17,415	1,842
1857.....	729,779	1,364	731,143	50,639	.....	51,107	20,538	1,906

* Nine months to June 30, and the fiscal year from this time begins July 1.

COMMERCE OF THE UNITED STATES WITH THE SPANISH WEST INDIES (CUBA EXCEPTED), FROM OCT. 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	\$175,217	\$33,064	\$208,281	\$626,616	....	\$12,787	11,134	....
1822.....	180,435	7,066	188,041	533,667	....	35,029	10,650	....
1823.....	266,033	25,456	281,528	813,076	....	22,738	8,409	1,128
1824.....	306,836	233,718	540,614	856,696	....	8,850	5,068	180
1825.....	216,102	22,156	238,258	73,027	....	5,669	6,160	75
1826.....	210,553	12,668	223,226	770,770	....	7,841	6,879	....
1827.....	218,156	10,363	228,519	96,612	\$2,000	13,760	7,154	603
1828.....	222,151	15,677	237,828	1,12,130	1,950	3,446	7,433	323
1829.....	209,780	38,000	248,080	8,832	31,550	8,664	11,051	216
1830.....	245,636	27,523	273,159	1,307,143	21,650	7,718	8,734	489
Total.....	\$2,211,304	\$427,710	\$2,639,014	\$9,009,174	\$57,105	\$127,137	82,531	3,014
Sept. 30, 1831.....	\$261,801	\$53,245	\$315,046	\$1,580,156	\$35,683	\$16,178	8,272	1,051
1832.....	322,550	72,552	395,111	1,885,182	42,360	9,127	9,943	717
1833.....	393,002	27,398	420,400	1,79,324	7,080	8,552	13,865	219
1834.....	431,805	50,722	482,527	2,246,413	11,050	11,160	15,760	741
1835.....	536,035	91,622	627,657	2,364,170	70,550	15,256	21,140	172
1836.....	545,550	65,859	611,409	3,201,043	47,086	8,600	22,079	423
1837.....	517,778	52,133	569,911	2,481,082	42,823	58,725	17,071	1,155
1838.....	602,568	30,434	633,002	2,636,152	30,450	36,733	1,538	2,406
1839.....	779,041	87,348	866,389	3,742,541	115,207	23,144	22,547	1,160
1840.....	740,420	29,208	769,628	1,88,732	31,272	46,650	22,559	992
Total.....	\$5,350,566	\$669,616	\$6,020,182	\$23,26,803	\$434,004	\$264,055	172,187	8,996
Sept. 30, 1841.....	\$721,845	\$28,087	\$749,932	\$2,560,020	\$28,023	\$17,709	30,129	730
1842.....	610,813	19,531	630,344	2,517,001	12,757	63,457	29,565	1,134
9 mos., 1843.....	442,054	11,722	453,776	1,076,125	1,872	47,430	18,361	340
June 30, 1844.....	636,062	5,177	641,239	2,425,202	4,088	27,621	28,443	688
1845.....	658,147	20,775	678,922	2,026,253	11,008	53,453	28,575	622
1846.....	675,441	25,065	700,506	2,277,110	15,554	62,679	30,056	1,373
1847.....	825,079	33,985	859,064	2,141,200	21,594	14,157	26,767	1,879
1848.....	801,722	37,012	838,734	2,106,256	21,556	29,150	35,241	1,150
1849.....	523,202	33,234	556,436	1,64,861	28,005	27,664	25,870	9,850
1850.....	816,062	93,591	909,653	2,067,866	88,753	2,000	30,744	3,108
Total.....	\$6,741,390	\$308,850	\$7,050,240	\$21,162,663	\$234,015	\$346,692	283,451	14,917
June 30, 1851.....	\$61,410	\$57,200	\$1,018,610	\$2,480,320	\$9,900	\$345	36,320	6,013
1852.....	1,05,563	3,542	1,05,105	3,011,223	51,806	26,277	35,010	5,544
1853.....	810,411	54,143	864,554	2,800,936	47,570	18,016	30,815	9,429
1854.....	990,886	60,957	1,051,843	2,850,353	133,700	19,170	31,014	8,528
1855.....	1,144,581	38,357	1,182,938	2,475,980	16,000	23,025	34,150	5,552
1856.....	1,09,509	43,125	1,142,724	3,870,963	23,250	14,700	33,964	1,950
1857.....	1,733,420	152,045	1,935,465	5,748,600	489,495	658	37,633	3,550

COMMERCE OF THE UNITED STATES WITH THE SWEDISH WEST INDIES, FROM OCTOBER 1, 1820, TO JULY 1, 1857.

Years ending	Exports.			Imports.	Whereof there was in Bullion and Specie.		Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	Export.	Import.	American.	Foreign.
Sept. 30, 1821.....	\$507,077	\$53,147	\$560,226	\$611,116	....	\$2,2738	20,774	888
1822.....	56,566	93,249	660,313	393,110	....	\$7,683	16,282	1080
1823.....	241,701	18,362	260,063	185,808	....	44,181	8,174	354
1824.....	204,830	39,087	244,070	102,835	....	22,520	8,263	340
1825.....	193,761	41,247	235,008	81,702	....	36,553	7,150	133
1826.....	120,573	23,284	143,857	163,400	....	40,429	4,437	....
1827.....	416,822	25,014	441,836	209,585	....	82,920	16,277	....
1828.....	611,884	23,616	635,500	375,995	....	109,656	26,553	335
1829.....	634,523	23,791	708,314	283,049	....	107,741	28,246	358
1830.....	552,700	37,727	590,427	230,530	....	157,874	19,760	984
Total.....	\$4,103,290	\$377,124	\$4,480,414	\$2,637,635	....	\$64,155	156,116	4742
Sept. 30, 1831.....	\$251,927	\$11,111	\$263,038	\$218,918	....	\$111,142	7,199	552
1832.....	141,240	7,478	148,718	53,410	....	22,215	4,651	644
1833.....	100,163	5,657	105,820	32,202	....	8,350	3,350	283
1834.....	81,040	7,902	88,942	47,214	\$2400	24,429	2,619	236
1835.....	72,714	13,641	86,355	81,330	....	22,013	2,599	217
1836.....	80,225	1,620	81,845	56,414	....	10,602	2,052	....
1837.....	84,114	3,065	87,119	6,977	....	27,207	2,628	84
1838.....	74,141	4,281	78,421	46,019	....	26,013	1,945	....
1839.....	108,282	4,130	112,412	12,468	....	3,900	2,184	139
1840.....	93,710	3,610	102,320	57,545	....	47,470	2,203	139
Total.....	\$1,087,574	\$61,835	\$1,149,409	\$624,487	\$2400	\$305,863	31,475	2294
Sept. 30, 1841.....	\$165,184	\$3,707	\$168,891	\$10,760	....	\$13,607	3,455	95
1842.....	129,727	3,320	133,047	23,242	....	19,475	2,663	726
9 mos., 1843.....	31,228	2,346	33,574	51,318	....	45,823	1,400	....
June 30, 1844.....	63,884	1,360	65,244	23,719	\$1000	22,359	1,478	141
1845.....	88,886	1,453	90,339	12,119	....	8,473	2,135	....
1846.....	138,021	3,448	141,469	5,235	1012	2,450	2,359	....
1847.....	110,062	3,059	113,121	....	....	....	1,607	....
1848.....	75,456	800	76,256	13,735	....	9,589	2,250	79
1849.....	15,128	737	15,865	15,982	....	9,918	2,684	547
1850.....	98,176	1,166	99,342	2,193	....	500	2,454	382
Total.....	\$9,589	\$21,096	\$1,017,888	\$167,403	\$2012	\$132,234	22,004	1970
June 30, 1851.....	\$61,157	\$61,905	\$123,062	\$29,001	....	\$12,587	1,310	....
1852.....	90,852	1,793	92,645	4,284	....	3,220	2,287	125
1853.....	31,024	1,101	32,125	6,876	....	4,589	1,136	....
1854.....	12,741	....	12,741	22,500	....	13,156	367	....
1855.....	68,856	391	69,247	32,220	....	16,816	1,365	146
1856.....	60,702	....	60,702	10,192	....	2,820	1,012	85
1857.....	76,405	3,528	79,933	12,082	\$2065	....	1,719	....

* Nine months to June 30, and the fiscal year from this time begins July 1.

French West Indies.—The following table gives the general trade of France with its colonies, in 1853:

Colonies.	Imports.	Exports.
Martinique	465,441	4765,577
Guadaloupe	423,655	570,434
Bourbon	851,647	684,946
Senegal	287,296	392,369
Cayenne	56,833	181,044
India	609,723	21,384
Algiers	1,132,304	3,355,966
St. Pierre and Miquelon, etc.	617,681	273,687
Isles Mayotte and Madagascar	8,627	36,584

The trade to Bourbon Island, Guyana, Martinique, and Guadaloupe, out and home, employed in 1848, 492 ships; in 1849, 541; in 1850, 486; in 1851, 602; in 1852, 677; in 1853, 583. The mean of the six years, 565 vessels.

Swedish West Indies.—The island of St. Bartholomew is the only possession of the Swedes in America. It belongs to the Leeward group, and is situate centrally in lat. 17° 50' N., and long. 62° 52' W., distant twelve miles from St. Martin, and about thirty from St. Christopher. It is about eight miles long by from two to three miles wide, and contains an area of about twenty-five square miles. Capital, Gustavia. The island is of an irregular shape, and deeply indented by numerous small sandy bays, separated by bold and steep rocky acclivities, of moderate height. In the interior it is hilly, but its loftiest elevations are less than 1000 feet. In most parts it is barren and sterile, but has numerous well-cultivated valleys. It produces all the staples of the West Indies—cotton, sugar, tobacco, indigo, etc., and also lignum vite and iron-wood. Its only exports are cattle and some salt. Water is scarce, and the inhabitants depend for supply on the rains. The only harbor is La Carenage, a safe and commodious one, and much frequented. It is on the west side of the island. Close by is Gustavia, the principal town, a thriving place.—For articles on British Emancipation, British Colonies, etc., see *Eclectic Review* (4th series), iv., ix.; *Christian Quarterly Spectator*, x.; *FRASER'S Magazine*, viii.; *Edinburgh Rev.*, xix., xli., xlv., xl.; *Quarterly Rev.*, xxxii., xxxviii. (SOUTHEY), xlv.; *Westminster Review*, i.; *BLACKWOOD'S Mag.*, xiv., xv., xvi., xxxi., xxxiv., lxiii.

Whalebone, a substance of the nature of horn, adhering in thin parallel laminæ to the upper jaw of the whale. These vary in size from three to twelve feet in length; the breadth of the largest at the thick end, where they are attached to the jaw, is about a foot. They are extremely elastic. All above six feet in length is called *size bone*. This article was first known in England about the year 1693. It may be worth while to remark, as evincing the ignorance that at one time prevailed with respect to the whale, that, by an old English feudal law, the *tail* of all whales belonged to the queen, as a perquisite, to furnish her majesty's wardrobe with whalebone!—BLACKSTONE, vol. i. p. 233. The import of whalebone into the United States for a number of years past has been as follows:

	Pounds.		Pounds.
1847	3,311,080	1852	1,259,900
1848	2,003,000	1853	5,652,300
1849	2,281,101	1854	3,445,200
1850	2,809,200	1855	2,797,500
1851	3,616,500	1856	2,387,400

—See **WHALE-FISHERIES**. Whalebone first became in use in Europe in the 17th century.—See p. 390.

Whale-fishery.—*Whale* (Common), the *Balæna mysticetus* of Linnæus, a marine animal of the cetaceous species, and the largest of all those with which men are acquainted. The whale has, it is affirmed, been found one hundred and sixty feet in length; but this is most probably an exaggeration. In the Northern seas it is at present seldom found above sixty feet long: being, however, generally killed before it arrives at its full growth, this is no proof that the animal may not formerly have attained to a much larger size. The bodies of whales are covered, immediately under the

skin, with a layer of fat or *blubber*, which in a large fish is from twelve to eighteen inches thick. In young whales this fatty matter resembles hog's lard, but in old ones it is of a reddish color. This is the valuable part of the whale, and the desire to possess it has prompted man to attempt the capture of this mighty animal. The blubber yields, by expression, nearly its own weight of a thick, viscid oil (train oil). The common whale is now rarely found, except within the Arctic circle; but at a former period it was not unfrequently met with on our coasts. There is a good account of the common whale, and of the manner in which the fishery is carried on, in Mr. JOHN LAING'S *Voyage to Spitzbergen*, one of the shortest, cheapest, and best of the innumerable books published on this hackneyed subject.

1. *The Sperm Whale* (the *Cachalot* or *Physeter macrocephalus*).—The principal species are the black-headed with a dorsal fin, and the round-headed without a fin on the back, and with fistula in the snout. This whale is known at a distance by the peculiarity of his "spoutings" or "blows." He can be easily detected by whalers, if he happens to be in company with other species of whales. He blows the water or vapor from his nostrils in a single column, to the height, perhaps, of twelve feet, inclining in a forward direction, in an angle of forty-five degrees with the horizon, and visible for several miles. There is also a wonderful regularity as to time in which he "blows," perhaps once in ten minutes. He remains on the surface of the water from forty-five to sixty minutes, and under water about the same time. Unless the whale is frightened, whalers make quite correct calculation as to the chances of overtaking him, or meeting him, or when he will rise to the surface after he has "turned flukes." When the sperm whale is near he can be easily distinguished by the form of his head, unlike any other variety of whale. Its head is enormous in bulk, being fully more than one-third of the whole length of its body, and it ends like an abrupt and steep promontory, and so hard for several feet from its front, that it is quite difficult, if not impossible, for an iron to enter it; as impervious, indeed, to a harpoon as a bale of cotton. Besides, the sperm whale has a hump on his back, which distinguishes him from others. This hump is farther forward than the hump on the finback whale. Sperm whales have been captured from seventy to ninety feet in length, and from thirty to forty-five feet in circumference round the largest part of their bodies. It is supposed by whalers, from their appearance, that they live, or some of them at least, to a great age. One writer on this subject thought that the sperm whale would attain the age of many hundred years, and even to a thousand years. This, however, is mere conjecture, because there are no dates or facts upon which to found a correct opinion.

It is supposed, that as the sperm whale advances in age, his head not only retains its ordinary proportions, and to appearance becomes enlarged, but the truth is, the other parts of his body, especially his extremities, do actually diminish in bulk and circumference. In some instances more oil has been taken out of the head of a sperm whale than from the other part of his body. The principal food of the sperm whale is "squid," a molluscous animal. "This is an animal of so curious an order as to merit a word of special notice. The principal peculiarity of this molluscous tribe is the possession of powerful tentacula or arms, ranged round the mouth, and provided with suckers, which give them the power of adhering to rocks, or any other substances, with surprising tenacity. Some of this tribe attain to a great size, and, as large as the whale is, will furnish it with no contemptible mouthful. In the gullet of one sperm whale an arm or tentaculum of a sea-squid was found measuring nearly twenty-seven feet long." Whalers frequently discover large masses or junks of squid floating about, probably torn in pieces

by whales in their search after food. The flesh of the squid is soft, without bones, and somewhat transparent, like the common sun-fish seen on our shores. It is said that squid have been seen as large as an ordinary whale. This food for the sperm whale is found in great abundance in the Pacific seas.

2. *The Right Whale*.—The whale having this general cognomen belongs to the species of *Balæna mysticetus*. There are several varieties included in this species, as we shall hereafter observe, and which are distinguished by whalers both in regard to some external peculiarity as well as the different localities where they are usually found. The right whale differs from the sperm in the following particulars: His head is sharper, more pointed—he has no “hump” on his back—the column of water which he throws up when he “blows” is divided like the tines of a fork, and it rises from his breathing-holes in a perpendicular direction, from eight to twenty feet. The right whale furnishes the bone (*balæen*) so much in common use, and called “whalebone.” This bone is taken from the mouth and upper jaw of the whale, and is set along laterally in the most exact order several inches apart, decreasing in length from the centre of his mouth, or the arch of his palate, and becoming shorter farther back; while toward the lips the bone tapers away into mere bristles, forming a loose hanging fringe or border. At the bottom of this row of bone, where it penetrates the gum, and from eighteen to thirty inches downward, we find a material that resembles coarse hair, entwining and interlacing the bone, and thus forming a sort of network, and so thick, that when the whale closes his lips to press out the water the smallest kind of fish are caught in the meshes, and are unable to escape. Indeed, the edges of the bones or slabs, as they might be termed, are fringed with this coarse hair, and it extends to their extremities, as may be seen in the rough state when landed from whale ships. The length of the bones or slabs (average eight feet, longest fourteen feet) vary, in a great measure, according to the size of the fish, though some varieties of this species have larger and better bone than others. The value of the bone is enhanced, as a general thing, in proportion to its length. The principal food of the right whale is a very small red fish, called “brit.” Immense shoals of these fish are seen on whale grounds, and the water to a great distance, even for miles, becomes colored with them.

The right whale does not fight or contend with his mouth or head, as the sperm whale does, but his means of attack and defense are chiefly in his enormous flukes. He will, however, when struck, “root around,” as whalers say, and not unfrequently in this manner upset a boat. This kind of whale, and other varieties distinguished by the *balæen* or bone, have no regular time for remaining on the surface of the water after they “breach,” nor in remaining under water after they “turn flukes.” The length of a large right whale is about eighty feet, and some have yielded their captors 250 to 300 barrels of oil. Such a whale would perhaps weigh not far from eighty tons. The oil of this species of whale is less valuable than the sperm. The whalebone, which now has an advanced price in the market far beyond any previous value attached to it, is obtained from the mouth of the whale about in proportion of 1000 pounds to 100 barrels of oil.

3. *The Finback Whale*.—This is a smooth, slim fish—smaller usually than a right whale. He is found in nearly all latitudes. He has a “hump” on his back, which distinguishes him from the right whale. His head and mouth are of the same construction. This whale is known by whalers, when seen at a suitable distance, by his “blows.” The column of vapor rises in a single stream, in a vertical or perpendicular direction. This fish is termed *Finback*, on account of a fin on his back, differing in this particular from all other species of whale. The oil obtained from him is of the same quality as the right-whale oil.

4. *Bowhead Whale*.—This whale is smooth all over, having no “bonnet on his head,” as whalers say, and as right whales have. Their heads differ in shape somewhat from other whales, and hence the name *Bowhead* given to them. This species of whale, so far as known, have never been found except in the Ochotsk Sea and Arctic Ocean. The Greenland whale, and also the species called the great *Rorqual*, are doubtless included in the name which our whalers give to the *Bowhead*. There are several other varieties of the whale tribe, and different names are attached to them, such as the “Scragg,” the “Humpback,” etc.; but the foregoing are all the kinds whether of interest or profit to whalers.—*Rev. LEWIS HOLMES.*

It is probably true, as has been sometimes contended, that the Norwegians occasionally captured the whale before any other European nation engaged in so difficult and perilous an enterprise. But the early efforts of the Norwegians were not conducted on any systematic plan, and should be regarded only in the same point of view as the fishing expeditions of the Esquimaux. The Biscayans were certainly the first people who prosecuted the whale-fishery as a regular commercial pursuit. They carried it on with vigor and success in the 12th, 13th, and 14th centuries. In 1388, Edward III. relinquished to Peter de Puyanne a duty of £6 sterling a whale, laid on those brought into the port of Biarritz, to indemnify him for the extraordinary expenses he had incurred in fitting out a fleet for the service of his majesty. This fact proves beyond dispute that the fishery carried on from Biarritz at the period referred to must have been very considerable indeed; and it was also prosecuted to a greater or less extent from Cibourne, Vieux Boucan, and subsequently from Rochelle and other places.—See *Mémoire sur l'Antiquité de la Pêche de la Baleine*, by NOËL, 12mo. Paris, 1795. The whales captured by the Biscayans were not so large as those that are taken in the Polar seas, and are supposed to have been attracted southward in pursuit of herrings. They were not very productive of oil, but their flesh was used as an article of food, and the whalebone was applied to a variety of useful purposes, and brought a very high price. This branch of industry ceased long since, and from the same cause that has occasioned the cessation of the whale-fishery in many other places—the want of fish. Whether it were that the whales, from a sense of the dangers to which they exposed themselves in coming southward, no longer left the Icy Sea, or that the breed had been nearly destroyed, certain it is, that they gradually became less numerous in the Bay of Biscay, and at length ceased almost entirely to frequent that sea; and the fishers being obliged to pursue their prey upon the banks of Newfoundland and the coasts of Iceland, the French fishery rapidly fell off.

The voyages of the Dutch and English to the Northern Ocean, in order, if possible, to discover a passage through it to India, though they failed of their main object, laid open the haunts of the whale. The companions of Barentz, who discovered Spitzbergen in 1596, and of Hudson, who soon after explored the same seas, represented to their countrymen the amazing number of whales with which they were crowded. Vessels were in consequence fitted out for the Northern whale-fishery by the English and Dutch, the harpooners and a part of the crew being Biscayans. They did not, however, confine their efforts to a fair competition with each other as fishers. The Muscovy Company obtained a royal charter, prohibiting the ships of all other nations from fishing in the seas round Spitzbergen, on pretext of its having been first discovered by Sir Hugh Willoughby. There can, however, be no doubt that Barentz, and not Sir Hugh, was its original discoverer; though, supposing that the fact had been otherwise, the attempt to exclude other nations from the surrounding seas, on such a ground, was not one that could be tolerated. The Dutch, who were at the time prompt to

embark in every commercial pursuit that gave any hopes of success, eagerly entered on this new career, and sent out ships fitted equally for the purposes of fishing and of defense against the attacks of others. The Muscovy Company having attempted to vindicate its pretensions by force, several encounters took place between their ships and those of the Dutch. The conviction at length became general that there was room enough for all parties in the Northern seas; and in order to avoid the chance of coming into collision with each other, they parceled Spitzbergen and the adjacent ocean into districts, which were respectively assigned to the English, Dutch, Hamburgers, French, Danes, etc.

The Dutch, being thus left to prosecute the fishery without having their attention diverted by hostile attacks, speedily acquired a decided superiority over all their competitors. When the Europeans first began to prosecute the fishery on the coast of Spitzbergen, whales were every where found in vast numbers. Ignorant of the strength and stratagems of the formidable foe by whom they were now assailed, instead of betraying any symptoms of fear, they surrounded the ships and crowded all the bays. Their capture was in consequence a comparatively easy task, and many were killed which it was afterward necessary to abandon, from the ships being already full. While fish were thus easily obtained, it was the practice to boil the blubber on shore in the North, and to fetch home only the oil and whalebone. And perhaps nothing can give a more vivid idea of the extent and importance of the Dutch fishery in the middle of the 17th century, than the fact that they constructed a considerable village, the houses of which were all previously prepared in Holland, on the Isle of Amsterdam, on the northern shore of Spitzbergen, to which they gave the appropriate name of *Smeerenberg* (from *smeeren*, to melt, and *berg*, a mountain). This was the grand rendezvous of the Dutch whale ships, and was amply provided with boilers, tanks, and every sort of apparatus required for preparing the oil and the bone. But this was not all. The whale fleets were attended with a number of provision ships, the cargoes of which were landed at *Smeerenberg*; which abounded during the busy season with well-furnished shops, good inns, etc.; so that many of the conveniences and enjoyments of Amsterdam were found within about eleven degrees of the Pole! It is particularly mentioned that the sailors and others were every morning supplied with what a Dutchman regards as a very great luxury—*hot rolls* for breakfast. Batavia and *Smeerenberg* were founded nearly at the same period, and it was for a considerable time doubted whether the latter was not the more important establishment.—*DE RESTE, Histoire des Pêches.*

During the flourishing period of the Dutch fishery, the quantity of oil made in the North was so great that it could not be carried home by the whale ships; and every year vessels were sent out in ballast to assist in importing the produce of the fishery. But the same cause that had destroyed the fishery of the Biscayans, ruined that which was carried on in the immediate neighborhood of Spitzbergen. Whales became gradually less common, and more and more timid and difficult to catch. They retreated first to the open seas, and then to the great banks of ice on the eastern coast of Greenland. When the site of the fishery had been thus removed to a very great distance from Spitzbergen, it was found most economical to send the blubber direct to Holland. *Smeerenberg* was in consequence totally deserted, and its position is now with difficulty discoverable.

But though very extensive, the Dutch whale-fishery was not, during the first thirty years of its existence, very profitable. This arose from the circumstance of the right to carry it on having been conceded, in 1614, to an exclusive company. The expense inseparable from such great associations, the wastefulness and unfaithfulness of their servants, who were much more in-

tent upon advancing their own interests than those of the company, increased the outlays so much, that the returns, great as they were, proved little more than adequate to defray them, and the fishery was confined within far narrower limits than it would otherwise have reached. But after various prolongations of the charter of the first company, and the formation of some new ones, the trade was finally thrown open in 1642. The effects of this measure were most salutary, and afford one of the most striking examples to be met with of the advantages of free competition. Within a few years the fishery was vastly extended; and though it became progressively more and more difficult from the growing scarcity of fish, it proved, notwithstanding these disadvantages, more profitable to the private adventurers than it had ever been to the company; and continued for above a century to be prosecuted with equal energy and success. The famous John de Witt has alluded as follows to this change in the mode of conducting the trade:

"In this respect," says he, "it is worthy of observation, that the authorized Greenland Company made heretofore little profit by their fishery, because of the great charge of setting out their ships; and that the train oil, blubber, and whale fins were not well made, handled, or cured; and being brought hither and put into warehouses, were not sold soon enough, nor to the company's best advantage. Whereas, now that every one equips their vessels at the cheapest rate, follow their fishing diligently, and manage all carefully, the blubber, train oil, and whale fins are employed for so many uses in several countries, that they can sell them with that conveniency, that though there are now fifteen ships for one that formerly sailed out of Holland on that account, and consequently each of them could not take so many whales as heretofore, and notwithstanding the new prohibition of France and other countries to import these commodities, and though there is greater plenty of them imported by our fishers—yet those commodities are so much raised in the value above what they were while there was a company, that the common inhabitants do exercise that fishery with profit, to the much greater benefit of our country than when it was (under the management of a company) carried on but by a few."—*True Interest of Holland*, p. 63, 8vo ed. London, 1746.

When in its most flourishing state, toward the year 1680, the Dutch whale-fishery employed about 260 ships and 14,000 sailors.

The English whale-fishery, like that of Holland, was originally carried on by an exclusive association. The Muscovy Company was, indeed, speedily driven from the field; but it was immediately succeeded by others that did not prove more fortunate. In 1725 the South Sea Company embarked largely in the trade, and prosecuted it for eight years; at the end of which, having lost a large sum, they gave it up. But the Legislature, having resolved to support the trade, granted, in 1732, a bounty of 20s. a ton to every ship of more than 200 tons burden engaged in it; but this premium being insufficient, it was raised, in 1749, to 40s. a ton, when a number of ships were fitted out, as much certainly in the intention of catching the bounty as of catching fish. Deceived by the prosperous appearance of the fishery, Parliament imagined that it was firmly established, and in 1777 the bounty was reduced to 30s. The effect of this reduction showed the factitious nature of the trade, the vessels engaged in it having fallen off in the course of the next five years from 105 to 33! To arrest this alarming decline, the bounty was raised to its old level in 1781, and of course the trade was soon restored to its previous state of apparent prosperity. The hostilities occasioned by the American war reduced the Dutch fishery to less than half its previous amount, and gave a proportional extension to that of England. The bounty, which had in consequence become very heavy, was reduced, in 1787, to 30s. a ton; in 1792 it was further reduced to 25s.; and in 1795 it was reduced to 20s., at which sum it continued till 1824, when it ceased.

It appears from accounts given in *MACHESON'S Annals of Commerce* (vol. iii. and iv.), that the total

bounties paid for the encouragement of the whale-fishery, in the interval between 1750 and 1788, amounted to no less than £1,577,935. It will be seen from the official account which follows, that there are no means of furnishing any accurate account of the sums paid as bounties by Great Britain from the year 1789 to 1813, inclusive; but it is, notwithstanding, abundantly certain that the total bounties paid during the period from 1789 to 1824 considerably exceeded £1,000,000.

AN ACCOUNT OF THE NUMBER OF SHIPS ANNUALLY FITTED OUT IN GREAT BRITAIN FOR THE NORTHERN WHALE FISHERY, OF THE TONNAGE AND CREWS OF SUCH SHIPS, AND OF THE BOUNTIES PAID ON THEIR ACCOUNT, FROM 1789 TO 1814.

Years.	Ship.	Tons.	Men.	Bounties paid.
1789	161	46,599	
1790	116	33,232	4492	
1791	116	33,106	4520	
1792	93	26,683	4667	
1793	82	28,487	3210	
1794	60	16,846	2250	
1795	44	11,748	1601	
1796	51	13,833	1910	
1797	60	16,371	2265	
1798	66	18,754	2633	
1799	67	19,360	2683	
1800	61	17,727	2451	
1801	64	18,668	2544	
1802	79	23,539	3119	
1803	95	28,608	3806	
1804	92	28,034	3517	
1805	91	27,570	3636	
1806	91	27,697	3715	
1807				The documents from which the amount of bounties paid in the years 1789 to 1806 could be shown, were destroyed in the fire at the London custom-house.
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We have already noticed several changes of the localities in which the whale-fishery has been carried on at different periods; and within these few years others of the same kind have taken place. The Dutch fishers first began to frequent Davis's Straits in 1719; and as the whales had not hitherto been pursued into this vast recess, they were found in greater numbers than in the seas round Spitzbergen. From about this period it was usually resorted to by about three-tenths of the Dutch ships. It was not till a comparatively late period that Davis's Straits began to be frequented by English whalers; and down to 1820, when Captain Scoresby published his elaborate and valuable work on the whale-fishery, that carried on in the Greenland seas was by far the most considerable. But it will be seen from the subjoined account, that from 1826 down to 1837 the Greenland seas were nearly abandoned. This was principally a consequence of the greater abundance of whales in Davis's Straits, but it was also in part owing to the various discoveries made by the expeditions fitted out by government for exploring the seas and inlets to the westward of Davis's Straits and Baffin's Bay having made the fishers acquainted with several new and advantageous situations for the prosecution of their business. Since 1837, however, the few ships that have been sent out have gone mostly to the Greenland seas. The sea in Davis's Straits is less incommoded with field-ice than the Greenland and Spitzbergen seas, but it abounds with icebergs; and the fishery, when carried on in Baffin's Bay and Lancaster Sound, is more dangerous, perhaps, than any that has hitherto been attempted. The subjoined table shows how rapidly the Northern fishery declined down to 1842, from which period it continued nearly stationary down to 1846, when it revived a little. During the last three years there have sailed for the Northern fishery—

1850	45 ships	11,160 tons.
1851	47 "	11,935 "
1852	49 "	13,457 "

It should, however, be observed that the fishery is rather for seals than for whales; the value of the produce obtained from the former considerably exceeding the value of that obtained from the latter.

During 1852 England imported 5519 tons spermaceti oil, which were almost wholly retained for consump-

tion. During the same year the imports and exports of train oil were, respectively, 14,500 and 2757 tons.

The import duties that in various countries have been placed upon whale oil, the product of foreign fisheries, have operated against the whale-fishery. This may be seen from the following statement of the duties now (1857) in force in the principal maritime countries:

Belgium	£2 27 per hectolitre of 20½ gallons.
Brazil	15 per cent. ad valorem.
China	5 per cent. ad valorem.
France	\$10 87 per 220 pounds.
Great Britain	Free.
Hanse Towns	½ to 1 per cent. ad valorem.
Holland	Free.
Russia	52½ cents per pood of 36 pounds.
Spain	33 cents per arroba of 4¼5 gallons.
Sweden	5 cents per Hspund of 18 2½ pounds.
United States	Free.

Southern Whale-fishery.—This consists of three distinct branches; viz., 1st, the catch of the spermaceti whale, which furnishes the valuable substance called spermaceti (see the term); 2d, that of the common black whale of the Southern seas; and, 3d, that of the sea-elephant, or Southern walrus. The spermaceti whale (*Physeter macrocephalus*) is found in all tropical climates, and especially on the coasts of New Zealand and the adjoining seas. The ordinary duration of the voyage of a ship employed in this department of the fishery is about three years. The common black whale of the Southern seas (*Physeter microps*) is met with in various places, but principally on the coast of Brazil, in the bays on the west coast of Africa, and in some of the bays in New South Wales, Van Diemen's Land, etc. Sea-elephants (intermediate between the walrus of the Northern seas and the seal) are principally met with in the seas round the islands of Desolation, South Georgia, and South Shetland, the coast of California, etc. Vast numbers of these animals are annually captured; vessels frequently load entirely with them; and they are believed to furnish more oil than the common South Sea whale. The oil of the black whale and that of the sea-elephant are both known in the market by the name of Southern oil, and they are so very similar that those most versed in the trade can with difficulty distinguish the one from the other. Hence ships commonly engage indifferently in either fishing, as opportunity offers. The usual duration of the voyage of a ship from England in either of the last two departments, or in the two combined, varies from twelve to eighteen months.

The South Sea fishery was not prosecuted by the English to any extent till about the beginning of the American war; and as the Americans had already entered on it with vigor and success, four American harpooners were sent out in each vessel. In 1791 seventy-five whale ships were sent out to the South Sea; but the number has not been so great since, and latterly it has been unprosperous and declining, in consequence partly of the competition of the colonists in Australia, who are incomparably better situated for the prosecution of this branch of industry, and partly of that of the Americans. The *Macrocephalus*, or spermaceti whale, is particularly abundant in the neighborhood of the Spice Islands; and Mr. Crawford, in his valuable work on the Eastern Archipelago, entered into some details to show that the fishery carried on there was of greater importance than the spice trade. Unluckily, however, the statements on which Mr. Crawford founded his comparisons were entirely erroneous, neither the ships nor the men employed amounting to more than one-fifth or one-sixth part of what he represented. We subjoin a statement of the Southern whale-fishery carried on from Great Britain since 1819, exhibiting the total number of ships annually absent from Great Britain on whaling expeditions; the total number of ships that annually returned to Great Britain; and the annual imports of sperm and common oil, with the prices of each:

STATEMENT OF THE SOUTHERN WHALE-FISHERY CARRIED ON FROM GREAT BRITAIN SINCE 1819; EXHIBITING THE TOTAL NUMBER OF SHIPS ANNUALLY ABSENT FROM GREAT BRITAIN ON WHALING EXPEDITIONS; THE TOTAL NUMBER OF SHIPS THAT ANNUALLY RETURNED TO GREAT BRITAIN; AND THE ANNUAL IMPORTS OF SPERM AND COMMON OIL, WITH THE PRICES OF EACH.

Years.	Ships at Sea.	Ships returned.	Sperm Oil imported.			Common Oil imported.		Price of Sperm Oil per Tun.	Price of common Oil per Tun.	Total Value of Imports.
1819.....	112	40	Tuns. 3678			Tuns. 4885		£ 85	£ 33	£ 475,335
1820.....	137	39	2717			5061		71	25	318,432
1821.....	123	53	3606			4570		60	19	303,190
1822.....	118	41	6011			1970		54	22	356,934
1823*.....	114	57	British.	Colonial.	American.	British.	Colonial.			
1824.....	96	42	6891	266	.....	1723	668	45	21	383,676
1825.....	88	32	5038	150	.....	742	618	40	22	273,040
1826†.....	78	38	4331	65	.....	1104	412	48	30	256,488
1827.....	80	29	5695	388	.....	454	289	55	34	359,827
1828.....	80	29	4476	334	.....	665	474	70	27	367,453
1829.....	83	20	3216	116	.....	136	338	79	25	275,078
1830.....	92	26	4485	818	.....	102	478	74	27	408,082
1831.....	104	25	4167	478	.....	419	904	72	43	392,049
1832.....	103	27	5389	1576	.....	192	1462	75	43	634,747
1833.....	106	30	5576	1589	.....	402	1785	61	23	498,301
1834.....	110	19	3151	2608	.....	220	2245	62	25	437,285
1835.....	99	27	4021	2710	.....	149	2394	65	23	490,044
1836.....	89	33	5681	2260	.....	511	3137	75	28	688,369
1837.....	82	26	4285	2716	.....	99	4180	80	32	697,078
1838.....	86	18	3118	2661	.....	381	4223	84	35	616,576
1839.....	84	21	3801	2454	.....	20	7904	84	25	721,840
1840.....	77	22	4259	1322	.....	170	6315	95	25	691,380
1841.....	72	16	2249	1719	1713	724	6270	104	25	587,542
1842.....	67	20	3310	1964	328	101	5433	98	31	688,496
1843.....	59	16	2027	873	1172	.....	3317	80	40	364,680

* The ships for this and the succeeding years, as for the previous ones, do not include colonial ships, but those from Britain only.

† From this year commenced the imperial measure.

But since then the fishery has rapidly declined, and is now quite insignificant. This is seen from the following account of the ships and their tonnage cleared out for the Southern whale-fishery, viz.:

1850.....	8 ships.....	2316 tons.
1851.....	5 ".....	1905 "
1852.....	4 ".....	1503 "

French Whale-fishery.—France, which preceded the other nations of Europe in the whale-fishery, can hardly be said, for many years past, to have had much share in it. In 1784 Louis XVI. endeavored to revive the fishery. With this view he fitted out six ships at Dunkirk on his own account, which were furnished with harpooners and a number of experienced seamen brought at a great expense from Nantucket. The adventure was more successful than could have been reasonably expected, considering the auspices under which it was carried on. Several private individuals followed the example of his majesty, and in 1790 France had about forty ships employed in the fishery. The Revolutionary war destroyed every vestige of this rising trade. But since the peace, government has made great efforts for its renewal; and at present high bounties are granted to all vessels fitted out for the whale-fisheries, but especially to those engaged in the sperm fishery. These, however, have not been so successful in forcing ships into this trade as might have been anticipated; for it appears from the official accounts that in 1852 the aggregate burden of the ships cleared out for the whale-fishery amounted to only 2306 tons.—*Administration des Douanes*, 1852, p. 460; McCulloch's *Dict.*

American Whale-fishery.—For a lengthened period the Americans have prosecuted the whale-fishery with greater vigor and success than, perhaps, any other people. They commenced it in 1690, and for about fifty years found an ample supply of fish on their own shores. But the whale having abandoned them, the American navigators entered with extraordinary ardor into the fisheries carried on in the Northern and Southern oceans. From 1778 to 1785 Massachusetts employed annually 183 vessels, carrying 13,820 tons, in the former; and 121 vessels, carrying 14,026 tons, in the latter. Mr. Burke, in his famous speech on American affairs in 1774, adverted to this wonderful display of daring enterprise as follows: "As to the wealth," said he, "which the colonies have drawn from the sea by their fisheries, you had all that matter fully opened at

your bar. You surely thought these acquisitions of value, for they seemed to excite your envy; and yet the spirit by which that enterprising employment has been exercised ought rather, in my opinion, to have raised esteem and admiration. And pray, sir, what in the world is equal to it? Pass by the other parts, and look at the manner in which the New England people carry on the whale-fishery. While we follow them among the trembling mountains of ice, and behold them penetrating into the deepest frozen recesses of Hudson's Bay and Davis's Straits; while we are looking for them beneath the Arctic circle, we hear that they have pierced into the opposite region of polar cold—that they are at the antipodes, and engaged under the frozen serpent of the South. Falkland Island, which seemed too remote and too romantic an object for the grasp of national ambition, is but a stage and resting-place for their victorious industry. Nor is the equinoctial heat more discouraging to them than the accumulated winter of both poles. We learn that while some of them draw the line or strike the harpoon on the coast of Africa, others run the longitude and pursue their gigantic game along the coast of Brazil. No sea but what is vexed with their fisheries; no climate that is not witness of their toils. Neither the perseverance of Holland nor the activity of France—not the dexterous and firm sagacity of English enterprise—ever carried this most perilous mode of hardy industry to the extent to which it has been pursued by this recent people—a people who are still in the gristle, and not hardened into manhood."

United States Whale-fishery.—The first sperm whale taken by the Nantucket whalers was killed by Christopher Hussey. He was cruising near the shore for "right" whales, and was blown off some distance from the land by a strong northerly wind, when he fell in with a school of that species of whale, and killed one and brought it home.

At what date this adventure took place is not fully ascertained, but it is supposed that it was not far from 1712. This event imparted new life to the business, for they immediately began to build vessels of about forty tons, to whale out in the "deep," as it was then called, to distinguish it from "shore whaling." They fitted three vessels for six weeks, carried a few hog-heads—sufficient to contain the blubber of one whale—and tried out the oil after they returned home.

In 1715 there were six vessels engaged in the whal-

ing business—all sloops, from thirty to forty tons burden each, and which produced an income of nearly \$5000.—MACY'S *History of Nantucket*.

As the enterprise increased more capital was invested, larger vessels were built, longer voyages were made, and new localities for whales were discovered.

Fifty years later, viz., from 1771 to 1775, Massachusetts alone employed annually 183 vessels in the North Atlantic Ocean, and 121 vessels of larger burden in the South Atlantic Ocean.

The first attempt to establish the sperm-whale fishery from Great Britain was made in 1775. Nine years later the French undertook to revive the prosecution of this business. The king, Louis XVI., fitted out six ships himself from Dunkirk, and procured his experienced harpooners from Nantucket. Others emulated the example of that monarch; so that before the French Revolution that nation had forty ships in the service.

The Revolutionary war of the American colonies, and the wars of the French Revolution, nearly destroyed this flourishing branch of marine enterprise in both countries. Just previous to the war, Massachusetts employed in this service 300 vessels and 4000 seamen, about half of whom were from Nantucket alone. During that war fifteen vessels belonging to this island were lost at sea, and 134 were captured by the enemy.

It was not until the year 1782—many years after the commencement of the enterprise in Nantucket, Cape Cod, Martha's Vineyard, and other places on the Sound—that the attention of New Bedford was turned toward the whale-fishery.

From this date until the present time no permanent obstruction, with the exception of the war of 1812-'15, has occurred to impede the gradual and increasing interest given to this enterprise, and which now assumes commanding commercial importance, and develops unrivaled energy in its prosecution.

The whole number of vessels employed in the whale-fishery in this country, as before reported, is 670. Number of ships, 358; barks, 259; brigs, 17; schooners, 46. The tonnage may be put down at 220,000; value of property, at \$100 per ton, \$22,000,000.

The number of seamen engaged in this business, allowing 30 for each ship, 24 for a bark, 20 for a brig, and 18 for a schooner, would be more than 20,000.

The following are the receipts of the whale-fishery of the United States during the year 1857:

	Ships and Barks.	Brigs.	Schooners.	Barrels of Sperm.	Barrels of Whale.
New Bedford	106	..	2	48,388	129,557
Nantucket	13	..	..	5,431	10,722
Dartmouth	1	..	..	350	45
Westport	8	1	1	4,751	397
Mattapoisett	3	2	1	1,778	1,760
Sippican .....	..	..	11	325	80
Holmes's Hole	2	..	1	835	3,876
Nantucket	5	1	1	2,857	5,879
Edgartown	3	..	1	880	3,337
Provincetown	2	1	17	1,910	2,636
Orleans .....	..	2	..	108	308
Gloucester	1	..	1	20	20
Beverly	1	..	..	346	30
Lynn	1	..	..	115	2,503
Boston	0	..	..	185	147
Fall River	1	..	..	700	800
Providence	1	..	..	358	5
Warren, R. I.	3	..	..	663	5,907
New London	19	2	1	3,570	27,295
Cold Spring	1	..	..	200	400
Stonington	1	..	..	..	2,000
Greenport	3	..	..	592	3,299
Mystic	3	..	..	450	4,900
Sag Harbor	3	..	1	1,457	2,100
New York	4	..	..	1,836	11,263
Total in 1857 ..	186	9	29	77,501	225,863
Receipts in 1850 ..	144	17	16	96,157	191,752
" " 1851 ..	194	24	18	98,536	211,915
" " 1852 ..	116	10	27	81,321	82,281
" " 1853 ..	200	11	29	88,897	241,389
" " 1854 ..	210	12	28	69,418	321,593
" " 1855 ..	146	6	20	60,285	176,186
" " 1856 ..	171	7	24	82,389	195,774

The *Whalemens' Shipping List*, of New Bedford, has compiled an annual statement of the results of the whale-fishery during the year 1857, including the amount of imports and exports of oil and bone, prices-current, etc. The number of American vessels employed in the whale-fishery at present includes 587 ships and barks, 18 brigs, and 49 schooners, making an aggregate of 203,148 tons. Of this number there has been in the North Pacific Ocean about 150 ships, which is a diminution of 30 as compared with the fleet employed in that quarter in 1856. But few vessels have been added to the whaling fleet during the past year, while several have been withdrawn, and two lost—the *Newton*, of New Bedford, and the *Indian Chief*, of New London—leaving the aggregate tonnage some 665 tons less than at the beginning of the year. The quantity of oil obtained by 109 ships, whose arrivals at the Sandwich Islands have been reported, averages 808 barrels, which is not very much from the average of the preceding year. In regard to the fleet in the Okhotak Sea, the accounts are somewhat conflicting—some vessels have met with good success; while others have done comparatively nothing.

The imports of oil and bone into the United States in 1857 were brought in by 173 ships and barks, 38 brigs and schooners, of which 142 belong to the seven ports embraced in the district of New Bedford, and the remainder to various ports east of New York. We annex a comparison of the imports since 1850:

Years.	Sperm Oil. Barrels.	Whale Oil. Barrels.	Whalebone. Pounds.
1850	92,892	200,608	2,869,200
1851	99,691	928,483	3,916,500
1852	78,872	84,211	1,259,900
1853	103,077	260,114	5,652,300
1854	76,696	319,837	3,445,200
1855	72,640	184,015	2,707,500
1856	80,941	197,890	2,502,700
1857	78,440	230,941	2,058,580

It will be seen from the above that the imports of sperm oil in 1857, as compared with 1856, fall short 501 barrels, while the imports of whale oil are 33,051 barrels in excess of 1856. The increased importation of the latter during the year has arisen chiefly from shipments via Sandwich Islands from vessels which had not completed their voyages; and consequently we look for a diminished import the present year, variously estimated at from 75,000 to 100,000 barrels. Considerable shipments of bone have also arrived in the same manner, which will tend still further to reduce the import of this article the present year. The stock of sperm oil, whale oil, and whalebone in importers' and speculators' hands, on the 1st of January, 1858, is given as follows:

	Sperm Oil. Barrels.	Whale Oil. Barrels.	Whalebone. Pounds.
New Bedford	27,440	64,148	135,400
Dartmouth	180	..	..
Westport	2,500	..	..
Mattapoisett	2,409	1,260	20,800
Sippican	630	..	..
New London	820	7,463	6,500
Nantucket	2,300	2,700	..
Sag Harbor .....	..	2,510	..
Edgartown .....	..	1,000	..
Warren	115	3,242	17,800
Boston and Provincetown	1,450	2,255	5,000
Mystic	170	5,600	..
Stonington .....	..	900	..
New York	200	..	50,000
Falmouth	300	..	..
Newport	250	400	..
Fall River	58	..	..
Beverly	290	50	..
Holmes's Hole	160	600	..
Salem	85	..	..
Total	39,307	92,193	235,500

The following is a statement of the exports of oil and whalebone from the United States for two years:

Years.	Sperm Oil. Barrels.	Whale Oil. Barrels.	Whalebone. Pounds.
1856	29,052	971	2,000,784
1857	37,231	17,407	1,835,662

The increased shipments of oil during 1857, as compared with the totals for 1856, were less the result of an actual foreign demand than a desire on the part of our importers to sustain the market here by reducing the stock. The effect, however, was directly the opposite of what had been anticipated, for, by overstocking the London market, prices declined there very rapidly, and our home markets were left without the competition resulting from a domestic and foreign demand, and prices of oil declined to a lower point than they have been since 1849. The demand for bone, however, has been unusually active, owing to the fashionable propensity of the ladies to "spread," and the price of this article advanced to a higher point in 1857 than was ever before known.

We annex a comparison of the average prices of sperm oil and whalebone for seventeen years:

Years.	Sperm Oil.	Whale Oil.	Whalebone.
1841	100 c.	30½ c.	19 c.
1842	94	31½	19½
1843	78	33½	23
1844	63	34½	35½
1845	90½	36½	40
1846	88	37½	38½
1847	87½	38½	34
1848	100½	36	30½
1849	103 9-10	39 9-10	31 8-10
1850	120 7-10	49 1-10	34 4-10
1851	121½	45 5-16	34½
1852	123½	68½	50½
1853	124½	58½	34½
1854	143½	58½	39 1-5
1855	177 2-10	71 3-10	45½
1856	162	79½	18
1857	18½	7½	97½

IMPORTATIONS OF SPERM OIL, WHALE OIL, AND WHALEBONE INTO THE UNITED STATES IN 1857.

Ports.	Sperm Oil. Barrels.	Whale Oil. Pounds.	Whalebone. Pounds.
New Bedford	41,108	121,362	1,150
Fairhaven	5,500	17,417	103,200
Dartmouth	341	49	2,100
Westport	4,765	396	...
Wareham	408	1,649	3,000
Sippican	309	68	...
Mattapoisett	2,012	2,143	20,700
Dis. of New Bedford	61,446	149,044	1,479,850
New London	3,619	28,683	89,600
Nantucket	3,456	5,736	20,300
Sag Harbor	1,100	5,875	20,100
Edgartown	880	8,331	18,400
Warren	563	5,559	38,700
Provincetown	1,981	2,712	5,800
New York	1,866	11,263	306,300
Greenport	592	3,209	5,600
Cold Spring	201	371	8,100
Stonington	103	2,050	17,800
Mystic	480	4,856	14,500
Boston	131	104	10,000
Holmes's Hole	25	3,980	14,500
Orleans	113	313	2,100
Fall River	700	800	...
Lynn	108	2,550	17,200
Providence	358	5	...
New Haven	58	...	...
Philadelphia	94	...	...
Beverly	346	40	...
Gloucester	20	20	...
Total for 1857	78,440	231,411	2,058,850

The imports of oil and whalebone the product of foreign fisheries into the United States for the year ending June 30, 1857, were as follows: Oil, \$17,280; whalebone, \$252; spermaceti, \$413; total, \$17,945.

COMMERCE OF THE UNITED STATES WITH THE WHALE-FISHERIES FOR THE YEARS 1856 AND 1857.

Years ending	Exports.			Imports.	Tonnage cleared.	
	Domestic.	Foreign.	Total.	Total.	American.	Foreign.
June 30, 1856.....	\$52,404	\$22,290	\$34,355	\$58,067	51,744	670
1857.....	496,288	21,010	517,298	107,196	57,983	...

EXPORTS OF OIL, WHALEBONE, AND SPERMACETI (THE PRODUCT OF THE FISHERIES OF THE UNITED STATES) FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Spermaceti Oil.		Whale and other Fish.		Whalebone.		Spermaceti.		Spermaceti Candles.	
	Gallons.	Value.	Gallons.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Russia on the Black Sea	64	\$0	...	...	...	...	...	...	...	...
Prussia	...	...	...	...	...	...	...	...	180	\$65
Sweden and Norway	7,015	12,000	...	...	...	...	...	...	...	...
Danish West Indies	...	...	803	\$702	163	\$6	...	...	...	...
Hamburg	...	...	...	...	711,687	434,560	6,049	\$2,265	161	81
Bremen	440	62	...	...	384,075	193,062	...	...	191	77
Holland	634	1,175	...	...	10,107	5,583	...	...	180	92
Dutch West Indies	...	...	4,541	3,514	100	40	...	...	705	286
Dutch Guiana	...	...	643	546	...	...	...	...	1,072	436
Belgium	1,638	2,992	30,801	20,431	2,200	1,330	...	...	1,250	500
England	721,337	1,073,622	46,362	35,811	277,277	197,204	67,484	29,94	...	...
Scotland	51,744	84,541	...	...	...	...	...	...	...	...
Gibraltar	...	...	...	...	1,517	980	...	...	...	...
Canada	25,801	27,84	161,208	164,717	...	...	...	...	29,883	8,070
Other British N. Am. Poss.	2,339	3,033	10,346	9,457	...	...	...	...	...	...
British West Indies	161	216	3,176	2,542	...	...	1,250	251	955	295
British Honduras	...	...	81	67	...	...	...	...	361	180
British Guiana	410	461	5,581	4,490	...	...	...	...	...	...
British Possessions in Africa	...	...	185	208	200	140	1,558	654	...	...
Other ports in Africa	...	...	...	...	...	...	...	...	5,818	1,980
British Australia	...	...	6,012	4,356	...	...	...	...	...	...
France on the Atlantic	...	...	10,310	6,127	627,219	425,866	3,396	1,568	300	130
France on the Mediterranean	...	...	...	...	4,148	2,648	...	...	...	...
French North American Poss.	...	...	333	287	...	...	...	...	...	...
French Guiana	...	...	3,185	2,714	...	...	...	...	...	...
Spain on the Atlantic	...	...	...	...	...	...	...	...	354	142
Spain on the Mediterranean	...	...	...	...	...	...	...	...	884	201
Cuba	1,151	2,877	107,888	86,409	1,160	520	...	...	15,783	5,756
Porto Rico	432	670	5,421	4,252	750	360	...	...	830	302
Portugal	...	...	250	182	19,508	13,331	...	...	...	...
Madeira	...	...	...	...	...	...	...	...	450	176
Cape de Verd Islands	...	...	...	...	...	...	...	...	217	76
Havti	150	240	5,997	5,009	...	...	...	...	5,680	2,050
Mexico	1,363	1,737	2,886	2,446	500	210	740	279	12,754	4,791
Central Republic	...	...	108	121	...	...	...	...	...	...
New Granada	361	574	503	308	...	...	...	...	2,028	761
Venezuela	...	...	843	662	630	372	...	...	...	...
Brazil	...	...	80	66	1,202	848	510	163	18,711	6,953
Argentine Republic	...	...	171	197	...	...	...	...	...	...
Chili	3,080	3,850	6,431	7,129	...	...	...	...	3,764	650
Ecuador	...	...	...	...	...	...	...	...	1,681	672
Sandwich Islands	160	270	494	503	...	...	...	...	900	450
China	...	...	...	...	...	...	...	...	...	...
Whale-fisheries	...	...	277	553	...	...	...	...	...	...
Total year 1856-57	819,081	\$1,216,888	414,466	\$363,665	2,042,390	\$1,307,322	80,987	\$34,917	104,576	\$35,121

For articles on Whale-fishery, see *North American Review*, xxxviii. (J. R. WILLIAMS); *Hunt's Merchants' Magazine*, xiv., xvi.; *Democratic Review*, xix.; *Quarterly Review*, lxiii.; *Foreign Quarterly*, vii.; *Christian Review*, xii.; *Living Age*, xiii., xiv.; *Edinburgh Review*, lxxxvi.

Wharf, a sort of quay, constructed of wood or stone, on the margin of a roadstead or harbor, along side of which ships or lighters are brought for the sake of being conveniently loaded or unloaded.

Wharfage, the fee paid for landing goods on a wharf, or for shipping them off.

Wheat (Ger. *Weizen*; Du. *Tarw*; Da. *Hvede*; Sw. *Heete*; Fr. *Froment*, *Bled*, *Blé*; It. *Grano*, *Formento*; Sp. and Port. *Trigo*; Russ. *Pscheniza*; Pol. *Pszensia*), a species of bread-corn (*Triticum*, Linn.), by far the most important of any cultivated in Europe or North America. We are totally ignorant of the country whence this valuable grain was first derived; but it was very early cultivated in Sicily. It is raised in almost every part of the temperate zones, and in some places as high as 2000 feet above the level of the sea.

Wheat Production of the United States.—Wheat, where the soil and climate are adapted to its growth, and the requisite progress has been made in its culture, is decidedly preferred to all other grains, and, next to maize, is the most important crop in the United States, not only on account of its general use for bread, but for its safety and convenience for exportation. It is not known to what country it is indigenous, any more than our other cultivated cereals, all of which, no doubt, have been essentially improved by man. By some, wheat is considered to have been coeval with the creation, as it is known that upward of a thousand years before our era it was cultivated, and a superior variety had been attained. It has steadily followed the progress of civilization, from the earliest times, in all countries where it would grow. The introduction of this grain into the North American colonies dates back to the earliest periods of their settlement by Europeans. It was first sown, with other grains, on the Elizabeth Islands, in Massachusetts, by Gosnold, at the time he explored that coast in 1602. In 1611, wheat, as well as other grains, was also sown in Virginia; and by the year 1648 there were cultivated many hundred acres in that colony. Although premiums were offered as an encouragement of its growth in 1651, it was not much cultivated for more than a century after, in consequence of the ill-directed attention to the culture of tobacco.

Wheat was introduced into the valley of the Mississippi by the "Western Company" in 1718, where, from the careless mode of cultivating it by the early settlers, and the sudden alternations of temperature, it would only yield from five to eight fold, running to straw and blade without filling the ear. In 1746, however, the culture had so far extended, that six hundred barrels of flour were received at New Orleans from the Wabash; and by the year 1750 the French of Illinois raised three times as much wheat as they consumed, and large quantities of grain and flour were sent to the same place. Prior to the Revolution, the primitive soils of New York, New Jersey, and of New England, appear not to have rewarded the cultivation of this grain much, if any, beyond the wants of the inhabitants. Considerable quantities were raised on the Hudson, and in some parts of New Jersey and Pennsylvania, which were exported to the West Indies, and New England, and to Great Britain, France, Portugal, and Spain, in years of scarcity, previously to 1723.

In 1776 there was entailed upon this country an enduring calamity, in consequence of the introduction of the Hessian or wheat fly, which was supposed to have been brought from Germany in some straw employed in the debarkation of Howe's troops, on the west end of Long Island. From that point this insect gradually spread in various directions, at the rate of

twenty or thirty miles a year, and the wheat of the entire regions east of the Alleghenies is now more or less infested with the larvæ, as well as in large portions of the States bordering on the Ohio and Mississippi, and on the great lakes; and so great have been the ravages of these insects, that the cultivation of this grain in many places has been abandoned.

The geographical range of the wheat region in the Eastern Continent and Australia lies principally between the thirtieth and sixtieth parallel of north latitude, and between the thirtieth and fortieth degrees south, being chiefly confined to France, Spain, Portugal, Italy, Sicily, Greece, Turkey, Russia, Denmark, Norway, Sweden, Poland, Prussia, Netherlands, Belgium, Great Britain, Ireland, Northern and Southern Africa, Tartary, India, China, Australia, Van Diemen's Land, and Japan. Along the Atlantic portions of the Western Continent it embraces the tracts lying between the thirtieth and fiftieth parallels; and in the country westward of the Rocky Mountains, one or more degrees farther north. Along the west coast of South America, as well as in situations within the torrid zone, sufficiently elevated above the level of the sea and properly irrigated by natural or artificial means, abundant crops are often produced. The principal districts of the United States in which this important grain is produced in the greatest abundance, and forms a leading article of commerce, embrace the States of New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, Ohio, Kentucky, Michigan, Indiana, Illinois, Missouri, Wisconsin, and Iowa. The chief varieties cultivated in the Northern and Eastern States are the white flint, tea, Siberian, bald, Black Sea, and the Italian spring wheat; in the Middle and Western States, the Mediterranean, the Virginia white May, the blue stem, the Indiana, the Kentucky white-bearded, the old red chaff, and the Talavera. The yield varies from ten to forty bushels and upward per acre, weighing per bushel from fifty-eight to sixty-seven pounds. Within a few years a species of wheat has been introduced from Egypt, which, although it has been lying dormant two thousand years, promises to be unusually prolific. Another species from South Australia, weighing seventy pounds to the bushel, has also been introduced.

It appears that on the whole crop of the United States there was a gain, during ten years, of 15,645,000 bushels. The crop of New England decreased from 2,014,000 to 1,090,000 bushels, exhibiting a decline of 924,000 bushels, and indicating that the attention of farmers has been much withdrawn from the culture of wheat. Grouping the States from the Hudson to the Potomac, including the District of Columbia, it appears that they produced in 1849 35,085,000 bushels, against 29,986,000 in 1839. (In Virginia there was an increase of 1,123,000 bushels.) These States embrace the oldest wheat-growing region of the country, and that in which the soil and climate seem to be adapted to the permanent culture of the grain. The increase of production in the ten years has been 6,272,000 bushels, equal to 17.4 per cent. The area of tilled land in these States is 86,000,000 acres, only 80 per cent. of the number of acres returned for the whole United States, while the proportion of wheat produced is 46 per cent. of the entire crop of the country. In North Carolina there has been an increase of 170,000 bushels; but in the Southern States generally there was a considerable decrease. Indiana, Illinois, Michigan, and Wisconsin contributed to the general aggregate, under the sixth census, only 9,800,000 bushels; under the last they are shown to have produced upward of 25,000,000 bushels, an amount greater than the whole increase in the United States for the period.—*U. S. Patent Office Report*.

As a curious illustration of the fluctuations in the price of grain in Great Britain for the last two centuries we give the following table, taken from the *Encycl. Britannica*.

ACCOUNT OF THE AVERAGE PRICES OF BRITISH CORN PER IMPERIAL QUARTER, IN ENGLAND AND WALES, SINCE 1771, AS ASCERTAINED BY THE RECEIVER OF CORN RETURNS.

Years.	Wheat.			Barley.			Oats.			Rye.			Years.	Wheat.			Barley.			Oats.			Rye.			
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.		£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	
1771.	2	0	7	1	6	5	0	17	2	1	15	4	1812	5	6	6	3	6	9	2	4	6	3	18	7	
1772.	2	12	8	1	6	1	0	16	8	1	17	9	1813	5	9	9	2	18	6	1	18	6	8	11	11	
1773.	2	12	7	1	9	2	0	17	8	1	14	4	1814	5	14	4	1	17	4	1	5	8	2	4	8	
1774.	2	14	3	1	9	4	0	18	4	1	15	4	1815	5	8	7	1	10	3	1	3	7	1	18	1	
1775.	2	9	10	1	6	9	0	17	0	1	13	10	1816	5	18	6	1	13	11	1	7	2	2	5	1	
1776.	1	19	4	1	0	9	0	15	5	1	7	8	1817	4	16	11	2	9	4	1	12	5	2	18	3	
1777.	2	6	11	1	1	1	0	16	1	1	8	10	1818	4	6	3	2	18	10	1	12	5	2	16	4	
1778.	2	3	3	1	3	4	0	15	7	1	9	2	1819	5	14	6	2	5	9	1	8	2	2	9	6	
1779.	1	14	8	1	0	1	0	14	5	1	4	0	1820	5	7	10	1	13	10	1	4	2	2	2	0	
1780.	1	16	9	0	17	6	0	13	2	1	2	10	1821	2	16	1	1	6	0	0	19	6	1	12	0	
1781.	2	6	0	0	17	8	0	14	1	1	7	8	1822	2	4	7	1	1	10	0	18	1	1	10	10	
1782.	2	9	3	1	3	2	0	15	7	1	9	8	1823	2	13	4	1	11	6	1	2	11	1	11	10	
1783.	2	14	3	1	11	3	0	1	0	5	1	16	9	1824	3	8	11	1	16	4	1	4	10	2	1	5
1784.	2	10	4	1	8	8	0	18	10	1	13	2	1825	3	8	6	2	0	0	1	5	8	2	2	3	
1785.	2	3	1	1	4	9	0	17	8	1	8	10	1826	2	18	8	1	14	4	1	6	8	2	1	1	
1786.	2	9	0	1	5	1	0	18	6	1	8	0	1827	2	18	6	1	17	7	1	8	2	2	0	2	
1787.	2	2	5	1	3	4	0	17	2	1	8	6	1828	3	0	5	1	12	10	1	2	6	1	14	2	
1788.	2	6	4	1	2	8	0	16	1	1	8	6	1829	3	6	3	1	12	6	1	2	9	1	14	10	
1789.	2	12	9	1	3	6	0	16	6	1	10	9	1830	3	4	3	1	12	7	1	4	5	1	15	10	
1790.	2	14	9	1	6	3	0	19	5	1	15	0	1831	3	6	4	1	18	0	1	5	4	2	0	0	
1791.	2	8	7	1	6	10	0	18	1	1	12	7	1832	2	18	8	1	13	1	1	0	5	1	14	7	
1792.	2	3	0	....	....	....	0	16	9	1	9	10	1833	2	12	11	1	7	6	0	18	5	1	12	11
1793.	2	9	3	1	11	1	0	1	0	6	1	6	1834	2	6	2	1	9	0	1	0	11	1	12	9	
1794.	2	12	3	1	11	9	1	1	1	3	1	17	5	1835	1	19	4	1	9	11	1	2	0	1	10	4
1795.	3	15	2	1	17	5	1	4	5	....	....	....	1836	2	8	6	1	12	10	1	3	1	1	13	4
1796.	3	18	7	1	15	4	1	1	10	....	....	....	1837	2	15	10	1	10	4	1	3	1	1	14	9
1797.	2	13	9	1	7	2	0	16	3	....	....	....	1838	3	4	7	1	11	5	1	2	5	1	15	1
1798.	2	11	10	1	9	0	0	19	5	....	....	....	1839	3	10	8	1	19	6	1	5	11	2	2	0
1799.	3	9	0	1	16	2	1	7	6	....	....	....	1840	3	6	4	1	16	5	1	5	8	1	17	0
1800.	5	13	10	2	19	10	1	19	4	....	....	....	1841	3	4	4	1	12	10	1	2	5	1	16	9
1801.	5	19	6	3	8	6	1	17	0	....	....	....	1842	2	17	5	1	7	6	0	19	3	1	13	0
1802.	3	9	10	1	13	4	1	0	4	....	....	....	1843	2	10	1	1	9	6	0	18	4	1	10	7
1803.	2	18	10	1	5	4	1	1	6	....	....	....	1844	2	11	8	1	13	8	1	0	7	1	13	11
1804.	3	2	3	1	11	0	1	4	3	....	....	....	1845	2	10	10	1	11	8	1	2	6	1	12	6
1805.	4	9	9	2	4	6	1	3	4	....	....	....	1846	2	14	8	1	12	8	1	3	8	1	15	0
1806.	6	19	1	1	18	8	1	7	7	....	....	....	1847	3	9	9	2	4	2	1	8	8	2	9	0
1807.	3	15	4	1	19	4	1	8	4	....	....	....	1848	2	10	6	1	11	6	1	0	6	....	....	....
1808.	4	1	4	....	....	....	1	13	4	....	....	....	1849	2	4	3	1	7	9	0	17	6	1	5	8
1809.	4	17	4	2	7	0	1	11	5	....	....	....	1850	2	0	3	1	3	5	0	16	5	1	3	3
1810.	5	6	5	2	8	1	1	8	7	2	19	5	1851	1	18	6	1	4	9	0	18	7	1	5	6	
1811.	4	15	3	2	2	3	1	7	7	2	8	4	1852	2	0	9	1	8	6	0	19	1	1	9	10	

NOTE.—The Imperial bushel contains 2218.192 cubic inches, the Winchester bushel 2150.42 cubic inches, the former being about one thirty-second part larger than the latter.—See WEIGHTS AND MEASURES.

BRITISH GRAIN TRADE.

ACCOUNT SHOWING THE QUANTITIES OF THE DIFFERENT VARIETIES OF FOREIGN AND COLONIAL GRAIN ENTERED FOR CONSUMPTION IN THE UNITED KINGDOM IN EACH OF THE EIGHTEEN YEARS ENDING WITH 1852, WITH THE TOTAL QUANTITIES SO ENTERED, AND THE ANNUAL ENTRIES AT AN AVERAGE OF THE ABOVE PERIOD; WITH A SIMILAR ACCOUNT FOR INDIAN CORN AND MEAL FOR THE TEN AND SEVEN YEARS ENDING WITH 1852.—(COMPILED FROM VARIOUS PARLIAMENTARY PAPERS.)

Years.	Wheat and Flour.	Barley.	Oats and Out-meal.	Rye and Rye-meal.	Pearl and Peas-meal.	Beans and Bean-meal.	Total entered.	Indian Corn and Meal.
	Quarters.	Quarters.	Quarters.	Quarters.	Quarters.	Quarters.	Quarters.	Quarters.
1835	23,554	136,553	176,142	8	25,184	69,844	436,560	....
1836	30,107	110,021	97,197	18	80,923	87,796	406,067	....
1837	244,272	47,475	334,024	19,576	87,615	109,076	842,093	....
1838	1,843,475	8,192	11,072	2,517	11,618	54,240	1,986,114	....
1839	2,711,723	594,301	832,789	152,182	170,270	123,597	4,615,262	....
1840	2,401,436	619,801	517,052	1,857	159,457	120,517	3,820,120	....
1841	2,647,808	222,887	27,913	518	132,857	267,607	3,209,685	....
1842	2,989,645	49,969	295,437	28,516	80,450	43,279	3,467,296	....
1843	990,523	228,543	45,254	2,724	45,383	45,702	1,353,129	10,225
1844	988,515	1,020,766	258,235	28,779	106,375	225,680	2,628,350	38,711
1845	315,615	299,430	587,343	23	81,735	197,919	1,402,156	42,295
1846	2,962,928	404,644	779,442	1,710	161,801	209,674	4,540,399	757,609
1847	4,612,110	782,698	1,788,057	253,510	193,073	476,253	8,105,694	4,023,913
1848	2,198,755	883,295	872,553	55,481	164,771	429,704	4,624,183	1,637,419
1849	5,592,514	1,544,893	1,375,535	259,936	283,002	432,612	9,539,705	2,255,061
1850	4,845,854	1,028,907	1,153,279	98,431	179,738	444,612	7,740,821	1,276,853
1851	5,275,377	826,390	1,193,566	23,002	98,602	313,506	7,735,823	1,808,748
1852	4,135,376	624,062	982,273	5,576	105,517	372,475	6,229,784	1,471,097
Totals	41,814,968	9,425,690	11,354,376	933,284	2,188,623	4,101,883	72,841,315	13,321,942
Average annual consumption for the 19 years ending 1852.	2,459,720	523,816	630,798	51,849	121,590	228,216	4,046,739	1,332,194
Average annual consumption for the 7 years ending 1852.	4,231,185	870,786	1,162,546	99,510	172,393	393,366	6,930,798	1,890,101

We give here as an interesting statement, and as showing the present liberal system of Great Britain in regard to the importation of wheat from the United States, the tariff import duties on wheat in the principal countries that import from the United States.

Countries.	Import Duties on Wheat.
Austria	Per centner (110 pounds), 16½ cents.
Belgium	18½ cents per 220 pounds.
Brazil	20 per cent. ad valorem.
Chili	25 per cent. ad valorem when under \$3 per 2½ bushels—otherwise free.
China	5 per cent. ad valorem.
Peru	75 cents per fanega of 135 bushels.

Countries.	Import Duties on Wheat.
France	Tariff regulated by average monthly prices of wheat in home market.
Great Britain	24 cents per quarter (8 bushels). North American Possessions free.
Hanse Towns	½ to 1 per cent. ad valorem.
Holland	\$3 20 for 1 last, or 85-20 bushels.
Mexico	Generally prohibited.
New Granada	Free.
Norway	1 tonde (394 bushels), 63 cents.
Spain	Generally prohibited.
Cuba	\$5 per quintal (101 pounds). 22 per cent. in favor of Spanish vessels.
Sweden	Per 4-157 bushels, 60 cents.
United States	15 per cent. ad valorem.

WHEAT AND WHEAT FLOUR (STATED AS QUARTERS OF WHEAT) IMPORTED INTO GREAT BRITAIN DURING EACH OF THE TEN YEARS ENDING WITH 1852, EXHIBITING THE QUANTITIES BROUGHT FROM EACH COUNTRY.

Countries.	1843.	1844.	1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.
Russia	Quarters. 33,608	Quarters. 104,526	Quarters. 36,751	Quarters. 204,850	Quarters. 550,577	Quarters. 523,138	Quarters. 539,606	Quarters. 538,613	Quarters. 600,684	Quarters. 733,734
Sweden and Norway	678	10,732	679	218	8,647	5,346	6,494	3,576	6	546
Denmark	60,864	94,409	74,170	61,563	73,668	191,787	243,213	162,207	163,768	218,504
Prussia	650,503	551,015	424,539	360,881	492,925	528,156	618,690	535,655	696,175	452,292
Germany, viz., Hanse- atic Towns, Olden- burg, Hanover, and Mecklenburg	126,521	108,922	151,271	126,572	151,839	532,591	498,984	380,944	264,721	179,631
Holland	858	11,772	1,614	473	11,800	163,973	308,432	293,465	66,414	124,963
Belgium	332	1,101	993	3,064	27,409	373,335	366,099	201,922	69,046	25,961
France	3,181	44,875	25,809	73,774	179,255	320,010	742,023	1,145,146	1,193,433	459,418
Spain	1	11	4,016	74,041	24,700	917	498	2,186	115	6,321
Italy	5,206	80,230	57,403	194,256	64,850	83,170	281,530	117,223	241,562	65,103
Malta	3,155	6,163	4,120	11,090	46,251	8,576	9,049	10,596	10,585	17,106
Greece .....	.....	.....	3,240	11,595	.....	4,129	61,136	6,292	165	.....
Turkey, including Syria, Egypt, Wallachia, and Moldavia	14,899	41,790	7,030	41,557	266,779	40,340	295,542	282,793	873,130	533,524
Cape of Good Hope .....	.....	83	9	87	2	2	1	.....	1	.....
British East Indies	3,624	2,303	1,204	361	203	2,755	2,025	690	22	.....
Australian Settlements	1,292	4,210	14,035	20,346	13,690	5,559	15,699	14,584	104	.....
British N. Am. Colonies	113,446	228,069	220,349	327,105	398,733	186,254	142,265	80,894	129,680	110,933
United States of America	26,000	8,353	93,622	808,178	1,834,142	206,102	617,131	537,050	911,855	1,231,894
All other parts	2,674	8	2,000	24,122	16,255	11,023	26,839	19,812	4,656	5,272
Total	1,064,941	1,379,292	1,141,957	2,344,142	4,464,757	3,082,321	4,835,250	4,830,263	5,350,412	4,164,602

Wheat Trade of the Elbe, etc.—Next to Dantzic, Hamburg is, perhaps, the greatest grain market in the north of Europe, being a dépôt for large quantities of Baltic corn, and for the produce of the extensive countries traversed by the Elbe. The exports of wheat from Hamburg amounted, at an average of the eleven years ending with 1841, to 210,871 quarters a year. The price of wheat is frequently less in Hamburg than in Dantzic; but this lowness of price is altogether ascribable to the inferiority of the Holstein and Hanover wheats, which are generally met with in great abundance in Hamburg. Wheat from the Upper Elbe is of a better quality. Bohemian wheat is occasionally forwarded by the river to Hamburg; but the charges attending its conveyance from Prague amount to full 15s. a quarter, and prevent its being sent down, except when the price is comparatively high. In 1841 the shipments of wheat from Hamburg amounted to 507,400 quarters, of which 460,900 were for England.

French Wheat Trade.—It appears from the accounts given by the Marquis Garnier, in the last edition of his translation of the *Wealth of Nations*, that the price of the hectolitre of wheat at the market of Paris amounted, at an average of the nineteen years beginning with 1801 and ending with 1819, to 20 francs 53 cents, which is equal to 39 francs 80 cents the septier; or, taking the exchange at 25 francs, to 45s. 6d. the quarter. Count Chaptal, in his valuable work *Sur l'Industrie Française*, published in 1819, estimates the ordinary average price of wheat throughout France at 18 francs the hectolitre, or 42s. 10d. the quarter. The various expenses attending the importation of a quarter of French wheat into London may be taken at a medium at about 6s. a quarter. France, however, has very little surplus produce to dispose of; so that it would be impossible for her to export any considerable quantity without occasioning a great advance of price.

The mean of the different estimates framed by Vauban, Quesnay, Expilly, Lavoisier, and Arthur Young, gives 61,519,672 septiers, or 32,810,000 quarters, as the total average growth of the different kinds of grain in France (*Peuchet Statistique Élémentaire*). We, however, took occasion, in a former article on this subject, to observe that there could not be a doubt that this estimate was a great deal too low; and the more careful investigations of late French statisticians fully confirm this remark. The annual produce of the harvest of France was lately (1843) estimated, from returns obtained under official authority, at 69,558,000 hectolitres of wheat, and 112,958,000 ditto of other sorts of grain; making in all 182,517,000 hectolitres, or 62,740,000 imperial quarters. Of this quantity it is supposed that about 16 per cent. is consumed as seed, 19 per cent. in

the feeding of different species of animals, and 2 per cent. in distilleries and breweries.

The foreign grain trade of France was regulated, till within these few years, by a law which forbade exportation, except when the home prices were below certain limits, and which restrained and absolutely forbade importation, except when they were above certain other limits. The prices regulating importation and exportation differed in the different districts into which the kingdom was divided. Latterly, however, importation has been at all times allowed under graduated duties, which, like those recently existing in England, become prohibitory when the prices sink to a certain level. The frontier departments are divided into four separate districts, the prices in each district governing the duties on importation into it, so that it sometimes happens that grain warehoused in a particular port, where it is not admissible except under a high duty, has been carried to another port in another district, and admitted at a low duty. An official announcement is issued on the last day of each month, of what the duties are to be in each district during the succeeding month.

Spanish Grain Trade.—The exportation of grain from Spain was formerly prohibited under the severest penalties. But in 1820 grain and flour were both allowed to be freely exported, and in 1823 this privilege was extended to all productions (*frutos*) the growth of the soil. There is now, in fact, no obstacle whatever, except the expense of carriage, to the conveyance of grain to the sea-ports, and thence to the foreigner. Owing, however, to the grain-growing provinces being principally situated in the interior, and to the extreme badness of the roads, which renders carriage to the coast both expensive and difficult, the exports are comparatively trifling: this difficulty of carriage frequently gives rise to very great differences of prices at places in all parts of the country only a few leagues distant.

Grain Trade of Odessa.—Odessa, on the Black Sea, is the only port in southern Europe from which any considerable quantity of grain is exported. We believe, indeed, that the fertility of the soil in its vicinity has been much exaggerated; but the wheat shipped at Odessa is principally brought from Volhynia and the Polish provinces to the south of Cracow, the supplies from which are susceptible of an indefinite increase. Owing to the cataracts in the Dnieper, and the Dniester having a great number of shallows, most part of the grain brought to Odessa comes by land carriage. The expense of this mode of conveyance is not, however, nearly so great as might be supposed. The carts with grain are often in parties of 150; the oxen are pas-

tured during the night, and they take advantage of the period when the peasantry are not occupied with the harvest, so that the charge on account of conveyance is comparatively trifling.

Both soft and hard wheat are exported from Odessa; but the former, which is by far the most abundant, is only brought to England. Supposing British wheat to sell at about 60s., Odessa wheat in good order would not be worth more than 52s. in the London market; but it is a curious fact, that in the Mediterranean the estimation in which they are held is quite the reverse; at Malta, Marseilles, Leghorn, etc., Odessa wheat fetches a decidedly higher price than British wheat.

The hard wheat brought from the Black Sea comes principally from Taganrog. It is a very fine species of grain; it is full 10 per cent. heavier than British wheat, and has less than half the bran. It is used in Italy for making macaroni, vermicelli, and things of that sort; little of it has found its way to England.

The voyage from Odessa to Britain is of uncertain duration, but generally very long. It is essential to the importation of wheat in a good condition, that it should be made during the winter months. When the voyage is made in summer, unless the wheat be very superior, and be shipped in exceedingly good order, it is almost sure to heat, and has sometimes, indeed, been injured to such a degree as to require to be dug from the hold with pick-axes. Unless, therefore, means be devised for lessening the risk of damage during the voyage, there is little reason to think that Odessa wheat will ever be very largely imported into Britain.

The entire expense of importing a quarter of wheat from Odessa to London may be estimated at from 16s. to 18s. The exports of wheat from Odessa, and other ports on the Black Sea, to Constantinople, the Levant, Italy, the south of France, etc., have latterly been very large indeed. In 1846 the exports from Odessa only amounted to 1,279,502 quarters, and in 1847 to 2,016,692 ditto: the latter being, we believe, the largest exportation that ever took place in a single year from any single port. Owing to the scarcity in England, above 400,000 quarters of the above quantity were shipped for that country, but the speculation entailed a heavy loss on the importers. The price free on board at Odessa considerably exceeded 40s. a quarter.—E. B.

United States.—When we see the growth of wheat keeping up with the progress of population in the oldest States of the Union, we need have no apprehension of a decline in the cultivation of this important crop. The amount of flour exported from New Jersey in 1751 was 6424 barrels; from Philadelphia, in 1752, 125,960 barrels, besides 86,500 bushels of wheat; in 1767, 198,816 barrels, besides 367,500 bushels of wheat; in 1771, 252,744 barrels; from Savannah, in 1771, 7200 pounds; from Virginia, for some years annually preceding the Revolution, 800,000 bushels of wheat. The total exports of flour from the United States in 1791 were 619,681 barrels, besides 1,018,339 bushels of wheat; in 1800, 653,052 barrels, besides 26,853 bushels of wheat; in 1810, 798,431 barrels, besides 325,924 bushels of wheat; in 1820-21, 1,056,119 barrels, besides 25,821 bushels of wheat; in 1830-31, 1,806,529 barrels, besides 408,910 bushels of wheat; in 1840-41, 1,515,817 barrels, besides 868,585 bushels of wheat; in 1845-46, 2,289,476 barrels, besides 1,613,795 bushels of wheat; in 1846-47, 4,382,496 barrels, besides 4,899,951 bushels of wheat; in 1850-51, 2,202,335 barrels, besides 1,026,725 bushels of wheat. According to the census of 1840, the wheat crop of the United States amounted to 84,823,272 bushels; in 1849, according to the census of 1850, 100,503,899 bushels, although in some of the largest wheat-growing States the crop of 1849 fell far below the average. The production of the year 1857 in the United States is estimated at about 200,000,000 of bushels.

In the State of Ohio, especially, there was great deficiency, as was made apparent by the returns of the

wheat crop for the ensuing year, made in pursuance of an act of the Legislature of that State. From the almost universal returns of "short crop" by the marshals in that State in 1849, which fell below that of 1839, 2,000,000 bushels, and the ascertained crop of 1850, we are fully satisfied that the average wheat crop of Ohio would appear 80 per cent. greater than shown by the census returns. The same causes which operated to diminish the wheat crop of Ohio, were not without their effects upon that of other States bordering on the upper portion of the valley of the Mississippi.

In the London exhibition very little wheat was exhibited equal to that from the United States, especially that from Genesee county, in the State of New York—a soft, white variety—to the exhibitor of which a prize medal was awarded by the Royal Commissioners, and recently transmitted to Mr. Bell by the President of the United States, the chairman of the American Executive Committee. The red Mediterranean wheat exhibited from the United States attracted much attention. The wheat from South Australia was probably superior to any exhibited, while much from our own country fell but little behind, and was unquestionably next in quality.—*Patent Office Report.*

STATEMENT SHOWING THE ANNUAL AVERAGE EXPORT PRICE OF FLOUR AT NEW YORK FROM 1800 TILL JUNE 30, 1855; ALSO THE ANNUAL AVERAGE PRICE OF FLOUR IN THE CITIES OF BOSTON, NEW YORK, PHILADELPHIA, BALTIMORE, NEW ORLEANS, AND ST. LOUIS, FROM 1800 TILL JUNE 30, 1855.

Years.	Export Price.	Boston.	New York.	Philadelphia.	Baltimore.	N. Orleans.	St. Louis.
1800	\$10 00	\$11 00	\$9 38	\$7 75	\$11 42	....	....
1801	13 00	12 10	10 14	10 85	11 42	....	....
1802	9 00	8 17	6 19	6 14	7 00	....	....
1803	7 00	7 55	6 01	6 75	6 50	....	....
1804	7 75	8 97	7 15	7 81	7 33	....	....
1805	13 00	11 25	9 59	10 15	12 18	....	....
1806	7 50	8 25	7 13	7 15	7 33	....	....
1807	8 25	7 73	6 76	7 10	7 50	....	....
1808	6 00	6 25	5 15	5 59	5 75	....	....
1809	7 50	7 03	6 79	6 43	6 50	....	....
1810	8 15	9 42	8 77	9 87	9 40	....	....
1811	10 60	10 42	9 05	10 40	10 67	....	....
1812	10 75	10 90	9 08	9 95	10 12	....	....
1813	13 00	14 67	7 76	9 29	10 17	\$13 50	....
1814	14 50	14 57	7 76	7 67	8 50	9 00	....
1815	9 25	8 95	8 17	8 83	7 92	9 00	....
1816	7 87	9 40	9 34	9 75	8 67	9 30	....
1817	14 75	12 27	11 72	12 12	10 31	12 50	....
1818	10 25	10 50	9 42	9 85	9 50	10 83	....
1819	8 00	7 70	6 79	7 19	6 56	9 02	....
1820	5 87	5 25	4 81	4 94	4 15	6 00	....
1821	4 25	4 42	4 85	4 92	4 64	6 28	....
1822	7 00	6 94	6 39	6 43	6 36	5 75	....
1823	7 75	7 34	6 93	6 90	6 89	6 68	....
1824	6 62	6 07	5 23	5 62	5 64	6 25	....
1825	5 87	5 57	5 19	5 00	4 88	4 11	....
1826	5 25	5 24	5 00	4 69	4 78	4 49	....
1827	8 00	5 64	5 14	5 27	5 15	5 12	....
1828	5 50	6 14	5 50	5 29	5 48	5 26	....
1829	5 00	6 81	6 54	6 25	6 37	7 20	....
1830	7 25	5 26	5 03	4 83	4 66	4 18	....
1831	5 62	6 05	5 84	5 82	5 61	5 47	....
1832	5 87	6 29	5 87	5 62	5 79	6 84	....
1833	5 50	6 11	5 70	5 85	5 69	5 23	\$1 93
1834	5 50	5 42	5 07	5 21	4 99	5 19	4 50
1835	6 00	6 42	6 00	5 75	5 84	6 35	6 25
1836	7 50	8 50	7 78	7 41	9 92	8 55	8 00
1837	10 25	10 18	9 69	9 75	9 43	9 10	9 12
1838	9 50	8 95	8 02	7 81	7 84	8 67	7 87
1839	6 75	7 20	7 40	6 89	6 65	6 57	7 19
1840	5 37	5 51	5 17	5 22	5 00	4 93	4 93
1841	5 20	5 77	5 39	5 34	5 31	5 33	4 75
1842	6 00	5 67	5 67	5 47	5 20	4 54	4 56
1843	4 50	4 87	5 07	4 60	4 26	4 13	3 75
1844	4 75	5 13	4 61	4 34	4 31	4 44	4 50
1845	4 51	5 32	5 00	4 69	4 63	4 83	4 93
1846	5 15	5 63	5 19	4 70	4 53	4 38	4 50
1847	5 95	7 17	6 80	6 02	6 21	5 54	4 93
1848	6 22	6 43	5 71	5 67	5 52	4 76	5 25
1849	5 35	6 00	4 96	4 84	4 83	4 61	5 43
1850	5 00	6 00	4 86	4 97	4 89	5 31	6 25
1851	4 77	5 25	4 19	4 38	4 18	4 00	4 88
1852	4 24	5 20	4 96	4 23	4 26	4 10	5 23
1853	5 60	6 27	5 51	5 47	5 39	5 48	5 08
1854	7 98	9 25	8 02	8 14	8 13	7 60	6 69
1855	10 10	10 25	9 06	9 62	9 57	9 36	7 83

NOTE.—The price of flour for New Orleans and St. Louis could not be obtained for earlier years than those respectively given.

STATEMENT SHOWING THE PRODUCTION OF GRAIN, WINE,
ETC., IN DIFFERENT COUNTRIES.

Countries.	Produce.
Austrian Empire ..	1837 27,094,591 qrs.
	Wheat qrs. 3,436,946
	Rye and maize qrs. 10,065,781
	Barley qrs. 4,540,221
	Oats qrs. 9,031,643
British Empire....	Estimate, 1848.. 60,045,000 qrs.
	Wheat qrs. 18,225,000
	Barley qrs. 9,295,000
	Oats and rye qrs. 30,500,000
	Beans and peas qrs. 2,025,000
	Value of agricultural products.....£ 215,613,811
	Spindles.....No. 37,555,000
France	1840 62,738,462 qrs.
	Wheat qrs. 23,927,731
	Meslin and rye.....qrs. 13,639,444
	Barley qrs. 5,731,497
	Oats qrs. 10,821,391
	Maize qrs. 2,621,349
	Potatoes.....qrs. 33,085,900
	Production of wine ..galls. 899,230,506
Prussia.....	Estimate, 1846 ..£78,024,900
	Grain£ 26,874,900
	Potatoes.....£ 51,150,000
	Exported, 1849.
	Dantzic .....qrs. 898,227
	Stettin.....qrs. 283,476
	Königsberg.....qrs. 208,945
	Memel.....qrs. 306,245
Russian Empire...	Average estimated produce, 1848 52,522,000 qrs.
	Exported.
	Wheat .....qrs. 2,365,222
	Rye .....qrs. 196,738
	Barley .....qrs. 110,597
	Oats .....qrs. 170,835
United States	1848 118,652,449 qrs.
	Wheat .....qrs. 15,735,575
	Barley and rye.....qrs. 4,896,881
	Oats .....qrs. 23,187,500
	Buckwheat.....qrs. 1,253,800
	Indian corn.....qrs. 74,518,750
	Tobacco produced... 218,909,000
	Prod. of agriculture... 174,617,435
	Prod. of live stock... 52,550,162
	1850-'51.
	Cotton crop.....bales. 2,365,257
Bavaria.....	Average estimate.
	Grain .....qrs. 1,990,924
	Potatoes.....qrs. 2,181,818
Belgium, 1849.....	Wheat .....qrs. 1,668,645
	Rye .....qrs. 1,920,427
	Barley .....qrs. 982,649
	Oats .....qrs. 2,319,478
	Potatoes.....bushels. 51,899,107
Brazil	Sugar produced.....tons. 110,000
	Coffee exported.....bags. 1,673,256
Denmark	Estimate production in Denmark and Holstein .. 7,978,216 qrs. grain.
	Wheat .....qrs. 374,106
	Rye .....qrs. 1,965,436
	Barley .....qrs. 2,260,238
	Oats .....qrs. 2,884,725
	Beans and peas.....qrs. 498,711
Egypt, 1834.....	Wheat .....qrs. 630,000
	Beans .....qrs. 500,000
	Barley and maize...qrs. 450,000
	Cotton, Egyptian...cwt. 6,000
	Cotton, foreign...cwt. 200,000
	Linseed.....cwt. 37,530
	Currants.....tons. 18,926
Greece, 1845.....	Exported to Great Britain from Hanseatic Towns.
	Sugar .....cwt. 3,622
Holland	1849, average of nine years, 2,987,876 qrs.
	Wheat .....qrs. 449,736
	Rye .....qrs. 952,719
	Buckwheat.....qrs. 330,091
	Barley .....qrs. 483,930
	Oats .....qrs. 821,400
	Indian corn.....qrs. 3,293,750
Mexico.....	Tobacco.....lbs. 1,840,000
Papal States.....	Oil.....lbs. 113,925,000
Portugal.....	Produce, 1849, 3,123,851 qrs. grain.
	Wheat .....qrs. 686,160
	Barley .....qrs. 213,336
	Rye .....qrs. 521,980
	Maize .....qrs. 1,660,814
	Oats .....qrs. 41,501
Sardinia.....	Average produce, 5,328,125 qrs.
	Wheat .....qrs. 2,503,375
	Indian corn.....qrs. 1,615,625
	Barley .....qrs. 446,875
	Chestnuts.....qrs. 343,750
	Rice.....qrs. 412,500

Countries.	Produce.
Spain.....	1849 11,901,912 qrs.
	Wheat .....qrs. 5,564,350
	Barley .....qrs. 2,860,343
	Rye .....qrs. 1,932,935
	Oats and maize.....qrs. 1,243,294
	Wine exported.....galls. 4,254,336
Sweden & Norway.	Sweden, 1837.. 3,630,480 qrs.
	Wheat .....qrs. 137,593
	Rye .....qrs. 1,281,580
	Oats and peas.....qrs. 1,030,023
	Barley .....qrs. 1,013,007
	Potatoes.....qrs. 2,313,811
	Ibraila Export, 1847. Galatz, 1845.
Turkey.....	Wheat .....qrs. 898,558
	Barley .....qrs. 805,802
	Indian corn,qrs. 629,917
Two Sicilies.....	7,494,138 qrs. grain.
	Wheat and maize...qrs. 8,000,000
	Olive-oil.....tons. 70,000
	Silk .....qrs. 1,400,090
	Cotton.....tons. 10,000
	Linseed.....qrs. 30,000
China	Exported June 30, 1849-'50.
	Tea..... 83,245,300 lbs.
	Great Britain.....lbs. 53,965,800
	Other countries...lbs. 29,283,500
	July 1, 1850, to May 20, 1851.
	Great Britain.....lbs. 60,192,300
COLONIES.	1850.
British Possessions.	Indigo.....maunds. 110,000
Indies.....	1847, total value...£2,576,285
Canada.....	Qrs. Value.
	Wheat .....7,559,773 £1,222,785
	Barley .....615,727 58,019
	Oats .....7,055,730 440,983
	Rye .....446,293 50,208
	Maize .....1,137,555 142,294
	Buckwheat.....432,573 86,514
	Peas .....1,753,836 219,230
	Potatoes.....4,751,331 856,329
	Hides .....pieces. 311,991
	Skins .....pieces. 261,054
	Tallow.....lbs. 434,433
	Wool.....lbs. 1,010,307
Australia.....	1848.
New South Wales.	Fisheries.....£ 68,960
Ceylon.....	Exported to Great Britain, 1850.
	Cotton.....lbs. 807,363
Spanish Possess.	1850.
Cuba.....	Sugar produced.....tons. 250,000
	Total value of agricul- tural produce.....\$ 9,821,921
Dutch Possessions.	1850.
Java.....	Indigo.....cwt. 831,436
	Pepper.....cwt. 551,605
	Cochineal.....lbs. 186,535

PRODUCTION OF WHEAT IN THE SEVERAL STATES OF THE
UNION IN 1840 AND 1850.

States and Territories.	1840. Bushels.	1850. Bushels.
Alabama.....	533,032	394,044
Arkansas.....	105,873	199,639
California.....	12,147	17,223
Columbia, District of ..	12,147	17,223
Connecticut.....	87,009	41,762
Delaware.....	515,163	482,511
Florida.....	412	1,027
Georgia.....	1,801,330	1,098,534
Illinois.....	3,335,393	9,414,575
Indiana.....	4,049,375	6,214,458
Iowa.....	154,893	1,530,681
Kentucky.....	4,803,152	2,142,822
Louisiana.....	60	417
Maine.....	843,160	296,259
Maryland.....	3,846,753	4,494,680
Massachusetts.....	157,925	31,211
Michigan.....	2,157,103	4,926,389
Mississippi.....	196,622	137,990
Missouri.....	1,037,335	2,981,652
New Hampshire.....	423,124	185,658
New Jersey.....	774,203	1,601,190
New York.....	12,286,413	13,121,416
North Carolina.....	1,900,835	2,130,102
Ohio.....	16,571,077	14,487,351
Pennsylvania.....	13,213,077	15,367,691
Rhode Island.....	3,093	49
South Carolina.....	968,354	1,060,277
Tennessee.....	4,569,692	1,619,395
Texas.....	196,925	41,729
Vermont.....	498,500	535,955
Virginia.....	10,109,716	11,212,616
Wisconsin.....	212,116	4,286,131
Minnesota Territory.....	103,379	1,401
New Mexico Territory.....	.....	196,516
Oregon Territory.....	.....	211,943
Utah Territory.....	.....	107,702
Total.....	88,513,270	100,485,544

EXPORTS OF DOMESTIC WHEAT AND FLOUR FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Wheat.		Flour.	
	Bushels.	Value.	Barrels.	Value.
Asiatic Russia .....	...	...	50	\$760
Russian Possessions in North America .....	...	...	150	1,368
Sweden and Norway	110	\$128	979	6,945
Swedish West Indies .....	...	...	4,502	30,439
Danish West Indies .....	...	...	34,798	253,649
Hamburg .....	...	...	1,585	10,467
Bremen	12,643	19,479	6,201	39,228
Holland	2,000	3,125	4,477	30,268
Dutch West Indies .....	...	...	18,827	104,392
Dutch Guiana .....	...	...	6,690	50,875
Dutch East Indies .....	...	...	2,030	14,640
Belgium	274,559	417,591	6,098	35,710
England	8,560,084	13,435,325	1,027,066	6,905,769
Scotland	1,019,529	1,544,787	121,150	687,149
Ireland	138,863	232,455	22,272	154,029
Gibraltar	24,936	41,598	46,391	310,157
Malta .....	...	...	478	3,792
Canada	1,655,641	1,867,457	118,857	717,245
Other British North American Possessions	142,563	221,560	436,231	2,881,803
British West Indies	14,325	23,912	245,642	1,633,027
British Honduras .....	...	...	15,641	96,767
British Guiana .....	...	...	50,017	330,773
British Possessions in Africa	9,100	20,862	19,037	133,286
Other ports in Africa	1,400	2,000	10,029	75,079
British Australia	35,932	64,683	98,355	593,070
British East Indies	581	1,040	2,879	22,764
France on the Atlantic	1,146,999	1,850,821	155,544	1,001,505
France on the Mediterranean	380,129	615,675	29,259	198,042
French North American Possessions .....	...	...	6,824	43,499
French West Indies .....	...	...	33,021	284,166
French Guiana .....	...	...	249	1,862
Spain on the Atlantic	361,547	594,650	72,381	499,188
Spain on the Mediterranean	393,077	646,002	155,650	1,120,717
Canary Islands	4,770	7,976	2,385	15,791
Cuba	7,907	10,171	45,145	324,410
Porto Rico .....	...	...	22,298	152,215
Portugal	369,802	599,036	68,671	461,148
Madeira .....	...	...	2,209	16,312
Cape de Verd Islands .....	...	...	597	4,360
Azores .....	...	...	592	3,196
Sardinia	12,103	17,476	1,735	12,006
Two Sicilies	240	440	12,833	84,467
Austria .....	...	...	10	90
Turkey in Europe .....	...	...	1,168	8,565
Turkey in Asia .....	...	...	4,028	29,279
Haiti .....	...	...	50,029	372,615
San Domingo .....	...	...	556	4,224
Mexico .....	...	...	24,089	179,088
Central Republic .....	...	...	616	4,996
New Granada .....	...	...	16,991	126,141
Venezuela .....	...	...	47,388	351,174
Brazil .....	...	...	507,134	3,900,467
Uruguay, or Cisplatine Republic .....	...	...	72,961	512,471
Argentine Republic	1,631	2,608	50,021	378,816
Chili .....	...	...	6,639	53,526
Peru .....	...	...	1,920	15,940
Ecuador .....	...	...	738	5,864
Sandwich Islands .....	...	...	3,653	30,882
Other Islands in the Pacific .....	...	...	615	5,878
China .....	...	...	11,590	108,586
Whale-fisheries .....	...	...	2,338	17,945
Uncertain places .....	...	...	4,814	29,509
Total, 1856-'57	14,570,331	\$22,240,857	3,712,053	\$25,852,316

EXPORTS OF FOREIGN WHEAT AND FLOUR FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Wheat.	Wheat Flour.	
	Bushels.	Value.	Cwt. Value.
England	35,670	\$56,302	45,985 \$210,203
Scotland .....	...	...	540 1,925
British N. Am. Poss. ....	...	...	3,355 14,449
Spain on the Atlantic	6,173	11,113	...
China .....	...	...	500 2,100
Total	41,843	\$67,415	50,580 \$228,677
From warehouse	10,678	\$17,084	2,562 \$10,248
Not from warehouse	31,165	50,331	47,918 218,429

The imports of wheat into the United States are merely nominal, being, for the year ending June 30, 1857, as follows:

Whence imported.	Bushels.	Value.
Hamburg	334	\$38
Sandwich Islands	300	294
Other places	24	27
Total	658	\$909

Formerly the export of breadstuffs from the United States was principally made up of flour, but of late years it has been found advantageous to ship wheat in bulk, especially from the interior grain markets, without transshipment; and, as may be seen from the preced-

ing statement, at present the export of wheat is nearly equal that of flour.

The consumption of the country, per the census figures of product, population, and export, for the years 1840 and 1850, and the rate of increase in population being known, the results are as follows:

Years.	Population.	Consumption at 3½ Bushels.	Actual Export.
1840	17,069,656	64,565,447	11,198,018
1850	23,267,726	64,182,986	8,827,017
1851	24,023,916	64,483,895	12,943,490
1852	24,780,106	66,730,815	18,600,680
1853	25,536,296	89,877,025	18,953,960
1854	26,292,486	93,023,690	28,148,595
1855	27,048,673	94,670,355	7,821,584
1856	27,804,863	97,317,020	30,000,000

Years.	Seed.	Crop.	Price in New York.
1840	8,482,727	84,827,272	\$5.44
1850	11,479,922	104,479,923	\$6.62
1851	12,000,000	110,032,294	6.63
1852	11,688,803	117,511,011	4.37
1853	12,500,000	121,136,048	4.44
1854	13,000,000	133,172,285	9.25
1855	13,500,000	114,001,939	9.50
1856	13,500,000	140,317,000	...

AMOUNTS OF INDIAN CORN AND CORN-MEAL, AND OF WHEAT, WHEAT FLOUR, AND WHEAT SHIP-BREAD EXPORTED FROM THE UNITED STATES DURING A PERIOD OF THIRTY-SIX YEARS, EACH ENDING ON THE 30TH OF JUNE.

Years.	Value of Corn and its Manufactures.	Value of Wheat and its Manufactures.
1821.....	\$616,279	\$4,476,357
1822.....	900,656	5,257,286
1823.....	930,489	5,151,437
1824.....	730,340	5,977,255
1825.....	878,073	4,466,679
1826.....	1,007,321	4,411,870
1827.....	1,022,464	4,645,784
1828.....	822,858	4,464,774
1829.....	974,535	5,972,920
1830.....	597,119	6,320,603
1831.....	992,051	10,712,261
1832.....	768,775	5,229,853
1833.....	871,814	5,895,157
1834.....	695,453	4,792,087
1835.....	1,217,665	4,667,981
1836.....	725,262	3,819,421
1837.....	911,654	3,253,767
1838.....	864,391	3,875,110
1839.....	799,516	7,419,232
1840.....	1,043,516	12,208,086
1841.....	995,411	8,960,568
1842.....	992,967	8,616,731
1843.....	735,915	4,339,434
1844.....	1,045,037	7,648,491
1845.....	1,053,293	6,101,666
1846.....	2,131,744	13,717,392
1847.....	18,696,546	32,739,427
1848.....	5,645,084	16,482,380
1849.....	9,135,994	13,401,748
1850.....	4,652,844	8,074,498
1851.....	2,385,415	11,844,349
1852.....	2,114,005	14,743,251
1853.....	2,084,051	19,591,817
1854.....	7,077,253	40,616,956
1855.....	8,195,638	12,883,937
1856.....	8,798,253	45,231,411
1857.....	6,142,457	48,982,551

Whip, in sea language, a rope passed through a single block or pulley.

Whirlpool, a vortex, eddy, or gulf, where the water has a circular motion. Whirlpools are produced by the meeting of currents which run in different directions. Their danger to navigation is well known, but is, perhaps, not equal to the dread which sailors entertain of them. Some of the most celebrated are the Euriplus, near the coast of Negropont; the Charybdis, in the Straits of Sicily; and the Maelstrom, on the northern coast of Norway.

Whirlwind, a revolving column or mass of air, supposed with most probability to be produced by the meeting of two currents of air blowing in opposite directions, but ascribed by some to electricity. It is analogous to the *whirlpool*. When the opposite currents have the same velocity, the circulation will be maintained at the same spot; but if the motion of one of them is more rapid than that of the other, it will transport the whirling motion with its excess of celerity, and a progressive and rotatory motion are thus maintained at the same time. Whirlwinds generally occur in summer, and are most violent in tropical countries, where they frequently produce most destructive effects.

Whisky, a spirit obtained by distillation from corn, sugar, or molasses, though generally from the former. Whisky is the *national spirit*, if we may so term it, of Scotland and Ireland; but that distilled in the former is generally reckoned superior to that of the latter.—See *SPIRITS*. Whisky is a corruption of the Irish word *uisquebaugh*. This ardent spirit may be manufactured from barley malt alone; from the raw or unmalted barley mixed with from a third to a ninth of malt; from a mixture of raw barley, wheat, rye, or oats, with from a sixth to a tenth of barley malt; or from a mixture of raw barley, or big, with sugar; or from sugar or molasses alone. When barley malt is alone used, the processes are simple, and the spirit produced has a more agreeable flavor, and is more esteemed; but, in consequence of the heavy duty on malt, distillers have been induced to employ large quantities of

unmalted grain, and of late years no small proportion of sugar and molasses, adding merely enough of malt to induce the chemical conversion of the starch in the unmalted grain into grape sugar.

During the germination of barley (as in its conversion into malt) a peculiar substance is generated in the grain called *diastase*, which acts chemically on the starch of the grain, converting it first into a kind of gum called *dextrine*, and then into a sweet substance identical in composition with grape sugar. It has been found that this diastase can convert 2000 parts of starch into grape sugar; and it is of this valuable property that the distiller avails himself when he adds malt to his raw grain. To save the more expensive article malt, he uses only so much as experiment has proved will suffice to change the starch of the raw grain into sugar when mixed with it in his mash-tun. The distiller, therefore, to prepare the saccharine fluid for his operations, has to go through all the processes of brewing before he gets it ready for the still.—See *article BREWING*.

The Manufacture of Whisky.—Cincinnati has become the greatest whisky market in the world, and the Ohio Valley the most important whisky-producing region with which we are acquainted. The distilleries in the vicinity of Cincinnati are on a large scale, and they are said to exhibit many improvements devised by inventive genius. Steam is made to perform nearly all the labor. Few men are employed, and they do little else than look at the machines as they perform the work. The quantity of corn consumed in a single distillery in Cincinnati is about one thousand bushels per day, from which about 4000 gallons of whisky are produced. This gives for this single establishment a consumption of 312,000 bushels of corn per annum, and a production of 1,248,000 gallons of whisky. We have not the data upon which to base an estimate of the quantity of whisky produced in the Ohio Valley. The quantity sold in the Cincinnati market annually is about 220,000 barrels, or about 9,000,000 gallons. This is probably not more than one half the production of Ohio and Indiana alone. We presume that the production is 18,000,000 gallons, and find the consumption of corn averaging four and a half million bushels. It is probable that the production of whisky in the Ohio Valley is 50,000,000 gallons per annum, involving a consumption of 12,500,000 bushels of corn, the average value of which is \$5,000,000. The demand for the article is great, and daily increasing.

White Sea. The entrance to the port of Archangel, situated on the right bank of the Dwina, about thirty miles from its mouth, is interrupted by a bar, over which vessels drawing more than fourteen feet of water can not pass. Larger ships discharge and load outside the bar. The trade of Archangel extends as far as Siberia, and along the coasts of the White Sea, east and west. Previous to the founding of St. Petersburg this was the only place of maritime commerce in the empire. Since that period its trade has considerably declined. The River Dwina is connected with the Volga and Neva by canals; but, owing to the rigor of the climate, the port of Archangel is open only from July to September. Its imports consist of colonial goods, salt, woollens, and hardwares. In 1852 there entered this port 715 vessels, with an aggregate of 56,922 tons; of which 85 were laden and 630 in ballast. These all cleared with freight. Of the arrivals there were under the English flag 273 vessels, with an aggregate tonnage of 24,297 tons.

	Archangel.	Other Ports.
Imports in 1852	1,252,000	201,000
Exports in 1852	20,851,000	556,000
Total, year 1852.....	22,103,000	757,000

Total custom-house receipts from the five ports of the White Sea, in 1852, 984,000 francs. These ports are Archangel, Oneg, Kola, Kemi, Sounsky. The imports of Archangel consist of dry and salted fish, sugar,

wines, and other liquors, salt, and peltries. The exports are flax, linens, linseed, timber, tar, etc.

Wigs. The wig-trade is one of the most curious connected with manufactures in hair. The French are famous in this department. There is a regular hair-harvest in some of the central districts of France; Paris firms send agents into those districts in the spring of the year, who purchase the beautiful tresses which the country maidens have been cultivating for that purpose; this hair-crop is as much an annual affair as a corn-crop in the fields. The price paid is about three-pence (English) per ounce; but the agents usually pay for the hair with ribbons, handkerchiefs, and other trinkets, at fairs and markets. Not the least curious feature is, that the agents can distinguish the hair of one district from that of another not far distant—an ethnographical feat which might puzzle a learned naturalist—and attach a money value to this difference. If it be true, as is asserted, that two hundred thousand pounds' weight of women's hair is thus annually sold in the country districts of France, it must be admitted to form a very singular kind of commerce. The agents sort and clean the hair, and then dispose of it to the Paris firms at about double the former price. Then comes the art of the *peruquier* to fashion this hair into wigs, perukes, and scalps—some of which command a very high price. Of the "transparent wigs," the "ventilating wigs," the "bald white wigs," the "gossamer-parting wigs," the "fronts with each hair fixed separately," and other wonders of wig-making, we have been abundantly informed by our advertising *peruquiers*.

Wind-mills. They are of great antiquity, and some writers state them to be of Roman invention; but certainly we are indebted for the wind-mill to the Saracens. They are said to have been originally introduced into Europe by the knights of St. John, who took the hint from what they had seen in the crusades.—BAKER! Wind-mills were first known in Spain, France, and Germany, in 1299.—ANDERSON. Wind saw-mills were invented by a Dutchman in 1633, when one was erected near the Strand, in London.

Windows. See GLASS. There were windows in Pompeii, A.D. 79, as is evident from its ruins. It is certain that windows of some kind were glazed so early as the third century, if not before, though the fashion was not introduced until it was done by Bennet, A.D. 633. Windows of glass were used in private houses, but the glass was imported, 1777.—ANDERSON. In England about 6000 houses now have fifty windows and upward in each; about 275,000 have ten windows and upward; and 725,000 have seven windows, or less than seven. The window-tax in England was first enacted in order to defray the expense of and deficiency in the re-coinage of gold, 7 William III., 1695.

Winds. The prevailing winds in the Caribbean Sea and southern parts of the Gulf of Mexico are the northeast trade-winds. They have their offices to perform in the river basins of inter-tropical America, and the rains which they may discharge into the Mississippi Valley now and then are exceptions, not the rule. The winds from the north can not bring vapors from the great lakes to make rains for the Mississippi, for two reasons: 1st. The basin of the great lakes receives from the atmosphere more water in the shape of rain than they give back in the shape of vapor. The St. Lawrence River carries off the excess. 2d. The mean climate of the lake country is colder than that of the Mississippi Valley, and therefore, as a general rule, the temperature of the Mississippi Valley is unfavorable for condensing vapor from that quarter. It can not come from the Atlantic, because the greater part of the Mississippi Valley is to the windward of the Atlantic. The winds that blow across this ocean go to Europe with their vapors; and in the Pacific, from the parallels of California down to the equator, the direction of the wind at the surface is from, not toward,

the basin of the Mississippi. Therefore it seemed to be established with some degree of probability, or, if that expression be too strong, with something like apparent plausibility, that the rain winds of the Mississippi Valley do not, as a general rule, get their vapors from the North Atlantic Ocean, nor from the Gulf of Mexico, nor from the great lakes; nor from that part of the Pacific Ocean over which the northeast trade-winds prevail.

Southeast Trade-winds.—After the northeast trades have blown out their season, which in India ends in April, the great arid plains of Central Asia, of Tartary, Thibet, and Mongolia, become heated up; they rarefy the air of the northeast trades, and cause it to ascend. This rarefaction and ascent, by their demand for an indraught, are felt by the air which the southeast trade-winds bring to the equatorial Doldrums of the Indian Ocean: it rushes over into the northern hemisphere to supply the upward draught from the heated plains as the southwest monsoons. The forces of diurnal rotation assist to give these winds their westing. Thus the southeast trades, in certain parts of the Indian Ocean, are converted, during the summer and early autumn, into southwest monsoons. These then come from the Indian Ocean and Sea of Arabia loaded with moisture, and, striking with it perpendicularly upon the Ghauts, precipitate upon that narrow strip of land between this range and the Arabian Sea an amount of water that is truly astonishing. Here, then, are not only the conditions for causing more rain, now on the west, now on the east side of this mountain range, but the conditions also for the most copious precipitation. Accordingly, when we come to consult rain-gauges, and to ask meteorological observers in India about the fall of rain, they tell us that on the western slopes of the Ghauts it sometimes reaches the enormous depth of twelve or fifteen inches in one day. Were the Andes stretched along the eastern instead of the western coast of America, we should have an amount of precipitation on their eastern slopes that would be truly astonishing; for the water which the Amazon and the other majestic streams of South America return to the ocean would still be precipitated between the sea-shore and the crest of these mountains. These winds of India then continue their course to the Himalaya range as dry winds. In crossing this range, they are subjected to a lower temperature than that to which they were exposed in crossing the Ghauts. Here they drop more of their moisture in the shape of snow and rain, and then pass over into the thirsty lands beyond with scarcely enough vapor in them to make even a cloud. Thence they ascend into the upper air, there to become counter-currents in the general system of atmospherical circulation.

Rain-winds are the winds which convey the vapor from the sea, where it is taken up, to other parts of the earth, where it is let down either as snow, hail, or rain. As a general rule, the trade-winds may be regarded as the evaporating winds; and when, in the course of their circuit, they are converted into monsoons, or the variables of either hemisphere, they then generally become also the rain-winds—especially the monsoons—for certain localities. Thus the southwest monsoons of the Indian Ocean are the rain-winds for the west coast of Hindostan. In like manner, the African monsoons of the Atlantic are the winds which feed the springs of the Niger and the Senegal with rains. Upon every water-shed which is drained into the sea, the precipitation, for the whole extent of the shed so drained, may be considered as greater than the evaporation, by the amount of water which runs off through the river into the sea. In this view, all rivers may be regarded as immense rain-gauges, and the volume of water annually discharged by any one as an expression of the quantity which is annually evaporated from the sea, carried back by the winds, and precipitated throughout the whole extent of the valley that is drain-

ed by it. Now, if we knew the rain-winds from the dry, for each locality and season generally throughout such a basin, we should be enabled to determine, with some degree of probability at least, as to the part of the ocean from which such rains were evaporated. And thus, notwithstanding all the eddies caused by mountain chains and other uneven surfaces, we might detect the general course of the atmospherical circulation over the land as well as the sea, and make the general courses of circulation in each valley as obvious to the mind of the philosopher as is the current of the Mississippi, or of any other great river, to his senses.

These investigations as to the rain-winds at sea indicate that the vapors which supply the sources of the Amazon with rain are taken up from the Atlantic Ocean by the northeast and southeast trade-winds; and many circumstances, some of which have already been detailed, tend to show that the winds which feed the Mississippi with rains get their vapor in the southeast trade-wind region of the other hemisphere. For instance, we know from observation that the trade-wind regions of the ocean, beyond the immediate vicinity of the land, are, for the most part, rainless regions, and that the trade-wind zones may be described, in a hyetographic sense, as the evaporating regions. They also show, or rather indicate, as a general rule, that, leaving the polar limits of the two trade-wind systems, and approaching the nearest pole, the precipitation is greater than the evaporation until the point of maximum cold is reached.

And we know also that, as a general rule, the southeast and northeast trade-winds, which come from a lower and go to a higher temperature, are the evaporating winds, i. e., they evaporate more than they precipitate; while those winds which come from a higher and go to a lower temperature are the rain-winds, i. e., they precipitate more than they evaporate. That such is the case, not only do researches indicate, but reason teaches, and philosophy intimates. These views, therefore, suggest the inquiry as to the sufficiency of the Atlantic, after supplying the sources of the Amazon and its tributaries with their waters, to supply also the sources of the Mississippi and the St. Lawrence, and of all the rivers, great and small, of North America and Europe. A careful study of the rain-winds, in connection with the *Wind and Current Charts*, will probably indicate to us the "springs in the ocean" which supply the vapors for the rains that are carried off by those great rivers. "All the rivers run into the sea; yet the sea is not full; unto the place from whence the rivers come, thither they return again."—MAURY'S *Phys. Geog.*

Wind-sails, in a ship, are made of common sailcloth, and are usually twenty-five and thirty feet long according to the size of the ship, and are of the form of a cone ending obtusely. When they are made use of, they are hoisted by ropes to about two-thirds or more of their height, with their bases distended circularly, and their apex hanging downward in the hatchways of the ship. Above each of these one of the common sails is so disposed that the greatest part of the air rushing against it is directed into the wind-sail, and conveyed into the body of the ship, to produce ventilation, etc.

Windward, in sea-language, denotes any thing toward that point from whence the wind blows, in respect of a ship: thus windward tide is the tide which runs against the wind.

Wine (Ger. *Wein*; Fr. *Vin*; It. and Sp. *Vino*; Port. *Vinho*; Russ. *Wino*, *Winogradnoe winoe*; Lat. *Vinum* Gr. *Oinos*; Arab. *Khumr*), the fermented juice of the grape, or berries of the vine (*Vitis vinifera*). The vine is indigenous to Persia and the Levant; but it is now found in most temperate regions. The limits within which it is cultivated in the northern hemisphere of the Old World vary from about 15° to 43° and 52°; but in North America it is not cultivated farther

north than 38° or 40°. It is rarely grown at a greater altitude than 3000 feet. From Asia the vine was introduced into Greece, and thence into Italy. The Phœceans, who founded Marseilles, carried the vine to the south of France; but it is doubtful whether it was introduced into Burgundy till the age of the Antonines. The ancient writers give the most contradictory accounts with respect to the introduction of the vine into Gaul.—See the learned and excellent work of LE GRAND D'AUSSEY, *Vie Privée des Français*. The species of *Vitis* indigenous to North America is very different from the *Vitis vinifera*. In favorable seasons the vine ripens in the open air in England; and in the 11th and 12th centuries considerable quantities of inferior wine were made from native grapes. Vineyards are now, however, unknown in Great Britain; but the grapes raised in hot-houses, and used in desserts, are excellent. The vine grows in every sort of soil; but that which is light and gravelly seems best suited for the production of fine wines. It succeeds extremely well in volcanic countries. The best wines of Italy are produced in the neighborhood of Vesuvius; the famous Tokay wine is also made in a volcanic district, as are several of the best French wines; many parts of the south of France bearing evident marks of extinct volcanoes. Hermitage is grown among the *débris* of granite rocks. The most favorable situation for a vineyard is upon a rising ground or hill facing the southeast, and the situation should not be too confined;

—apertus
Bacchus amat colles.

The art of expressing and fermenting the juice of the grape appears to have been practiced from the remotest antiquity. The sacred writings tell us that Noah planted a vineyard soon after the deluge (*Gen. ix. 20*); and a modern Latin poet ingeniously represents the vine as a gift from Heaven, to console mankind for the miseries entailed upon them by that grand catastrophe!

Omnia vastatis ergo quum cerneret arvis
Desolata Deus, nobis felicia vini
Dona dedit; tristes hominum quo munere fovit
Reliquias, mundi solatus vitæ ruinam!

Vanierii *Prod. Rusticum*, lib. xi.

Species of Wine.—There are many varieties of vines; and this circumstance, combined with differences of soil, climate, mode of preparation, etc., occasions an extreme variety in the species of wine. But between places immediately contiguous to each other, and where even a careful observer would hardly remark any difference, the qualities of the wines, though produced by the same species of grape, and treated in the same way, are often very different. A great deal evidently depends upon the aspect of the vineyard; and it is probable that a good deal depends on peculiarities of soil. But whatever may be the cause, it is certain that there are wines raised in a few limited districts, such as Tokay, Johannisberger, Constantia, the best Burgundy, Champagne, Claret, etc., that no art or care has hitherto succeeded in producing of equal goodness in other places.

The leading character of wine must be referred to the alcohol which it contains, and upon which its intoxicating powers principally depend; not exclusively, however; for some of the lighter wines, if brisk and effervescent, seem to derive from the admixture of carbonic acid a peculiar exhilarating power not directly proportional to their alcoholic contents. And again, we find other wines, among which certain Burgundies stand foremost, which are eminently heating, though not very strong. The following table shows the quantity of alcohol (of the specific gravity of 825 at 60°), by measure, contained in 100 parts by measure of the respective wines. Some other vinous and spirituous liquors have been added, for the purpose of showing the relation which they bear to wine in the proportion of alcohol which they contain.

PROPORTION OF SPIRIT PER CENT.

	By Measure.	Aver. age.		By Measure.	Aver. age.
1. Lissa.....	26-47		33. Syracuse	15-28	
"	24-35		34. Sauterne.....	14-22	
"	15-90		35. Grenache....	21-24	
		25-41	36. Burgundy	16-60	
2. Raisin wine..	26-40		"	15-22	
"	25-77		"	14-53	
"	23-20		"	11-95	
		25-12	"	(20	
3. Marsala	26-03		years in bottle)	12-16	
"	25-05				17-84
"	18-40		37. Hock.....	14-37	
		25-09	"	13-00	
4. Port	25-83		"	(old in	
"	24-29		cask)	8-88	
"	23-71				12-08
"	23-39		38. Johannisberger		
"	22-30		(1788)	8-71	
"	21-40		39. Rudisheimer		
"	19-00		(1811)	10-72	
		22-36	40. Rhenish	7-36	
5. Madeira	24-42		41. Nice	14-36	
"	23-93		42. Barsac	13-86	
" (Sercial)	21-40		43. Tent	13-36	
"	19-20		44. Champagne		
		22-27	" (still)	13-80	
6. Currant wine..	20-85		" (spark-		
7. Sherry	19-81		ling)	12-80	
"	19-83		"	(red) 12-53	
"	18-79		"	11-30	
"	18-25				12-01
" (very old)	23-80		45. Red Hermitage	12-32	
		19-17	46. Vin de Grave	13-94	
8. Teneriffe	19-79		"	12-80	
9. Colares	19-75		47. Frontignac ..	12-79	
10. Lachryma			48. Cote Rotie ..	12-32	
Christi	19-70		49. Gooseberry		
11. Constantia ..	14-50		wine	11-84	
" (white)	19-75		50. Orange wine		
12. " (red)	18-92		(average of		
13. Lisbon	18-94		six samples		
14. Malaga (1666)	18-94		made by a		
15. Bucelias	18-49		London		
16. Red Madeira.	22-30		manufactu-		
"	18-40		rer)	11-26	
17. Cape Muschat	18-25		51. Tokay	9-88	
18. Cape Madeira	22-94		52. Elder wine ..	8-79	
"	20-50		53. Cider (highest		
"	18-11		average)	9-87	
19. Stein wine... 10-60			Cider (lowest		
20. Grape wine ..	18-11		average)	5-21	
21. Calcavella... 19-20			54. Perry (average		
"	18-10		of four sam-		
22. Vidonia	19-25		ples)	7-26	
23. Alba Flora ..	17-26		55. Mead	7-32	
24. Malaga	17-26		56. Ale (Burton)	8-83	
25. White Hermi-			" (Edinb'gh)	6-20	
tage	17-43		" (Dorches-		
26. Rousillon ..	19-00		ter)	5-56	
"	17-26				
27. Alcatteo	16-20		57. Brown stout .	6-80	
28. Aina	30-00		58. London porter		
29. Claret	17-11		(average) ..	4-20	
"	16-32		59. London small		
"	14-08		beer (aver-		
"	12-91		age)	1-28	
		15-20	60. Brandy	63-39	
30. Malmsey Ma-			61. Rum	63-68	
deira	16-40		62. Gin	51-60	
31. Lunel	15-52		63. Scotch whis-		
32. Sherazaz (red)	15-52		ky	54-32	
" (white)	19-30		64. Irish whisky.	53-90	

It is necessary, however, to observe that the proportion of alcohol in the same wine varies materially according to the age of the wine and other circumstances, and that wines having the same quantities of alcohol in each may, notwithstanding, differ essentially in every other respect. Practically wines are distinguished by their color, hardness or softness on the palate, their aroma, and their being still or effervescing. In many cases, too, the same variety of wine may be distinguished into a number of sub-varieties, differing more or less in one or more of these particulars. Thus, in the case of Champagne, some varieties are red, and others white or straw-colored; some are dry and others sweet; the aroma of one variety differs from that of another; and, while some are still, others have every different degree of effervescing power. The same variety exists in the case of clarets, and, indeed, of almost every description of wine.

The differences in the qualities of wines depend partly on differences in the vines, but more on the differ-

ences of the soils in which they are planted, in the exposure of the vineyards, and in the treatment of the grapes, and the mode of manufacturing the wine. Though the vine grows in every sort of soil, a rising ground, or gently-sloping hill facing the south, with a loose, gravelly, or rather volcanic soil, is by far the best situation for a vineyard. It is in such situations that all the finest wines are produced.

It would be useless, in a work of this kind, to attempt characterizing the different sorts of wine used. Port and sherry have long enjoyed a decided preponderance in the markets; and it must be admitted that, when of good quality and sparingly used, they are very unexceptionable wines. But they are often harsh, and have the disadvantage of being strong and heating, so that they can not be taken, to any thing like excess, by most persons with impunity. They are well enough for a glass or two, but they are not wines for conversation or society. It is not probable, indeed, had it not been for the high differential duties with which French wines were so long burdened, that the use of port and sherry would ever have been so general; and since the abolition of the differential duty in 1831, French wines have begun gradually, though slowly, to make their way from the highest, to which they have hitherto been mostly confined, among the middle classes. They are, indeed, superior in almost all respects to every other variety. The best growths of claret, Champagne, and Burgundy, seem to unite all the qualities required to constitute perfect wines. Had they been known in antiquity, we apprehend they would have engrossed most part of the praise so profusely lavished on the Pramnian, Cecuban, Falernian, and other renowned wines of Greece and Rome.—BRANDE'S Dict.

Ancient Wines.—The wines of Lesbos and Chios among the Greeks, and the Falernian and Cecuban among the Romans, have acquired an immortality of renown. Great uncertainty, however, prevails as to the nature of these wines. Dr. Henderson thinks that the most celebrated of them all, the Falernian, approached, in its most essential characters, near to Madeira. In preparing their wines, the ancients often inspissated them till they became of the consistence of honey, or even thicker. These were diluted with water previously to their being drunk; and, indeed, the habit of mixing wine with water seems to have prevailed much more in antiquity than in modern times.

Modern Wines.—The principal wines made use of in England are port, sherry, claret, Champagne, Madeira, hock, Marsala, Cape, etc.

Port, the after-dinner wine, is produced in the province of Upper Douro, in Portugal; and is shipped at Oporto, whence its name. When it arrives in England, it is of a dark purple or inky color; has a full, rough body, with an astringent bitter-sweet taste, and a strong flavor and odor of brandy. After it has remained some years longer in the wood, the sweetness, roughness, and astringency of the flavor abate; but it is only after it has been kept 10 or 15 years in bottle that the odor of the brandy is completely subdued, and the genuine aroma of the wine developed. When kept too great an age, it becomes tawny, and loses its peculiar flavor. During the process of melioration, a considerable portion of the extractive and coloring matter is precipitated on the sides of the vessels in the form of crust. In some wines this change occurs much earlier than in others. A large quantity of brandy is always mixed with the wine shipped from Oporto for England. Genuine unmixed port-wine is very rarely met with. We have been so long accustomed to the compounded article, that, were it possible to procure it unmixed, it is doubtful whether it would be at all suited to our taste. According to Mr. Brande's analysis, on which, however, owing to the differences in the quality of the wine, no great stress can be laid, port, as used in England, contains about 23 per cent. of alcohol.

EXPORTATION OF WINE FROM LISBON, 1853-1855.

To what Ports.	1853.	1854.	1855.
	Pipes.	Pipes.	Pipes.
Aalborg.....	.....	.....	12
Algiers.....	.....	.....	2
Ajuda.....	9	.....	.....
Amsterdam.....	59	10	.....
Angola.....	355	160	326
Australia.....	769	25	.....
Bahia.....	3,856	2,964	2,277
Benguela.....	135	93	77
Bergen.....	1	.....	.....
Bissau.....	10	.....	.....
Bologne.....	.....	.....	.....
Bristol.....	42	18	16
Buenos Ayres.....	.....	.....	.....
Cape Verd.....	307	.....	52
Cadiz.....	.....	.....	.....
Ceara.....	47	21	.....
China.....	.....	.....	.....
Copenhagen.....	.....	40	.....
Cork.....	3	.....	3
Cronstadt.....	1	.....	.....
Dublin.....	135	134	69
Elsinore.....	1	426	54
Genoa.....	7	6	5
Gibraltar.....	.....	.....	6
Glasgow.....	10	15	5
Goa.....	113	54	106
Gothenburg.....	.....	40	1
Halifax.....	.....	4	.....
Hamburg.....	726	707	393
Havre.....	36	13	32
Island of Corisco.....	.....	7	.....
Jersey.....	53	.....	.....
Krageroe.....	.....	1	.....
Leith.....	3	6	.....
Liban.....	5	1	.....
Liverpool.....	253	311	87
London.....	1,277	1,198	803
Macao.....	534	203	681
Maranhao.....	825	659	866
Marseilles.....	4	23	23
Mayagao.....	.....	.....	1
Memel.....	.....	.....	56
Mozambique.....	50	15	54
Mogador.....	.....	.....	.....
Montevideo.....	.....	6	.....
Nantes.....	1	24	17
Newcastle.....	.....	.....	.....
Newfoundland.....	9	49	22
New York.....	1,215	102	322
Onim.....	.....	.....	9
Ostend.....	.....	1	5
Para.....	698	1,051	636
Parahiba.....	172	.....	.....
Pernambuco.....	1,937	1,710	1,060
Petersburg.....	568	.....	.....
Plymouth.....	28	.....	.....
Poole.....	.....	1	.....
Porto Alegre.....	.....	205	.....
Portsmouth.....	1	1	.....
Quebec.....	.....	.....	185
Renders.....	.....	.....	.....
Riga.....	159	.....	.....
Rio Grande.....	903	864	620
Rio de Janeiro.....	11,678	14,665	8,835
Rio la Plata.....	.....	1	.....
Rouen.....	3	2	.....
Saffi.....	.....	.....	.....
Santos.....	.....	39	.....
Sedovey.....	457	1	.....
Singapore.....	10	.....	.....
Sligo.....	1	.....	.....
Soderham.....	.....	.....	1
Southampton.....	15	25	12
Stavanger.....	1	.....	.....
Stockholm.....	3	1	23
St. Thomas.....	83	53	22
Toulon.....	8	.....	.....
Wlaardingen.....	13	11	1
Total.....	27,647	25,966	17,790

SUMMARY OF THE EXPORTATION OF OIL, BRANDY, AND WINE FROM LISBON THE YEARS SPECIFIED.

Years.	Oil.	Brandy.	Wine.
	Pipes.	Pipes.	Pipes.
1853.....	4206	47	27,647
1854.....	259	.....	25,966
1855.....	2523	83	17,790
Total.....	6995	168	71,403

Oporto Wine Company.—The quality of the wine shipped from Oporto has been materially injured by the monopoly so long enjoyed by the Oporto Wine Company. This company was originally founded in

1756, during the administration of the Marquis Pomal. A certain extent of territory was marked out by its charter as the only district on the Douro in which wine could be raised for exportation: the absolute disposal of the wines raised in this district was placed in the hands of the company, who were further authorized to fix the prices to be paid for them to the cultivators, to prepare them for exportation, and to fix the price at which they should be sold to foreigners! It is obvious that a company with such powers could not be any thing else than an intolerable nuisance. What could be more arbitrary and unjust than to interdict the export of all wines raised out of the limits of the company's territory? But even in its own district, its proceedings were oppressive and injurious. The company annually fixed, by a fiat of their own, two rates of prices—one for the *vinho de feitoria*, or wine for exportation; the other for *vinho de ramo*, or wine for home consumption—at which the cultivators were to be paid, whatever might be the quality of their wines. They had, therefore, no motive to exert superior skill and ingenuity; but contented themselves with endeavoring to raise, at the least possible expense, the greatest supply of *vinho de feitoria*, for which the company allowed the highest price. All emulation was thus effectually extinguished, and the proprietors who possessed vineyards of a superior quality adulterated their wines with inferior growths, so as to reduce them to the average standard. "In this way," says Dr. Henderson, "the finer products of the Douro vintages have remained, in a great measure, unknown to us; and port-wine has come to be considered as a single liquor, if I may use the expression, of nearly uniform flavor and strength; varying, it is true, to a certain extent in quality, but still always approaching to a definite standard, and admitting of few degrees of excellence. The manipulations, the admixtures—in one word, the adulterations—to which the best wines of the Cimo do Douro are subjected, have much the same effect as if all the growths of Burgundy were to be mingled in one immense vat, and sent into the world as the only true Burgundian wine. The delicious produce of Romanée, Chambertin, and the Clos Vougeot, would disappear, and in their places we should find nothing better than a second-rate Beaune or Macon wine."—*History of Ancient and Modern Wines*. Not only, however, did the Oporto Wine Company deteriorate the quality, but they also raised the price of their wines to an enormous height. Secured against the competition of their countrymen, and enjoying down to 1831 a nearly absolute monopoly of the British markets for red wines by means of the high duties on those of France, they filled their pockets at our expense. At the very moment when the company were shipping wine for England at £40 a pipe, they frequently shipped the same wine to other countries at £20.—FLEETWOOD WILLIAMS on the Wine Trade. And the authentic tables published by Balbi show that the price of wine was trebled and quadrupled under the management of this corporation.—*Essai Statistique sur le Royaume de Portugal*.

It is long since the injurious influence of the company on the commerce of England was distinctly perceived and pointed out. So far back as 1767, the Board of Trade laid a memorial before his majesty in council, in which they state, "With respect to many particular regulations of the Oporto Company, which we think justly objected to by the merchants as highly grievous and oppressive, we have not thought it necessary to enter into a minute description of them, being of opinion that one general and fatal objection lies against them all; viz., that they all contribute to establish in the company a monopoly against your majesty's subjects from which by treaty they have a right to be exempted." But notwithstanding this authoritative exposition of the injury done to the English by this monopoly, and the experience which every subse-

quent year afforded of its mischievous influence, such was the inveteracy of ancient prejudice, that it was not till 1831 that we took that step which, had it been taken a century before, would have rid ourselves of its evils as well as a host of others, by equalizing the duties on French and Portuguese wines, and putting an end to the injurious preference given to the latter by the Methuen treaty. In 1833 Don Pedro, whose daughter had been raised to the Portuguese throne mainly by the intervention of the English, issued a decree abolishing the Old Oporto Company. And it might have been supposed that once abated, the nuisance would not have been again revived. But such was not the case. A new wine company was subsequently established, with privileges little less oppressive than those of the old company. And as the taste for French wine had made little progress among us in the interval, we suffered from the monopoly and adulterations practiced and sanctioned by the new company, as we had done from those of its predecessor. Its mischievous influence being further aggravated by a heavy export duty on wine shipped to any port in Europe, was latterly so intolerable, that to defeat it considerable quantities of port were imported by the circuitous route of the United States. However, the firm remonstrances of the British government, and the growing dissatisfaction of the Portuguese themselves, have at length succeeded in establishing a more equitable and less illiberal system. In October 1852, the new company was abolished, equal duties (about 14s. a pipe) were imposed on all wines exported, and considerable, though not entire, freedom was given to the trade.—For further details, see article OPORTO.

Sherry is of a deep amber color; when good, it has a fine aromatic odor; its taste is warm, with some degree of the agreeable bitterness of the peach kernel. When new, it tastes harsh and fiery; it is mellowed by being allowed to remain 4 or 5 years or longer in the wood; but it does not attain to its full flavor and perfection until it be kept for 15 or 20 years. It is a very strong wine, containing about 19 per cent. of alcohol. It is principally produced in the vicinity of Xeres, not far from Cadiz, in Spain. It is very extensively used in England as a dinner wine. Dry sherry, or *amontillado*, when genuine and old, fetches a very high price. Perhaps no wine is so much adulterated as sherry. With the exception of Marsala, the consumption of sherry has been far more influenced than that of any other wine by the reduction of the duties in 1825. In 1852 the quantity retained for home consumption amounted to 2,606,857 gallons, being 458,000 gallons more than double the quantity retained for consumption at an average of 1823 and 1824.

The province of Valencia, in Spain, produces a great variety of wines. Large quantities of a strong, sweetish red wine, called Benicarlo, from the port whence it is shipped, is exported to Cetta. It is thence conveyed, by the Canal of Languedoc, to Bordeaux, where it is mixed up with the poorer sorts of the wines of the Gironde, to which it gives color, body, and durability. The *Val de Peñas*, a pleasant red wine of La Mancha, said by Swinburne to be "the most drinkable, for common use, of any in Spain" (*Travels in Spain*, p. 319, 4to ed.), has probably been commended beyond its deserts. But in whatever estimation it may be held in its native province, we doubt whether it is ever likely to be acceptable to foreigners. When carried to the coast, it is conveyed in goat skins smeared with pitch. This gives it the *olor de bota*, by which it is disagreeably distinguished.

Claret, the term generally used in England, though not in France, to designate the red wines, the produce of the Gironde. Of these, Lafitte, Latour, Château-Margaux, and Haut-Brion, are so generally and deservedly esteemed, that they always sell at 20 to 30 per cent. higher than any others of the department. The first-mentioned is the most choice and delicate,

and is characterized by its silky softness on the palate, and its charming perfume, which partakes of that of the violet and the raspberry. The Latour has a fuller body, and at the same time a considerable aroma, but wants the softness of the Lafitte. The Château-Margaux, on the other hand, is lighter, and possesses all the delicate qualities of the Lafitte, except that it has not quite so high a flavor. The Haut-Brion, again, has more spirit and body than any of the preceding, but is rough when new, and requires to be kept six or seven years in the wood; while the others become fit for bottling in much less time.

Among the second-rate wines, that of Rozan, in the parish of St. Margaux, approaches in some respects to the growth of the Château-Margaux; Gorce, in the same territory, is little inferior to Latour; and the vineyards of Leoville, Larose, Bran-Mouton, Pichon-Longueville, and Calon, in the canton of Pauillac, afford wines of good flavor, which, in favorable years, have much of the excellence of the finer growths, from which, indeed, some of the best can with difficulty be distinguished. Among the third and fourth class wines are those of Pauillac, St. Julien de Regnac, St. Estephe, Canon, St. Emilion, the wines of Haut Medoc, etc. These have each some distinguishing peculiarity; but it requires a *connoisseur* to discriminate between the cognate varieties. In good years the quality is very superior. The aroma of the first growths is seldom fully developed till after they have been kept eight or nine years; but the secondary qualities come to perfection a year or two sooner. The color often grows darker as the wine advances in age, in consequence of the deposition of a portion of its tartar; but when well made, and thoroughly fined, it seldom deposits any crust. See the valuable work of Dr. HENDERSON on *Ancient and Modern Wines*; and JULLIEN, *Topographie de Vignobles*. Bordeaux wines are very rarely exported in a state of purity. We have given in the article BORDEAUX some account of the treatment to which those shipped for England are subjected, and to it we beg to refer the reader.

Champagne—so called from the province of France, of which it is the produce—is one of the most deservedly esteemed of the French wines. The wines of Champagne are divided into the two grand classes of white and red wines, and each of these, again, into still and sparkling; but there is a great variety in the flavor of the produce of different vineyards. Sillery is universally allowed to be the best of the still wines. It is dry, of a light amber color, has considerable body, and a charming aroma. "Le corps" (says M. Jullien), "le spiritueux, le charmant bouquet, et les vertus toniques dont il est pourvu, lui assurent la priorité sur tous les autres."—*Topographie de tous les Vignobles*. Dr. Henderson agrees with Jullien in considering it as one of the wholesomest of the Champagne wines. The sparkling wines are, however, the most popular, at least in England. Of these, the wine of Ay, five leagues south from Rheims, is perhaps the best. It is lighter and sweeter than Sillery, and has an exquisite flavor and aroma. That which merely creams on the surface (*demi-mousseux*) is preferred to the full frothing wine (*grand-mousseux*). Being bright, clear, and sparkling, it is as pleasing to the eye as it is grateful to the palate.

"Cernis micanti concolor ut vitro
Latex in auras, gemmeus aspic,
Scentillet exultim; utque dulces
Naribus illecebras propinet
"Succi latentis proditor halitus!
Ut spuma motu lactea turbido
Crystallinum lætis referre
Mox oculis proporet nitorem."

Hautvilliers, about four leagues from Rheims and one from Epernay, used formerly to produce wine that equaled, and sometimes surpassed, the wine of Ay. But it is no longer cultivated with the same care; so that, though still very good, it only ranks in the second

class. The best of the red wines of Champagne are those of Verzy, Verzenay, Mailly, Bouzy, and St. Basle. "Ils ont une belle couleur, du corps, du spiritueux, et surtout beaucoup de finesse, de sève, et de bouquet."—JULLIEN. The Clos St. Thierry, in the vicinity of Rheims, produces wine which, according to Jullien, unites the color and the aroma of Burgundy to the lightness of Champagne. The province of Champagne produces altogether about 1,100,000 hectolitres of wine; of which, however, the finest growths make but a small part. The principal trade in wine is carried on at Rheims, Avise, and Epernay. The vaults in which the vintages are stored are excavated in a rock of calcareous tufa to the depth of 30 or 40 feet. Those of M. Moët, at Epernay, are the most extensive, and few travelers pass through the place without going to see them. The briskest wines (*grands-mousseurs*) keep the worst.—JULLIEN.

Burgundy.—The best wines of this province, though not so popular as those of Champagne, probably because they are very apt to be injured by a sea-voyage, enjoy the highest reputation. "In richness of flavor and perfume, and all the more delicate qualities of the juice of the grape, they unquestionably rank as the first in the world; and it was not without reason that the dukes of Burgundy, in former times, were designated as the *princes des bons vins*."—HENDERSON. M. Jullien is not less decided: "Les vins des premiers crus, lorsqu'ils proviennent d'une bonne année, réunissent, dans de justes proportions, toutes les qualités qui constituent les vins parfaits; ils n'ont besoin d'aucun mélange, d'aucune préparation pour attendre leur plus haut degré de perfection. Ces opérations, que l'on

qualifie dans certains pays de *soins qui aident à la qualité*, sont toujours nuisibles aux vins de Bourgogne."

Romané-Conti, Chambertin, the Clos Vougeot, and Richebourg, are the most celebrated of the red wines of Burgundy. Chambertin was the favorite wine of Louis XIV. and of Napoleon. It is the produce of a vineyard of that name, situated seven miles south from Dijon, and furnishing each year from 180 to 150 puncheons, from an extent of about 65 acres. It has a fuller body and color, and greater durability, than the Romané, with an aroma nearly as fragrant. The white wines of Burgundy are less numerous, and, consequently, less generally known, than the others; but they maintain the highest rank among French white wines, and are not inferior to the red either in aroma or flavor. The entire annual produce of wine in Burgundy and Beaujolais may at present be estimated, at an average, at nearly 3,500,000 hectolitres, of which about 750,000 suffice for the consumption of the inhabitants. Since the revolution, the cultivation of the vine has been greatly extended in the province. Many of the new vineyards having necessarily been planted in comparatively unfavorable situations, a notion has been gaining ground that the wines of Burgundy are degenerating. This, however, is not the case. On the contrary, the quantity of *bons crus*, instead of being diminished, has increased considerably; though, as the supply of inferior wines has increased in a still greater degree, the fine wines bear a less proportion to the whole than they did previously to the revolution.—JULLIEN. The principal trade in Burgundy is carried on at Dijon, Gevrey, Châlons-sur-Saône, etc. Besides the above, France has a great variety of other excellent wines.

ACCOUNT OF THE QUANTITIES AND VALUE OF THE WINES EXPORTED FROM FRANCE IN 1852; DISTINGUISHING BETWEEN THOSE OF THE GIRONDE AND THOSE OF OTHER DEPARTMENTS, AND BETWEEN THOSE EXPORTED IN CASKS AND BOTTLES; AND SPECIFYING THE QUANTITIES OF THOSE SENT TO EACH COUNTRY AND THEIR TOTAL VALUE.—(ADMINISTRATION DES DOUANES FOR 1852, p. 241.)

Countries to which exported.	Wine in Casks.				Wine in Bottles.			
	Of the Gironde.		Of other Departments.		Of the Gironde.		Of other Departments.	
	Quantity. Hectolitres.	Value. Francs.	Quantity. Hectolitres.	Value. Francs.	Quantity. Hectolitres.	Value. Francs.	Quantity. Hectolitres.	Value. Francs.
Russia	22,840		18,549		814		7,324	
Sweden	1,237		4,643		162		580	
Norway	2,514		2,008				....
Denmark	8,586		7,720		154		....
German League	31,640		9,188		384		5,599	
Holland	78,192		14,018		642		....
Belgium	68,365		32,362		459		10,990	
Hanse Towns	88,536		65,111		2,727		2,900	
Hanover	14,908		....		....		....
Mecklenburg Schwerin	2,585		....		....		....
England	10,174		16,416		4,970		10,355	
Spain .....	....		2,746		496		815	
Austria .....	....		9,212		218		420	
Sardinian States .....	....		527,058		....		1,693	
The Two Sicilies .....	....		....		....		577	
Tuscany .....	....		89,789		....		438	
Roman States .....	....		7,579		....		306	
Switzerland .....	....		126,299		....		652	
Turkey .....	....		3,593		....		993	
Egypt .....	....		7,430		....		563	
Algeria	2,307		407,836		371		517	
Mauritius	51,942		....		581		....
India, English	3,125	29,682,064	2,886	38,364,132	2,223	8,072,610	492	19,284,658
" Dutch	3,014		....		1,080		....
" French	1,642		....		....		....
United States	161,970		66,204		24,465		19,101	
Hayti .....	....		3,789		....		657	
Cuba and Porto Rico	8,139		2,940		1,812		1,660	
St. Thomas .....	....		....		295		876	
Brazil	6,207		42,510		....		64	
Mexico	2,639		....		4,036		578	
Venezuela	1,359		....		529		521	
New Granada .....	....		....		....		417	
Peru	3,139		....		3,200		910	
Chili	5,574		....		3,097		779	
Rio de la Plata	17,157		26,639		676		....
Uruguay	25,566		14,755		1,062		400	
Guadaloupe	8,233		9,635		....		....
Martinique	7,429		26,904		283		....
Bourbon	36,016		17,943		301		....
Senegal	10,216		....		....		....
Cayenne	2,794		9,348		....		....
Fisheries	1,503		4,189		....		....
Guatemala .....	....		....		....		534	
Other places	6,379		19,021		1,038		1,972	
Totals	690,867	29,682,064	1,598,505	38,364,132	56,060	8,072,610	74,172	19,284,658

This makes a total export of 2,419,604 hectolitres, worth 95,403,484 francs, or £3,816,000. About ten years ago the exports did not exceed 1,500,000 hectolitres, so that there has been a large increase in the interval. And were France to adopt a liberal commercial policy, it is not easy to say to how great an extent her exports of wine, in the production of which she is immeasurably superior to every other country, might be increased. Exclusive of the above, there were exported from France in the same year 18,968 hectolitres of *vins de liqueurs*, valued at 2,001,886 francs.

The total produce of the vineyards of France is estimated at about 35,000,000 hectolitres (770,000,000 imp. gallons), worth 540,000,000 francs (£21,600,000). We beg to refer the reader to the article *BORDEAUX* for an account of the influence of the French system of commercial policy on this great department of industry. The question, whether the wines of Champagne or Burgundy were entitled to the preference, was agitated during the reign of Louis XIV. with extraordinary keenness. The celebrated Charles Coffin, rector of the University of Beauvais, published, during this controversy, the classical ode, partly quoted above, in which Champagne is eulogized, and its superiority vindicated with a spirit, vivacity, and delicacy worthy of the theme. The citizens of Rheims were not ungrateful to the poet, but liberally rewarded him with an appropriate and munificent donation of the wine he had so happily panegyrized. Gréneau wrote an ode in praise of Burgundy; but, unlike its subject, it was flat and insipid, and failed to procure any recompense to its author. The different pieces in this amusing controversy were collected and published in octavo, at Paris, in 1712.—See *LE GRAND D'AUSSEY, Vie Privée des Français*, and the *Biographie Universelle, art. COFFIN (CHARLES)*. Erasmus attributes the restoration of his health to his having drunk liberally of Burgundy; and has eulogized it in the most extravagant terms. An epistle of his, quoted by Le Grand d'Aussy, shows that Falstaff and he would have spent an evening together more agreeably than might have been supposed: "Le premier qui enseigne l'art de faire ce vin (Bourgogne), ou qui en fit présent, ne doit-il point passer plutôt pour nous avoir donné la vie que pour nous avoir gratifié d'une liqueur."—*Vie Privée des Français*.

Bordeaux Vintage of 1856.—The following table exhibits the yield of wine in the Gironde in years of full crop, compared with the actual yield of 1856, and the prices ruling at the close of the year:

	Full Crop of former Years.	Crop of 1856.	Price per Bbl. of four Hhd.
1856.	Hhds.	Bhls.	France.
Château Latour, St. Lambert ..	80	30	5000@5700
Château Lafite, Pauillac	125	50	5600@5700
Mouton, Brune, Pauillac	80	30	5000
Gruaud, Larose, St. Julien	150	25	4000
Pichon Longueville, St. Lambert ..	100	11	4000
Cos, Destournel, St. Esteppe	125	30	3700
Lagrange, Cabarrus, St. Julien	225	45	3000
Kirwan, Cantenac	42	8	3000
La Lugune, Ludon	32	4	3000
Milon, Dubart, Pauillac	75	23	2400
Ponlet Canet, Pauillac	140	25	3000
Jurine, Pauillac	90	20	3000
Bruno Dervez, St. Laurent	90	15	2000
Château d'Auzac, Labarde	75	21	2000
Cos, Labory, St. Esteppe	90	21	2000
Lynch, Moussas, Pauillac	80	25	2000
Durasse, Moussas, Pauillac	110	30	2000
Cantemerle, Macau	160	30	2000
Solberg, MacDaniel, Margaux ..	50	8	2000
1855.			
Château Lafite, Pauillac	175	60	3000
Mouton, Brune, Pauillac	80	30	2800

WHITE WINES.

	Price per Bbl. of four Hhds.
1856. Entre-deux-mers	frances 325@ 380
Cotes	450@ 600
Petit Fougne	800
Petit Bourge	1000

Madeira—so called from the island of that name—is

a wine that has long been in high estimation in this and other countries. Plants of the vine were conveyed from Crete to Madeira in 1421, and have succeeded extremely well. There is a considerable difference in the flavor and other qualities of the wines of Madeira: the best are produced on the south side of the island. Though naturally strong, they receive an addition of brandy when racked from the vessels in which they have been fermented, and another portion is thrown in previously to their exportation. This is said to be required to sustain the wine in the high temperature to which it is subjected in its passage to and from India and China, to which large quantities of it are sent, it being found that it is mellowed and its flavor materially improved by the voyage. It does not, however, necessarily follow that the wines which have made the longest voyages are always the best. Much must obviously depend on the original quality of the wine; and many of the parcels selected to be sent to India are so inferior, that the wine, when brought to London, does not rank so high as that which has been imported direct. But when the parcel sent out has been well chosen, it is very much matured and improved by the voyage; and it not only fetches a higher price, but is in all respects superior to the direct importations. Most of the adventitious spirit is dissipated in the course of the Indian voyage.

Madeira wines may be kept for a very long period. "Like the ancient vintages of the Surrentine hills, they are truly *firmissima vina*, retaining their qualities unimpaired in both extremes of climate, suffering no decay, and constantly improving as they advance in age. Indeed, they can not be pronounced in condition until they have been kept for ten years in the wood, and afterward allowed to mellow nearly twice that time in bottle; and even then they will hardly have reached the utmost perfection of which they are susceptible. When of good quality, and matured as above described, they lose all their original harshness, and acquire that agreeable pungency, that bitter sweetishness, which was so highly prized in the choicest wines of antiquity, uniting great strength and richness of flavor with an exceedingly fragrant and diffusible aroma. The nutty taste, which is often very marked, is not communicated, as some have imagined, by means of bitter almonds, but is inherent in the wine."—HENDERSON.

The wines of Madeira have latterly fallen into disrepute in England. The growth of the island, when greatest, was very limited—not exceeding 20,000 pipes, of which a considerable quantity went to the West Indies and America. Hence, when Madeira was a fashionable wine in England, every sort of deception was practiced with respect to it, and large quantities of spurious trash were disposed of for the genuine vintage of the island. This naturally brought the wine into discredit, so that sherry has been for several years the fashionable white wine. It is difficult, however, to imagine that adulteration was ever practiced to a greater extent upon Madeira than it is now practiced upon sherry. It is not, therefore, improbable that a reaction may take place in favor of Madeira. The quantity entered for home consumption in England in 1827 amounted to 308,295 gallons, whereas the quantity entered for home consumption in 1852 amounted to only 69,730 gallons.

Malmsey, a very rich, luscious species of Madeira, is made from grapes grown on rocky grounds exposed to the full influence of the sun's rays, and allowed to remain on the vine till they are over-ripe. The trade in Madeira wine is carried on at Funchal, the capital of the island, in lat. 32° 37' N., long. 17° 6' W. Weights and measures same as at Lisbon. Madeira is said to have suffered very severely from the disease that has recently attacked the vine.

Teneriffe wine—so called from the island of that name—resembles Madeira, and is not unfrequently substituted in its stead; but it wants the full body and rich flavor of the best growths of Madeira.

German Wines.—The wines of Germany imported into England are principally produced on the banks of the Rhine and Moselle. The Rhine wines constitute a distinct order by themselves. They are drier than the French white wines, and are characterized by a delicate flavor and aroma, called in the country *gäre*, which is quite peculiar to them, and of which it would, therefore, be in vain to attempt the description. A notion prevails that they are naturally acid, and the inferior kinds, no doubt, are so; but this is not the constant character of the Rhine wines, which in good years have no perceptible acidity to the taste, at least not more than is common to them with the growths of warmer regions. Their chief distinction is their extreme durability. The wines made in warm, dry years are always in great demand, and fetch very high prices. The Johannisberger stands at the head of the Rhine wines. It has a very choice flavor and perfume, and is characterized by an almost total want of acidity. The vineyard is the property of Prince Metternich. The Steinberger ranks next to the Johannisberger. It is the strongest of all the Rhenish wines, and in favorable years has much flavor and delicacy. The produce of certain vineyards on the banks of the Moselle is of superior quality. The better sorts are clear and dry, with a light, pleasant flavor and high aroma; but they sometimes contract a slaty taste from the strata on which they grow. They arrive at maturity in five or six years; though, when made in a favorable season, they will keep twice that time without experiencing any deterioration.—HENDERSON on Wines.

Tokay—so called from a town in Hungary, near which it is produced, on the Theiss, 44 miles north-northwest from Debreczin. It is the finest of all the liqueur wines. It consists of three varieties, viz.: the *Essence*, flowing spontaneously from the ripest grapes, and corresponding with the *Mustum sponte defluens antequam calcantur uva* of the ancients; the *Ausbruch*, obtained by pressing the grapes with the hand, a small quantity of good new wine, or must, being at the same time poured over them; and the *Maslas*, or inferior variety, produced by pouring a larger quantity of less choice must over the same berries, and subjecting them to the action of the press. Of these varieties, the first, which is made only in very small quantities, is in the highest degree sweet and luscious, and is more sought for as a rarity than as being pleasant to the palate. It is on the *Ausbruch* that the reputation of Tokay depends. Mr. Paget says, "It is sweet, rich, but not cloying; strong, full-bodied, but mild, bright, and clear; and has a peculiar flavor of most exquisite delicacy. I never tasted it in perfection but at private tables, and that only twice; I could then have willingly confessed it the finest wine in the world." The *Maslas*, or inferior variety, is a much thinner wine, rather sweet, with a preponderating flavor of the dried grape. Mr. Paget estimates the entire produce of the Tokay vineyards in ordinary years at about 250,000 eimers, of about sixteen bottles each. The best *Ausbruch* is very dear, and but little that is genuine is seen in England.—PAGET'S *Travels in Hungary*, i. 481; HENDERSON, p. 228; JULIEN, p. 446.

Italian Wines.—The Sicilian white wine called *Marsala*, from the town (the ancient *Lilybæum*) whence it is shipped, and near which it is made, is now pretty largely consumed in England; the entries for home consumption having increased from 79,686 gallons in 1823 to 387,750 in 1852; an extraordinary increase, particularly when it is considered that during the same period, the consumption of most sorts of wine has been nearly stationary. Latterly, however, it has been rather declining. *Marsala* is a dry wine, the best qualities closely resembling the lighter sorts of *Madeira*; but the increased demand for it seems to have been owing as much to its cheapness as to any peculiarity of quality. It is, however, when good, an agreeable dinner wine. *Marsala* has been brought to its

present state of perfection and repute by the care and exertions of two Englishmen, the Messrs. Woodhouse, established in Sicily, who have an extensive factory in the neighborhood of *Marsala*. The wine is shipped in large quantities for America, whence a considerable quantity is again conveyed to the West Indies, where it is not unfrequently disposed of as real *Madeira*. With the exception of *Marsala*, very little wine either of Sicily or Italy is imported into England. The wines of those countries are, indeed, without perhaps a single exception, very inferior to those of France. The natives bestow no care upon the culture of the vine, and their ignorance, obstinacy, and want of skill in the preparation of wine, are said to be almost incredible. In some districts, as in Tuscany and parts of Naples, the art is, no doubt, better understood and practiced than in others; the *Montepulciano* of the former, said, by Redi (*Bacco in Toscana*), to be *d'ogni vino il re*, and the *Lacrima Christi* of the latter, being the most celebrated varieties. But the *lacrima* is better known by name than in reality, it being made in small quantities, and mostly reserved for the royal cellars.—HENDERSON. And, despite the superior quality of those now mentioned, had not the *Falerian*, *Cecuban*, and other famous ancient wines, been incomparably better than the best of those that are at present produced, they never would have elicited the glowing panegyrics of Horace.—McCULLOCH'S *Com. Dict.*

Few things are more striking to a visitor in Italy from the north of Europe than the straight rows of trees of all kinds that run through the corn-fields, at the foot of which vines are planted, and trained so as to extend in elegant festoons from one tree to another, exhibiting the pendent clusters of grapes. If the same mode of training the vines were attempted in the somewhat colder climates of France and Germany, the shade of the trees would prevent the grapes from ripening. This effect is not produced in Lombardy, where the berries become ripe, and, when eaten, are of good flavor; but the wine produced from them is, in general, of a bad or very indifferent quality. Though much of the wine is produced from such vines in the corn-fields as are distinguished by the names of *Campi Arativi Vitati*, or of *Campi Arborati Vitati*, and from vines planted in rows at such a distance from each other as to admit of maize being grown between them, and called *Ronchi*; yet in some parts are vineyards properly so called, because, like those of France and Germany, they alone occupy the ground, and are, like them, supported by props. The best wine is produced from the *Ronchi*, and more especially from the vineyards properly so called, in which, however, each vine produces less in quantity than those trained from tree to tree. The amount of produce varies greatly according to different years, different districts, and different modes of cultivation. From an approximate estimation made on many farms of various soils, it would appear that in the most productive districts the average produce of large vines trained to the trees around the corn-fields is from 48 to 52 gallons for 100 vines; and the average produce of vineyards, properly so called, from 58 to 65 gallons of wine to the acre.

In Lombardy the wine is generally of a bad quality. Its production is left chiefly to that description of cultivators before noticed under the name of colonists, who exercise little discretion and little care, either in the choice of the kind of grapes they plant or in the management of the juice. Their chief care is to obtain the largest quantity, without much regard to the flavor or the aptitude of keeping; and commonly, as soon as it is made, they divide it in equal shares with their landlords. One cause to which the inferiority of the wine is attributed arises from the general predilection in favor of red wine, or, as it is called, *Vino Nero*, which is prized according to the darkness of its color. In order to produce this deep color, the skins of the grapes are left, in the first part of the process,

to ferment with the juice. Sometimes this is suffered to continue during eight or ten days in a vat before the liquor is drawn off, and sometimes still longer, as the longer it continues the darker the wine becomes. The best wines are produced in the district near Varese, on the sunny slopes of the hills round the lakes of Como and Garda, and in the Val Calleppio, in the province of Bergamo. The wines of the localities of Sassella and Inferno, in the Valtelline, maintain the ancient renown of the Rhatian wines, relished by Augustus and celebrated by Virgil.

The wine of the Venetian provinces is, upon the whole, of a much better quality; its superiority is owing to the nature of the soil, to a better choice of the kinds of grapes that are planted, and to the more careful preparation of their juice. The best qualities are produced in the province of Treviso, in the Bericel and Euganean Hills, between Vicenza and Padua, in some districts of the province of Udine, and, above all, in the province of Verona, well known for its *Valpolicella*, the best common wine in the kingdom.

There is no old wine in the country, except in small quantities, and in the hands of a few amateur proprietors. The wine of each vintage is sold in the course of the following year; and when any of it is kept, even though it should not have become, or shown a tendency to become, vinegar, it will sell at a lower price than new wine, because it is milder, and less agreeable to the taste of the consumer.—E. B.

Previous to 1851, the annual quantity of wine produced in the kingdom, in average years, was 85,837,705 gallons, of which 52,823,203 gallons were produced in the Venetian, and 33,014,502 in the Lombard provinces. The produce of Lombardy not being sufficient for the consumption of its population, nearly 4,402,000 gallons a year more were imported either from the Venetian provinces, which produced much more than was required for their own consumption, or from the neighboring states of Modena, Piedmont, and the Papal territory, according to the respective local produce and prices. But since 1851, when the *oidium* attacked all the vines of the country, the produce has so fearfully diminished, that in 1856 the government found it necessary to grant a reduction of the direct land-tax on lands chiefly cultivated with vines, in proportion to the ascertained amount of loss. The whole produce of Lombardy in 1852 was reduced to 11,004,834 gallons, and that of the Venetian provinces, in 1854, to 7,538,311 gallons of wine. The respective loss of each province was as follows:

GOVERNMENT OF MILAN.

	Gallons of Wine produced in 1852.	1854.
Mantua.....	10,247,405	8,439,077
Milan.....	8,800,585	998,075
Brescia.....	3,674,823	747,778
Pavia.....	3,264,430	651,112
Bergamo.....	2,732,434	1,247,090
Como.....	2,665,305	1,958,353
Cremona.....	2,663,170	1,981,750
Sondrio.....	2,325,190	90,614
Lodi.....	1,962,910	964,464
Total.....	53,436,251	12,109,213

GOVERNMENT OF VENICE.

	Gallons of Wine produced in 1847.	1854.
Padova.....	10,454,592	2,531,112
Vicenza.....	9,004,350	1,320,580
Udine.....	9,574,206	1,210,532
Verona.....	8,593,770	660,290
Treviso.....	7,483,287	743,329
Rovigo.....	8,061,740	852,154
Venezia.....	2,751,209	528,232
Belluno.....	896,174	187,082
Total.....	53,109,328	7,538,311

Wines of Greece and Cyprus.—The soil in most parts of Greece and of the Grecian islands is admirably fitted for the growth of the vine; and in antiquity they produced some of the choicest wines. But the rapacity of the Turks, and the insecurity of person and property that has always prevailed under their miserable gov-

ernment, has effectually prevented the careful cultivation of the vine, and has occasioned in many places its total abandonment. It may, however, be fairly presumed, now that Greece has emancipated herself from the iron yoke of her oppressors, that the culture of the vine will attract some portion of that attention to which it is justly entitled, and that at no distant period wine will form an important article of export from Greece. Nowhere, perhaps, has the destructive influence of Turkish barbarism and misgovernment been so apparent as in Candia and Cyprus. While these two renowned and noble islands were possessed by the Venetians they supplied all Europe with the choicest dessert wines. Bacci affirms that, toward the end of the 16th century, Candia sent annually 200,000 casks of malmsey to the Adriatic, whereas at present it hardly produces sufficient to supply the wants of its few impoverished inhabitants.—HENDERSON. The wines of Cyprus, particularly those produced from the vineyard called the Commandery, from its having belonged to the Knights of Malta, were still more highly esteemed than those of Crete. In the earlier part of last century the total produce of the vintage of the island was supposed to amount to above 2,000,000 gallons, of which nearly one half was exported; but now the wine grown and exported does not amount to one-tenth part of these quantities! The oppression of which they have been the victims has reduced the peasantry to the extreme of indigence. The present population of the island is not supposed to exceed 60,000—a number insufficient to have peopled one of its many ancient cities; and small as this number is, it is constantly diminishing by the inhabitants availing themselves of every opportunity of emigrating.

Cape Wines.—The famous Constantia wine is the produce of two contiguous farms of that name at the base of Table Mountain, between eight and nine miles from Cape Town. The wine is very rich and luscious, though, according to Henderson, it yields in point of flavor and aroma to the muscadine wines of Languedoc and Roussillon. But, with this exception, most part of the Cape wines brought to England have an earthy, disagreeable taste, are often acid, want flavor and aroma, and are, in fact, altogether execrable.

American Wine.—The extent of our territory over which the wine culture may be advantageously diffused has long afforded a subject of much speculation. It early attracted the attention of the first colonists, who not only attempted to form vineyards of the European vine, but to make wine from our own native grapes. Although the subject has been zealously and sedulously pursued at various periods since, all those dwelling on the easterly half of the continent who have made trial of the foreign grape have never been able to bring their designs to perfection; and those who have tested their skill in our native varieties have only met with partial success; yet a degree of perseverance and enthusiasm seems to have pervaded all the votaries of this delightful pursuit, and a warm and mutual interchange of views and sentiments has existed among them, which has been comparatively unknown in other species of culture. Although the operators in recent times, from being interspersed over so great an extent of territory, are consequently more widely separated, still the connecting link, by a friendly co-operation in one common cause, may justly and appropriately assimilate their united exertions to that joyous period in the history of France when, during the reign of Probus, thousands of all ages and sexes united in one spontaneous and enthusiastic effort for the restoration of their vineyards. Indeed, when the far greater limits of our domain are considered, the combined efforts of our fellow-countrymen can not fail to produce effects even more important, from the great extent of their influence, and cause each section of our republic reciprocally to respond to the efforts of others, with all their attendant advantages and blessings.

The earliest attempt to establish a vineyard in the British North American colonies was by the "London Company" in Virginia, prior to 1620. By the year 1630 the prospects were sufficiently favorable to warrant the importation of several French *vignerons*, who, it was alleged, ruined them by bad management. Wine was also made in Virginia in 1647, and in 1651 premiums were offered for its production. On the authority of Beverley, who wrote prior to 1722, there were vineyards in that colony which produced 750 gallons a year. Beauchamp Plantagenet, in his "Description of the Province of New Albion," published in London in 1648, states that the English settlers in Uvedale (now Delaware) had vines running on mulberry and sassafras trees, and that there were four kinds of grapes. "The first," says he, "is the Thoulouse Muscat, sweet scented; the second, the great foxe and thick grape, after five moneths reaped, being boyled and salted, and well fined, it is a strong red Xeres; the third, a light claret; the fourth, a white grape, creeps on the land, maketh a pure gold-color wine: Tennis Pale, the Frenchman, of these four made eight sorts of excellent wine; and of the Muscat, acute boyled, that the second draught will fox [intoxicate] a reasonable pate, four moneths old; and here may be gathered and made two hundred tun in the vintage moneth, and replanted, will mend." An attempt to establish a vineyard near Philadelphia was made by William Penn in 1683; also by Andrew Dore in 1685; but neither succeeded.

In 1769 the French settlers on Illinois River made upward of 100 hogsheds of strong wine from the American wild grape.

The quantity of wine annually produced in the United States has become a subject of some discussion since the appearance of the return in the Seventh Census on that interest. The census of 1840 gave 124,000 gallons as the produce of that year. It has been stated in the public prints that since that period the culture of the grape, and the manufacture of wine therefrom, have grown into a business of considerable importance in the States bordering on the Ohio River, and that several hundred acres have been planted in vineyards in that valley, which yield at the rate of more than 45,000 gallons of wine a year. The total product of the Union in 1850 was given at 221,249 gallons. But during the intervening period there had been added to our own territory California and New Mexico, which in the latter year produced 60,718 gallons. This quantity deducted from the aggregate, leaves 160,531 gallons for the portion of the Union covered by the returns of 1840—indicating a gain of only 36,000 gallons. This is probably an understatement, but it seems to prove that no considerable progress has yet been made toward supplying by a home production the demand, to meet which importations of foreign wines to a very large amount are annually made. The consumption of wine in the United States, though by no means general, amounts in the aggregate to a large sum. The imports during the year ending June, 1851, were 6,160,000 gallons, of which probably three-fourths consisted of the wines of France. The value or invoice cost of the article was \$2,370,000. The average consumption of foreign wines was, therefore, in quantity but about one quarter of a gallon for each person, and in value only ten cents. The coincidence is somewhat remarkable, that this is almost precisely the rate of consumption of imported wine among the people of Great Britain. But in France, according to official returns, there is produced and retained for consumption 900,000,000 gallons of wine, allowing 25½ gallons to each person in the population.

It appears, from other tables in our census returns, that the quantity of ale and spirituous liquors produced in the United States in 1850 exceeded 86,000,000 gallons. The amount exported was balanced by the imports, and the quantity rejected, in forming the above estimate, for the sake of preserving round numbers;

the consumption of malt and spirituous liquors for manufacturing purposes, and as a beverage, appears to have been at the rate of nearly four gallons per head. It is the opinion of many, whose inquiries upon the subject entitle them to respect, that among what are called "civilized" nations, the vice of inebriation has always been found to prevail most extensively where the vine is not cultivated; while, on the other hand, where this species of culture is widely disseminated, the temperance of the people is proverbial. If such be the case, we may proudly hope that the day is not far distant when America will fully establish and claim a rivalry with the most favored land of the vine and the olive, and exultingly disclaim being tributary to any foreign clime.—*Patent Office Report.*

Concerning the wine culture in this country, which is yet in its infancy, we find in a recent German publication some interesting facts from the pen of Dr. Gumprecht. The author explains the causes of the failure of the manifold attempts to domesticate the European grapes in the United States by comparative thermometrical and hygrometrical statements, from which it appears that the ill success is attributable to the greater proportion of moisture to which the vine is subjected here, while the temperature is more favorable in Philadelphia, Cincinnati, or St. Louis than in Paris, Dresden, or Prague. The Catawba grape, an indigenous variety, is now extensively cultivated in the West and Southwest, and the Catawba wine bids fair to become an important article of commerce. In 1854 the vineyards comprised less than three thousand acres, the greater proportion of which was in the vicinity of Cincinnati, whence the grape culture has since spread, along both banks of the Ohio, to Pittsburgh and Cairo, and in a southerly direction through Kentucky and Tennessee to Alabama, and westwardly into Missouri.

On the Ohio an acre yields on an average 500 gallons of wine—an immense yield compared with the average of France, which is only 200 gallons. In 1853, however, which was the most fruitful year since 1848, the yield was most extraordinary, averaging along the Ohio 650 gallons to the acre, some vineyards producing from 800 to 900 gallons. The wine-growers of Ohio are mainly Germans and their descendants.

In 1852, notwithstanding the comparatively small area devoted to wine growing, the produce of wine in the United States was estimated at 500,000 gallons; and in 1854 the mammoth cellar of Messrs. Longworth and Zimmerman, at Cincinnati, contained 80,000 gallons. In a few years the product will doubtless be doubled and trebled, since the present high prices of wine pay the producer a fair profit, and the demand is so great that the Cincinnati wine-dealers are scarcely able to keep a stock on hand.

The juice of the grape is manufactured either into still wine or sparkling wine. The latter, in the preparation of which, as in that of Champagne, liquor is added, is the most sought after, and its production has already increased to such an extent that Buchanan estimated the value of sparkling wines raised in Ohio at \$175,000 per annum.

The wine produced in the United States is mostly of the description known as the white wine, but little of it being red. The value of the wine depends, as in Europe, on the character of the soil, the mode of treatment, and the weather. The years 1846, 1848, and 1851 produced the best wines, both here and in Europe; the vintage of 1853 was also a good one. In general, the product of the Catawba grape has the finest flavor and the greatest durability; it improves in quality for thirty years. According to an analysis made in 1848, the American wines contain from 7 to 11 per cent. of alcohol. A sample of Catawba hock from Longman's cellar, seven years of age, was proved by an analysis to contain from 11 to 11½ per cent. of alcohol; and a sample of red wine, of the Cape spe-

cies, was found to contain 9½ per cent. Buchanan states that the proportion of alcohol in the American wines is about the same as in the wines of France and Germany. Brände, however, contends that the French Graves wine contains 13-94, Barsac 13-86, Sauterne 14-22, Rudesheimer of 1800 12-22, and Hock 14-37 per cent. of alcohol.

The prices of American wines may be considered high. Ten to twelve bottles of stored still wine cost from \$5 to \$8, and sparkling wine brought \$12 in 1854. New wine ranges from 40 cents to \$1 10.

Of the recent territorial acquisitions of the United States, California, and Florida will probably ere long be ranked among the wine-producing States. In California the efforts of the old Catholic missionaries to cultivate the grape resulted satisfactorily, and the manufacture of wine from the domestic grape of Florida was also attended with success. Sir John Hawkins reports that in 1694 the settlers in Florida realized twenty hogsheads of palatable wine from the native grape. The good results which were anticipated from this discovery were, thanks to the political disturbances in which that colony became involved, never realized.

In Canada West, where certain species of wild grapes are very abundant, the manufacture of wine, recently introduced, has been attended with the most signal success. Buchanan's Journal pronounces it superior to the imported port-wine.—*N. Y. Eve. Post.*

The following statement shows the production of wine in the several States of the Union in the years 1840 and 1850, according to the census returns:

PRODUCTION OF WINE IN THE UNITED STATES IN 1840 AND 1850.—(CENSUS REPORT.)

States and Territories.	1840.	1850.
	Gallons.	Gallons.
Alabama.....	177	220
Arkansas.....	.....	35
California.....	.....	53,055
Columbia, District of..	25	863
Connecticut.....	2,666	4,269
Delaware.....	322	145
Florida.....	.....	10
Georgia.....	8,647	796
Illinois.....	474	2,997
Indiana.....	10,265	14,055
Iowa.....	.....	420
Kentucky.....	2,209	8,093
Louisiana.....	2,884	15
Maine.....	2,236	724
Maryland.....	7,585	1,451
Massachusetts.....	193	4,658
Michigan.....	.....	1,054
Mississippi.....	12	407
Missouri.....	22	10,563
New Hampshire.....	94	344
New Jersey.....	9,416	1,811
New York.....	6,799	9,172
North Carolina.....	28,752	11,058
Ohio.....	11,524	48,207
Pennsylvania.....	14,328	25,590
Rhode Island.....	803	1,013
South Carolina.....	648	5,880
Tennessee.....	653	92
Texas.....	.....	99
Vermont.....	94	659
Virginia.....	13,911	5,405
Wisconsin.....	.....	113
New Mexico Territory.	.....	2,363
Totals.....	124,734	221,249

WINE, SPIRITS, ETC., IMPORTED ANNUALLY INTO THE UNITED STATES, FROM 1843 TO 1857, INCLUSIVE.

Date.	WINE IN CASES.											
	Madeira.		Sherry.		Sicily.		Port.		Claret.		Other red Wine.	
	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.
1843*.....	3,949	\$1,075	4,685	\$6,491	14,579	\$6,617	33,593	\$25,714	873,895	\$134,558	.....	.....
1844.....	16,754	30,575	18,665	23,418	31,180	15,000	223,615	156,878	993,198	218,239	340,387	\$60,096
1845.....	101,176	145,287	23,616	33,289	110,590	46,033	260,593	162,358	1,051,862	249,633	495,558	143,210
1846.....	169,747	122,835	26,588	41,761	209,131	74,000	372,528	148,895	951,351	249,703	954,646	316,821
1846†.....	117,117	128,613	14,543	26,194	21,281	8,933	80,991	62,851	294,433	111,453	1,072,589	328,814
1847.....	13,806	5,717	77,521	56,061	92,631	24,230	8,075	3,791	591,656	119,544	539,454	119,411
1848.....	44,634	21,630	215,935	109,183	190,294	67,364	501,123	170,134	1,27,071	221,416	751,073	180,928
1849.....	153,971	105,302	170,794	128,510	130,851	32,231	711,268	272,700	1,912,701	263,836	994,458	221,177
1850.....	303,125	150,096	212,092	118,952	91,123	24,933	626,211	305,354	1,919,766	207,445	1,489,256	265,088
1851.....	163,941	116,008	250,277	154,065	301,010	98,975	762,967	349,849	1,940,121	230,333	1,245,201	236,727
1852.....	216,683	103,917	165,610	97,680	91,746	22,563	614,816	240,233	2,702,612	46,380	1,172,516	229,350
1853.....	226,403	105,628	313,048	155,819	190,205	45,794	662,791	268,005	2,633,802	482,827	1,374,416	377,482
1854.....	120,391	64,270	415,248	244,025	68,570	23,191	393,197	177,935	2,045,474	497,065	1,854,885	504,195
1855.....	71,912	46,445	383,318	208,414	197,700	65,350	186,460	97,987	1,371,400	404,631	1,519,505	459,385
1856.....	44,393	32,031	398,392	270,317	184,194	61,954	264,816	158,729	1,516,018	561,440	697,334	255,111
1857.....	106,350	65,880	544,649	364,906	230,346	133,834	600,219	407,564	1,897,108	663,403	1,156,293	560,527

Date.	WINE, BRANDY, AND GRAIN SPIRITS.						OTHER SPIRITS, BEER, ALE, AND PORTER.					
	Other white Wine.		Brandy.		Grain Spirits.		Other Spirits.		Beer, Ale, and Porter from England.		Beer, Ale, and Porter from Scotland.	
	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.
1843*.....	123,892	\$28,205	191,832	\$1-0.267	250,124	\$121,547	135,349	\$32,095	62,612	\$57,068	7,423	\$6,335
1844.....	298,414	75,000	782,510	606,633	416,918	171,015	210,427	78,027	107,489	102,157	19,236	18,343
1845.....	591,735	211,133	1,051,314	819,450	606,311	262,543	70,484	78,957	79,302	73,729	20,711	21,244
1846.....	705,808	310,241	963,147	839,231	677,785	345,352	221,344	81,713	117,621	110,597	38,044	39,811
1846†.....	618,267	296,736	831,103	355,451	356,323	86,073	65,477	28,862	46,146	42,987	2,151	1,895
1847.....	278,432	69,831	623,309	575,631	327,635	143,549	160,747	57,806	132,167	67,805	15,875	8,557
1848.....	840,637	193,358	1,670,111	1,135,033	676,033	327,493	228,671	75,943	130,008	101,171	39,582	21,533
1849.....	971,895	210,139	2,964,091	1,347,514	796,176	327,957	542,492	145,734	146,473	118,233	52,297	30,188
1850.....	1,088,801	215,353	4,145,802	2,659,537	751,183	361,078	339,163	113,779	156,735	129,957	52,556	41,790
1851.....	1,085,374	204,847	3,163,753	2,123,679	984,417	364,204	309,214	100,859	275,836	189,010	83,179	56,736
1852.....	935,379	195,870	2,751,810	1,792,729	865,301	294,386	559,677	98,940	262,538	186,964	110,752	67,804
1853.....	1,275,290	315,287	3,854,355	3,251,408	1,060,456	424,638	336,477	106,501	397,420	284,347	131,357	77,414
1854.....	1,379,583	350,204	2,152,366	2,255,341	1,197,234	564,569	399,553	128,308	825,571	424,875	270,064	128,607
1855.....	989,354	322,257	1,024,497	1,479,362	1,190,642	575,569	397,572	151,373	919,252	559,900	345,016	188,457
1856.....	517,135	193,499	1,715,717	1,539,342	1,532,126	773,276	772,694	288,494	792,165	504,146	359,486	193,600
1857.....	721,417	306,739	1,513,328	2,527,262	1,983,037	1,125,160	443,495	218,907	1,048,903	619,727	375,706	221,516

* Nine months.

† Five months.

‡ Seven months.

There were no exports of wine of domestic production from the United States for the fiscal year 1856-'57.

The exports of foreign wine from the United States for the year ending June 30, 1857, were as follows:

	Value.
Madeira.....	\$6,101
Sherry and St. Lucar.....	11,993
Port.....	14,081
Claret.....	27,691
Sicily.....	9,816
Red wine unenumerated.....	54,848
White wine unenumerated.....	3,646
Champagne.....	22,140

Wings. In naval matters, passages along the sides of the ship between the fore and after cockpit.

Wire. The invention of drawing wire is ascribed to Rodolph of Nuremberg, A.D. 1410. Mills for this purpose were first set up at Nuremberg in 1563. The first wire-mill in England was erected at Mortlake, in 1663.—MORTIMER. The astonishing ductility, which is one of the distinguishing qualities of gold, is no way more conspicuous than in gilt wire. A cylinder of 48 ounces of silver, covered with a coat of gold weighing only one ounce, is usually drawn into a wire two yards

of which only weigh one grain; so that 98 yards of the wire weigh no more than 49 grains, and one single grain of gold covers the whole 98 yards; and the thousandth part of a grain is above one-eighth of an inch long.—HALLEY. Eight grains of gold covering a cylinder of silver are commonly drawn into a wire 13,000 feet long; yet so perfectly does it cover the silver, that even a microscope does not discover any appearance of the silver underneath.—BOYLE.

Wisconsin, one of the northwestern United States, lies between lat. 42° 30' and 49° 30' N., and between long. 86° 50' and 96° W., being 600 miles long and 150 broad. It contains about 53,924 square miles. Population in 1840, 30,945; in 1845, 150,000; and in 1850, 305,191.

The portion south of Green Bay, Fox and Wisconsin rivers, is composed of timbered and prairie lands, with some swamps and wet prairies, having a vegetable soil from one to two feet deep. North of the Wisconsin River commences a hilly region, swelling as it proceeds north into a mountainous country, with a rugged and broken surface, creating many rapids and falls in the streams, and affording many wild and picturesque views. The northwest part of the State is covered with immense forests of pine, and much rough land, especially bordering Lake Superior. On the ridge dividing the waters flowing north into Lake Superior, and those flowing south into the Mississippi, are many small lakes, in which fish are abundant. Bordering on the Mississippi and Wisconsin rivers the soil is rich, and the land generally heavily timbered. Wisconsin is rich in minerals; the great Mississippi lead region lies mostly within its limits; iron ore of the best quality exists bordering the sources of all the streams entering the Mississippi, and copper along the shores of Lake Superior; marble, limestone, sandstone, gypsum, and other variety of minerals abound.

There were in this State in 1850, 1,015,499 acres of land improved, and 1,931,159 of unimproved land in farms; cash value of farms, \$28,528,563; and the value of implements and machinery, \$1,641,568. *Live Stock*.—Horses, 30,179; asses and mules, 156; milch cows, 64,339; working oxen, 42,801; other cattle, 76,293; sheep, 124,896; swine, 159,276: value of live stock, \$4,897,985.

Agricultural Products.—Wheat, 4,286,131 bushels; rye, 81,233; Indian corn, 1,988,979; oats, 3,414,672; barley, 209,692; buckwheat, 79,878; peas and beans, 20,657; potatoes, 1,402,077; sweet potatoes, 879; value of products of the orchard, \$4823; produce of market gardens, \$32,142; pounds of butter made, 3,633,750; of cheese, 400,283; maple-sugar, 610,976; molasses, 9874 gallons; beeswax and honey, 131,005 lbs.; wool, 253,963; flax, 63,393; hops, 15,930; tobacco, 1263; hay, tons of, 275,662; hemp, 2; clover seeds, 483 bushels; other grass seeds, 5003; flaxseed, 1191; and were made 118 gallons of wine: value of home-made manufactures, \$43,624; of slaughtered animals, \$920,178.

The principal rivers are the Mississippi, which flows along its western border for a distance of 275 miles. The Wisconsin has its entire course within the State, flows centrally, and enters the Mississippi on its western border. It is navigable to the portage of Fox or Neenah River, where a canal is being made, which, when completed, with the contemplated improvements of Fox River, will make a navigable communication between the Mississippi and the lakes. The Chippewa enters the Mississippi farther northwest, and is a large river, and St. Croix River forms a portion of its extreme western boundary. Rock River rises and flows partly in this State. The other principal rivers are the Menominee on its eastern border, entering Green Bay, and the Montreal, entering Lake Superior; there are also other small streams entering Lake Superior. The Milwaukee, Sheboygan, as well as others, enter Lake Michigan. The other most noted streams are the Wolf, Bad Axe, and Black Rivers. The principal

lakes within its borders are Winnebago, Horicon, Kaskahong, and the four lakes in the south, and many small ones in the north. The principal places in the State are Madison, the capital, Milwaukee, Racine, Kenosha, Osaukee, Green Bay, Jamesville, and Prairie du Chien. There were in January, 1854, four railroads in the State, with 647 miles of road finished and in operation, and there were 10 banks with a cash capital of \$600,000.

Manufactures, etc.—There were in the State in 1850, 9 woolen factories, with a capital invested of \$81,225, employing 25 males, manufacturing 36,000 yards of cloth and 74,350 lbs. of yarn, valued at \$87,992; 1 establishment making pig-iron, with a capital of \$15,000, employing 60 persons, and making 1000 tons of pig-iron, valued at \$27,000; 15 establishments, with a capital of \$116,350, employing 228 persons, producing 1342 tons of castings, etc., valued at \$216,195; 75 flouring and grist mills, 412 saw-mills; 34 tanneries; 42 printing-offices, issuing 6 daily, 5 tri-weekly, 36 weekly, and 1 monthly publication.

FOREIGN COMMERCE OF THE STATE OF WISCONSIN FROM JULY 1, 1853, TO JULY 1, 1857.

Years ending	Exports.	Imports	Tonnage cleared	
	Total.	Total.	American.	Foreign.
June 30, 1854	\$30,464	\$19,174	.....	.....
1855	174,057	43,153	8,149	400
1856	945,493	27,614	32,912	2710
1857	522,044	5,817	46,056	2806

At the close of the year 1857, the number of banks in Wisconsin had increased to 73, with a combined capital of \$5,600,000, and bank-note circulation \$3,000,000, the latter being secured by a collateral deposit of State stocks.

Woad (Ger. *Waid*; Du. *Weede*; Fr. *Pastel*, *Guède*, *Vouède*; It. *Guadone*, *Guado*, *Glastro*; Sp. *Pastel*, *Glasto*), the *Isatis tinctoria* of botanists, a biennial plant, with a fusiform fibrous root, and smooth branchy stem, rising from three to five feet in height. Woad is indigenous to most parts of Europe; and was extensively used from a very remote period, down to the general introduction of indigo, in the dyeing of blue. It is still cultivated to a considerable extent in France; but in England its cultivation is chiefly restricted to a few districts in Lincolnshire. After being bruised by machinery, to express the watery part, it is formed into balls, which ferment and fall into a dry powder, which is sold to the dyer. Woad is now seldom employed without a mixture of indigo. By itself it is incapable of giving a bright and deep blue color; but the color which it does give is very durable. The best methods of conducting the fermentation and preparation of woad are still so very ill understood, that the goodness of any parcel of it can never be ascertained till it be actually used; so that it has the disadvantage of being purchased under the greatest uncertainty as to its true value. At the proper age, indigo plants yield about thirty times as much coloring matter, and of a far superior quality, as an equal weight of woad; so that there is no prospect that any improvement that may be made in its preparation will ever render it, either in goodness or cheapness, a rival of the former.—LOUBON'S *Encycl. of Agriculture*; BANCROFT on *Colors*.

Woods. Mr. Holtzapffel, in his elaborate work on "Turning," gives a very minute description and classification of the various kinds of wood used in the arts. He first points out the well-known structural difference between *exogens* and *endogens*, which leads to a separation of all kinds of trees into two great groups; all the true woods (as they are sometimes termed) are *exogens*; whereas the *endogens* include the grasses, bamboos, palms, etc. In the countries where bamboos and palms are indigenous, the smaller stems are used as tubes for the conveyance of water, and the larger pieces as joists, etc. In the larger kinds of palm, the fibres appear like streaks or wires imbedded in a substance similar to cement or pith.

IMPORTS OF WOOD AND MANUFACTURES OF WOOD, ETC., INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence Imported.	Manufactures of Wood.				Unmanufactured Wood.				Corks.	Unman- ufactured Cork.
	Cabinet and Household Furniture.	Cedar, Mahogany, Rose, and Satin.	Willow.	Other Manu- factures of.	Cedar, Gren- adilla, Ma- hogany, Rose, and Satin.	Willow.	Fire-wood and other not specified.	Dye- wood in Stick.		
Russian Poss. in N. Am.	....	....	....	....	....	....	\$664	....	....	....
Sweden and Norway	....	....	....	\$51	....	....	....	....	....	....
Danish West Indies	....	....	....	....	....	....	10	....	....	....
Hamburg	\$1,010	\$823	\$5,808	61,583	\$511	\$3,367	18	....	\$144	....
Bremen	672	907	112,240	110,836	345	683	....	\$110	5,704	\$98
Holland	732	....	80	1,158	....	....	....	....	....	....
Dutch West Indies	....	....	....	....	695	....	1,741	18,188	....	....
Dutch Guiana	....	....	....	....	....	....	57	1,516	....	....
Dutch East Indies	....	....	....	42	....	....	....	790	....	....
Belgium	80	241	690	4,880	....	16,032	....	253	....	....
England	1,880	4,785	1,566	66,680	873	....	....	7,393	1,700	171
Scotland	....	60	....	1,040	....	....	....	....	....	508
Ireland	....	....	....	113	....	....	....	....	....	....
Gibraltar	....	....	....	....	....	....	....	....	1,498	....
Canada	26	....	13	26,205	....	....	1,252	2	....	....
Other British N. A. Poss.	....	....	....	3,752	735	....	7	1,466	....	26
British West Indies	....	50	....	458	7,355	....	3,238	82,266	....	....
British Honduras	....	....	....	....	28,831	....	....	27,564	....	....
British Guiana	....	....	....	35	111	....	21	69	....	....
British Poss. in Africa	....	....	....	....	....	....	....	524	....	....
Other ports in Africa	....	....	10	556	....	....	323	4,795	....	....
British Australia	....	....	....	....	....	....	1,458	....	....	....
British East Indies	426	....	17	1,010	....	....	160	9,144	....	....
France on the Atlantic	39,446	7,408	54,605	86,642	31,659	21,488	....	30	26,932	11
France on the Mediter'n.	....	90	....	68	....	203	....	9	83,609	10
French Guiana	....	....	....	....	....	....	71	....	....	....
Spain on the Atlantic	....	....	11	10	....	....	....	....	49,670	399
Spain on the Mediter'n.	....	....	....	82	....	....	....	....	22,280	....
Philippine Islands	55	....	....	179	....	....	....	22,181	....	....
Cuba	252	85	....	137	106,956	....	939	6,916	....	....
Porto Rico	....	....	....	....	1,591	....	780	823	....	....
Portugal	....	....	....	....	....	....	....	....	10,356	11,674
Madeira	....	....	21	144	....	....	....	....	....	....
Azores	....	68	....	....	....	....	....	....	....	....
Sardinia	33	....	....	26	....	....	....	....	192	....
Tuscany	660	666	....	7,347	....	....	....	....	....	....
Papal States	....	....	....	....	....	....	....	....	287	....
Two Sicilies	63	....	96	13	....	....	....	....	6,912	4,855
Austria	101	....	318	14	....	....	....	....	....	....
Turkey in Asia	....	....	....	1,130	....	....	525	....	....	....
Hayti	....	....	....	....	104,404	....	1,086	516,545	....	....
San Domingo	....	....	....	....	33,248	....	9,901	2,977	....	....
Mexico	....	....	65	43,813	....	137	....	52,212	....	....
Central Republic	....	....	....	860	....	....	....	6,694	....	....
New Granada	....	....	....	1,085	291	....	1,323	29,633	288	....
Venezuela	....	....	....	1,463	1,959	....	1,735	51,522	....	....
Brazil	....	....	....	639	154,346	....	1,445	9,011	....	....
Chili	....	....	....	54	....	....	2,051	33,377	....	....
Sandwich Islands	....	....	....	3	....	....	....	....	....	....
China	2,207	17	....	13,779	....	....	25	....	....	....
Total year 1856-'57.	\$47,636	\$15,185	\$175,484	\$3,117	\$518,251	\$41,773	\$29,457	\$866,048	\$20,572	\$17,692

The natives of the Isthmus of Darien pick out the fibres from some of the palms, and use them as nails; in some specimens they are as hard as rose-wood. Some of the smallest palms are imported into this country for walking-sticks, under the names of partridge and Penang canes. Of the four or five hundred varieties of palm-trees known to exist, only a very small number are imported. The palm woods so imported are sparingly employed for cabinet and marquetry work, for billiard cues, for snuff-boxes, etc. The twisted palm walking-sticks are the central stems or midribs of the leaves of the date palm: they are twisted when green, and stretched with heavy weights until they are thoroughly dry. The nut, or fruit, of many of this group of plants is applicable to uses in the arts; such as the betel-nut or areca-nut, whose substance is made into necklaces, the tops of walking-sticks, and other small objects; the cocoa-nut, whose shell yields the fibre or coir, now used in England for a great variety of purposes, and the hard portion of the shell, which is turned into cups, vases, buttons, etc.; the coquilla-nut, the shell of which, being hard and close-textured, is turned into knobs of umbrellas and parasols, small toys, etc. With respect to the simple wants and primitive arts of the people among whom the palms and bamboos grow, the uses of those plants are very numerous; of the *Cocos nucifera*, or cocoa-nut palm, for example, the fruit is eaten, the husk of the nut supplies coir for cordage, the leaves are used for making baskets and mats, the lower part of the stem yields wood fitted for joists and other kinds of carpentry, and

different portions of the plant are made to yield oil, sugar, palm wine, and arrack.

But it is the exogenous or true woods which render the more important services to man, so far as regards the stem or wood itself. The fibres do not appear to differ in size or bulk so much as in density and distance; these two last-named differences give rise to the distinction between hard and soft woods—the former comprising oak, mahogany, ebony, rose-wood, etc.; and the latter willow, alder, deal, etc. Another classification is that which springs from the direction of the fibres; if the annual or longitudinal fibres be tolerably straight, and very little interwoven with the medullary rays or interrupted by knots, the wood becomes elastic and easily rent; such are lance-wood, hickory, ash, etc.; but if the fibres are more crossed and interlaced, the wood becomes less elastic, and more rigid and tough; such are oak, beech, mahogany, etc.; and if the fibres be entangled to a still greater degree, they produce the non-elastic, tough, cross-grained woods, such as elm, lignum-vite, etc. Another mode of classification, traced with some minuteness by Mr. Holtzapffel, is that which is determined by the beauty of the surface presented by woods. The knots, occasioned by the junction of a branch with the stem; the curls, produced by the confused filling in of the space between the forks or springings of the branches, as in the yew; the gnarled appearance of the roots, formed at the points of junction of the rootlets or arms of the root with the body of the root itself, as in walnut wood; the pollard growths of the oak and other trees, which

owe the beauty of their grain to a crowding together of the little germs that produce the numerous shoots at the top; the ripple-mark surface, occasioned by a serpentine form of the grain, as in satin-wood and sycamore; the bird's-eye pattern, occasioned by a peculiar compression of the grain in isolated spots, as in some kinds of maple; the silver-grain, which results from a marked distinctness in the medullary rays, as in the plane, sycamore, and beech—all give rise to variations in the appearance of the surface of wood, which are the mainspring of the beauty observable in cabinet work. Another and very obvious mode of classifying woods is in respect to their color.

Mr. Holtzapffel gives a tabular view of all the kinds of wood commonly used in this country. The list includes nearly eighty species of trees, without naming the varieties of each species. He classifies them according to the services which they are calculated to render. One group includes *building* woods, subdivided into those fitted for ship-building, for house carpentry,

and for hydraulic engineering; another group includes the woods most useful for *machinery* and *mill-work*, subdivided according as the wood is suitable for frame-work, for rollers, for teeth of wheels, or for foundry patterns; a third group comprises the *turnery* woods, subdivided into common soft woods, hard woods, and Tunbridge-ware woods; a fourth group is made up of *furniture* woods, separated into common and best; a fifth group comprises *ornamental* foreign woods; a sixth group consists of *dye-woods*, arranged according to color; while a miscellaneous group is formed, subdivided according to the elasticity, the toughness, the even grain, or the durability of the wood. Of course many kinds of wood find a place in two or more of these groups; but the table is valuable, inasmuch as it brings together before the eye the names of all those woods which resemble each other in some one manufacturing quality.

The following tables show the exports (distinguishing between domestic and foreign production) of wood and its manufactures for the year ending June 30, 1857:

EXPORTS OF WOOD AND MANUFACTURES OF WOOD OF DOMESTIC PRODUCTION FROM THE UNITED STATES FOR THE FISCAL YEAR ENDING JUNE 30, 1857.

Whither exported.	Staves and Heading.		Shingles.		Boards, Plank, and Scantling.		Hewn Timber.	Other Lumber.	Oak Bark and other Dye.	All manufactures of Wood.
	M.	Value.	M.	Value.	M. Feet.	Value.	Value.	Value.	Value.	Value.
Russia on the Black Sea.	....	....	....	....	....	....	....	\$2,450	....	....
Asiatic Russia.	....	....	....	....	....	....	....	....	....	\$715
Russian North America.	....	....	120	\$426	....	....	....	35	....	115
Prussia.	....	....	....	....	....	....	....	....	\$450	....
Sweden and Norway.	....	....	....	....	....	....	....	....	....	808
Swedish West Indies.	....	....	1	22	38	\$630	....	....	....	23
Denmark.	10	\$627	....	....	5	77	....	....	....	327
Danish West Indies.	648	23,578	3,359	13,843	7,368	142,263	....	1,555	....	16,318
Hamburg.	96	8,175	....	....	742	13,983	....	706	7,689	66,674
Bremen.	184	12,791	....	....	687	10,640	\$2,586	8,812	38,706	41,968
Holland.	1,759	98,055	....	....	613	9,815	12,873	70,590	36,269	10,358
Dutch West Indies.	0	393	30	180	2,939	39,302	....	....	....	2,594
Dutch Guiana.	....	....	20	90	2,167	30,159	....	51	....	12,892
Dutch East Indies.	....	....	....	....	....	....	....	....	....	945
Belgium.	323	24,190	....	....	10	173	....	6,270	2,464	3,903
England.	2,594	165,549	....	....	4,821	74,766	321,075	98,728	164,260	155,721
Scotland.	245	18,259	....	....	120	1,809	45,410	3,007	7,619	6,876
Ireland.	3,885	7,209	....	....	2,665	33,101	23,192	6,965	....	382
Gibraltar.	147	9,466	....	....	36	616	....	....	386	4,016
Malta.	....	....	....	....	5	108	....	....	....	1,200
Canada.	394	7,839	21,638	54,553	85,645	864,103	31,883	2,187	2,766	142,433
British North America.	239	17,559	105	296	2,790	44,023	35,201	920	284	62,569
British West Indies.	12,675	199,310	20,664	64,040	22,663	300,544	1,840	2,284	286	45,207
British Honduras.	....	....	953	5,887	945	16,625	....	1,004	142	13,103
British Guiana.	766	18,430	....	....	4,059	53,273	....	55	....	12,486
British Poss. in Africa.	513	40,784	213	646	1,540	24,947	....	3,088	....	19,749
Other ports in Africa.	438	33,494	822	2,920	1,322	22,472	....	12,120	....	23,958
British Australia.	27	1,560	....	....	8,293	214,892	....	37,934	....	251,209
British East Indies.	137	9,282	....	....	1,848	33,690	....	14,265	....	21,379
France on the Atlantic.	2,068	145,951	....	....	1,785	29,712	13,041	116,829	35,985	14,401
France on the Mediterr'n.	769	49,162	....	....	1,240	14,970	5,849	25,410	13,711	6,413
French North America.	3	438	280	515	107	1,076	....	848	....	11,961
French West Indies.	1,559	29,546	6,353	17,520	16,521	217,604	....	174	....	6,005
French Guiana.	4	240	....	....	326	5,561	....	76	....	2,275
Spain on the Atlantic.	2,576	158,517	....	....	1,171	19,547	7,625	....	....	1,215
Spain on the Mediterr'n.	2,018	144,267	....	....	2,152	29,472	7,745	8,661	....	1,820
Canary Islands.	7	603	....	....	2,635	36,724	....	13,042	....	408
Philippine Islands.	....	....	....	....	....	....	....	....	....	985
Cuba.	7,835	561,674	3,131	7,404	68,406	876,142	5,144	138,464	201	1,675,248
Porto Rico.	21,580	114,330	3,155	14,741	4,443	117,504	....	6,432	....	131,904
Portugal.	1,136	96,460	20	60	331	4,806	....	90	11,100	6,886
Madeira.	....	....	....	....	437	6,339	....	....	....	1,084
Capo de Verd Islands.	....	....	71	181	73	1,192	....	153	....	1,008
Azores.	14	928	....	....	1,216	16,761	711	1,182	....	2,139
Sardinia.	55	2,666	....	....	270	5,100	....	233	....	1,349
Two Sicilies.	372	18,295	....	....	243	3,088	....	6,089	....	5,199
Austria.	....	....	....	....	....	....	....	....	890	....
Austrian Italy.	....	....	....	....	....	....	....	....	....	100
Turkey in Europe.	....	....	....	....	3	100	....	....	....	372
Turkey in Asia.	4	270	....	....	37	742	....	....	....	1,205
Hayti.	663	1,242	....	....	3,978	64,721	....	1,203	....	20,260
San Domingo.	....	2,555	....	....	2,456	20,011	....	....	....	44
Mexico.	723	1,598	....	....	2,617	38,669	....	5,890	....	21,576
Central Republic.	....	115	....	....	274	4,885	....	277	....	2,251
New Granada.	28	1,687	723	3,632	1,658	32,139	....	2,256	....	24,069
Venezuela.	33	1,401	100	600	621	12,408	....	....	....	15,413
Brazil.	56	5,293	....	....	5,743	87,040	2,560	3,670	....	42,327
Uruguay.	3	267	153	921	5,822	101,985	....	797	....	9,057
Argentine Republic.	40	3,215	1,171	4,218	12,976	185,074	....	2,561	83	27,345
Chili.	266	19,519	50	150	9,796	207,119	....	14,406	....	42,575
Peru.	36	2,690	....	....	1,876	33,147	....	....	....	10,064
Ecuador.	....	131	....	615	3	105	....	....	....	1,348
Sandwich Islands.	7	185	1,085	4,587	1,014	22,541	....	3,574	....	17,156
Pacific Islands.	....	351	1,427	....	21	468	....	11,919	....	1,906
China.	7	450	400	425	75	2,495	....	1,185	....	8,292
Whale-fisheries.	....	....	....	....	7,513	24,598	....	....	....	124,186
Total, year 1856-'57.	65,579	\$2,065,980	70,646	\$212,805	309,165	74,170,686	\$516,735	\$638,406	\$322,754	\$3,158,424

EXPORTS OF WOOD AND MANUFACTURES OF WOOD OF FOREIGN PRODUCTION FROM THE UNITED STATES FOR THE YEAR
ENDING JUNE 30, 1857.

Whither exported.	Manufactures of Wood.			Unmanufactured Wood.		
	Cabinet and Household Furniture.	Cedar, Mahogany, Rose, and Satin.	Willow.	Cedar, Grenadilla, Mahogany, Rose, and Satin.	Willow.	Fire-wood, and other not specified.
Russia on the Baltic and North Seas...	\$4,450	....	\$2,742
Asiatic Russia.....	\$52,918
Prussia.....	13,096
Sweden and Norway.....	4,792	....	16,186
Danish West Indies.....	636
Hamburg.....	4,166	....	167,315
Bremen.....	23,141	....	49,527
Holland.....	10,204	....	23,143
Belgium.....	16,540	....	55,232
England.....	4,296	51,105	....	315,759
Scotland.....	123	9,138
Gibraltar.....	613	....	9,390
Malta.....	1,003	....	6,247
Canada.....	\$74	\$624	3,028	....	213
Other British North American Poss.	429	....	1,516
British West Indies.....	3,708	....	6,180
British Australia.....
British East Indies.....	14,042	\$2811	5,478
France on the Atlantic.....	\$559	....	....	1,630	....	35,728
France on the Mediterranean.....	20,048
Spain on the Atlantic.....	1,463
Spain on the Mediterranean.....	3,000
Canary Islands.....	186	....	66
Cuba.....	23,469	....	....	168
Portugal.....	235	....	5,724
Azores.....	2,679	....	67
Sardinia.....	946	....	9,350
Two Sicilies.....	6,529	....	4,242
Austria.....	4,523	....	53,559
Austrian Possessions in Italy.....	4,275
Turkey in Europe.....	614
Turkey in Asia.....	1,105	....	7,143
Mexico.....	1,483	....	....	750
New Granada.....	1800	....	....	....	....	....
Brazil.....	78
Uruguay, or Cisplatine Republic.....	835	....	214
Buenos Ayres, or Argentine Republic	840	....	330
Chili.....	1,160	....	150	....
Sandwich Islands.....	383	....	9	....	....	....
China.....	1,458	....
Whale-fisheries.....	1,109	....	....	....
Total, year 1856-'57.....	\$2747	\$74	\$624	\$35,288	\$152,742	\$811
From warehouse.....	\$17,564	\$46,428	\$2811
Not from warehouse.....	\$2747	\$74	\$624	17,724	106,314	7,558

Wool (Ger. *Wolle*; Du. *Wol*; Da. *Uld*; Swed. *Ull*; Fr. *Laine*; It. and Sp. *Lana*; Port. *Lã*, *Lãa*; Russ. *Wolna*, *Scherst*; Pol. *Welna*; Lat. *Lana*), a kind of soft hair or down. The term is not very well defined. It is applied both to the fine hair of animals, as sheep, rabbits, some species of goats, the vicuña, etc.; and to fine vegetable fibres, as cotton. In this article, however, we refer only to the wool of sheep—an article which has continued, from the earliest period down to the present day, to be of primary importance, having always formed the principal part of the clothing of mankind in most temperate regions.

Species of Wool.—It has been customary to divide wool into two great classes—long and short wools; and these again into subordinate classes, according to the fineness of the fibre. Short wool is used in the cloth manufacture; and is, therefore, frequently called clothing wool. It may vary in length from one to three or four inches; if it be longer, it requires to be cut or broken to prepare it for the manufacture. The *felting* property of wool is known to every one. The process of hat-making, for example, depends entirely upon it. The wool of which hats are made is neither spun nor woven; but locks of it, being thoroughly intermixed and compressed in warm water, cohere and form a solid, tenacious substance.

Cloth and woollen goods are made from wool possessing this property; the wool is carded, spun, woven, and then, being put in the fulling-mill, the process of felting takes place. The strokes of the mill make the fibres cohere; the piece subjected to the operation contracts in length and breadth, and its texture becomes more compact and uniform. This process is essential to the beauty and strength of woollen cloth. But the long wool of which stuffs and worsteds are made is deprived of its felting properties. This is done by pass-

ing the wool through heated iron combs, which takes away the laminae or feathery part of the wool, and approximates it to the nature of silk or cotton. Long or combing wool may vary in length from three to eight inches. The shorter combing wools are principally used for hose, and are spun softer than the long combing wools; the former being made into what is called hard, and the latter into soft worsted yarn. The fineness of the hair or fibre can rarely be estimated, at least for any useful purpose, except by the wool sorter or dealer, accustomed by long habit to discern those minute differences that are quite inappreciable by common observers. In sorting wools, there are frequently eight or ten different species in a single fleece; and if the best wool of one fleece be not equal to the finest sort, it is thrown to a 2d, 3d, or 4th, or to a still lower sort, of an equal degree of fineness with it. The best English short native fleeces, such as the fine Norfolk and Southdown, are generally divided by the wool-sorter into the following sorts, all varying in fineness from each other: viz. 1. Prime; 2. Choice; 3. Super; 4. Head; 5. Downrights; 6. Seconds; 7. Fine Abb; 8. Course Abb; 9. Livery; 10. Short, coarse, or breech wool. The relative value of each varies, according to the greater demand for coarse, fine, or middle cloths.

The softness of the fibre is a quality of great importance. It is not dependent on the fineness of the fibre; and consists of a peculiar feel, approaching to that of silk or down. The difference in the value of two pieces of cloth made of two kinds of wool equally fine, but one distinguished for its softness and the other for the opposite quality, is such, that, with the same process and expense of manufacture, the one will be worth from 20 to 25 per cent. more than the other. Mr. Bakewell showed that the degree of softness depends principally on the nature of the soil on which sheep

are fed; that sheep pastured on chalk districts, or light calcareous soils, usually produce hard wool; while the wool of those that are pastured on rich, loamy, argillaceous soils, is always distinguished by its softness. Of the foreign wools, the Saxon is generally softer than the Spanish. Hard wools are all defective in their *felting* properties. In clothing wool, the color of the fleece should always approach as much as possible to the purest white; because such wool is not only necessary for cloths dressed white, but for all cloths that are to be dyed bright colors, for which a clear white ground is required to give a due degree of richness and lustre. Some of the English fine-wooled sheep, as the Norfolk and Southdown, have black or gray faces and legs. In all such sheep there is a tendency to grow gray wool on some part of the body, or to produce some gray fibres intermixed with the fleece, which renders the wool unfit for many kinds of white goods; for though the black hairs may be too few and minute to be detected by the wool sorter, yet when the cloth is stoved they become visible, forming reddish spots, by which its color is much injured. The Herefordshire sheep, which have white faces, are entirely free from this defect, and yield a fleece without any admixture of gray hairs.

The cleanness of the wool is an important consideration. The Spanish wool, for example, is always scoured after it is shorn; whereas the English wool is only imperfectly washed on the sheep previously to its being shorn. In consequence, it is said that while a pack of English clothing wool of 240 lbs. weight will waste about 70 lbs. in the manufacture, the same quantity of Spanish will not waste more than 48 lbs. Cleanness, therefore, is an object of much importance to the buyer. Before the recent improvements in the spinning of wool by machinery, great length and strength of staple was considered indispensable in most combing wools. The fleeces of the long-wooled sheep fed in the rich marshes of Kent and Lincoln used to be reckoned peculiarly suitable for the purposes of the wool-comber; but the improvements alluded to have effected a very great change in this respect, and have enabled the manufacturer to substitute short wool of three inches staple in the place of long combing wool, in the preparation of most worsted articles. A great alteration has, in consequence, taken place in the proportion of long to short wool since 1800; there having been in the interim, according to Mr. Hubbard's calculations, an increase of 132,053 packs in the quantity of the former produced in England, and a decrease of 72,820 in the quantity of the latter.

Whiteness of fleece is of less importance in the long combing than in clothing wool, provided it be free from gray hairs. Sometimes, however, the fleece has a dingy brown color, called a *winter stain*, which is a sure indication that the wool is not in a thoroughly sound state. Such fleeces are carefully thrown out by the wool sorter, being suitable only for goods that are to be dyed black. The fineness of heavy combing wool is not of so much consequence as its other qualities. The Merino or Spanish breed of sheep was introduced into England about the close of last century. George III. was a great patron of this breed, which was for several years a very great favorite. But it has been ascertained that, though the fleece does not much degenerate, the carcass, which is naturally ill-formed, and affords comparatively little weight of meat, does not improve; and as the farmer, in the kind of sheep which he keeps, must look not only to the produce of wool, but also to the butcher market, his interest is rather to return to the native breeds, and to give up the Spanish sheep. They have, however, been of considerable service to the flocks of England; having been judiciously crossed with the Southdown, Ryeland, &c.

Dr. Anderson, in a memorial submitted to the "Report of the Committee of the Highland Society," proves, from indisputable records, that from the earliest times

down to the reign of Queen Elizabeth, the wool of Great Britain was not only superior to that of Spain, but accounted the finest in the universe; and that even in the times of the Romans a manufacture of woollen cloths was established at Winchester for the use of the emperors. In later times, wool was manufactured in England, and is mentioned in A.D. 1185, but not in any quantity until 1831, when the weaving of it was introduced by John Kempe and other artisans from Flanders. This was the real origin of the English wool manufactures, Edward III., 1331.—*KYMER'S Fæderia*. The exportation prohibited, 1837. The exportation of English wool, and the importation of Irish wool into England prohibited, 1696. The non-exportation law repealed, 1824.—HAYDN.

Alpaca Wool.—The alpaca is one among many species of the llama, the wool of which is very beautiful. The first visit of these animals to Europe was an adventurous one. Thirty-six traveled across the whole breadth of South America, from Lima to Buenos Ayres, in 1808, and were there shipped to Europe as a present to the Empress Josephine. At Cadiz the poor animals were ill-treated by a rabble, and only a small number were ultimately preserved in Spain; they never reached Josephine. By degrees it was found that alpaca wool was longer, softer, more pliant, and more lustrous than sheep's wool, and the manufacturers of Bradford began to import it for use. Queen Victoria possesses one or two of these animals at Windsor, and some articles of dress were made from the alpaca wool in 1844: one was an apron, entirely of alpaca; another was a striped and figured dress, with silk warp, alpaca weft, and alternate silk and alpaca figures; a third was a plaid dress, woven with an intermixture of alpaca, silk, and worsted; while a fourth was a plain black dress, with cotton warp and alpaca weft. Many attempts have been made to establish the breed of the alpaca in England, but hitherto the enterprise has not been commercially successful.

That alpaca wool is coming extensively into use in England is shown by the imports: in 1836 to 1840 they averaged 7000 bales per annum; in 1841 to 1845, the average was 13,000 bales; in 1846 to 1850, more than 20,000.—*See ALPACA*.

Cashmere Wool.—It is an interesting feature in the modern history of the woollen manufacture, that the wool, or rather hair, of the Cashmere goat is becoming a favorite material in cloth of the better kind. Not that all the "Cashmeres" of the shops are really Cashmeres; the *morale* of trade has not yet reached the point when things are called by their right names; and the beautiful Asiatic valley is quite innocent of the greater part of those products which rejoice in the name of "Cashmeres." Still the high-born and the wealthy occasionally purchase shawls which were really made in that region, and (what is more interesting to us) attempts are being made to naturalize the animal which produces the beautiful filamentous material in question. The fleece of the Cashmere goat consists of two very different kinds of fibre—one of which is a fine, soft, pliable, rich wool, equal to the finest lamb's wool; while the other, called *kemp*, is a hard, stiff, coarse, rough kind of hair. The kemp may be used in the manufacture of coarse cloth; but every fibre must be removed before the fine wool can be employed in shawl-making. This removal is very difficult and tedious, and will be a bar to the spread of the manufacture, unless some expeditious system to effect it can be devised. Prince Albert has some Cashmere goats at Windsor; and some few months before the Great Exhibition was opened he caused the fleeces of those goats to be forwarded to two manufacturing firms, one near Leeds, and one near Halifax, there to be subjected to manufacturing processes. The separation of the fine wool from the kemp was a slow manipulative process, which many persons undertook voluntarily and pleasurably. Of course the expense which would attend

such a mode of manufacture for ordinary sale would be quite disproportionate to the result obtained; but the prince's praiseworthy object was answered by showing that the Cashmere goat *can* be reared, and that the fleecy covering can be wrought into cloth. The articles produced from the wool in question consisted of a piece of white cloth, with silk warp and Cashmere weft, woven with a brocaded figure; a piece of similar character, but dyed; two shawls made wholly of the Cashmere wool; and a piece of coarse woollen cloth made from the kemp or hair.—See CASHMERE.

Mauchamp Merino Wool.—In 1828 M. Graux, a farmer at Mauchamp, in the French department of Aisne, had a lamb which, as it grew up, became remarkable for the long, smooth, straight, and silky character of the fibres of the wool. He resolved to insure, so far as he could, a perpetuation of these valuable qualities in the progeny of the lamb. In 1830 he had one ram and one ewe whose wool was of this peculiar kind; in 1831 he had four rams and one ewe of the desired kind; and by 1833 the number was much increased. Thenceforward the progeny was very remarkable; some of the lambs, like their mothers, had the curled elastic wool of ordinary merino sheep; while the others, like their sires, had the long silky wool. As years advanced, M. Graux was able to obtain a breed of sheep which combined in the wool nearly all the qualities of the two former kinds; and thus originated the Mauchamp wool, which now sells in France for 25 per cent. above the best merino. It is found to be nearly equal to the real Cashmere wool in flexible delicacy of fibre, as a material for Cashmere shawls; and when combined with the real Cashmere, it imparts a strength in which that wool is deficient.

Deterioration or Change in the Character of British Wool.—It appears to be sufficiently established, by the evidence taken before the House of Lords in 1828, and other authorities, that a considerable deterioration, or rather, perhaps, change, has taken place in the quality of British wool, particularly during the 30 preceding years. The great object of the agriculturist has been to increase the weight of the carcass and the quantity of the wool; and it seems very difficult, if not quite impossible, to accomplish this without injuring the fineness of the fleece. Mr. Culley says, that the Herefordshire sheep, that produce the finest wool, are kept lean, and yield $1\frac{1}{2}$ lb. each; he adds, "if they be better kept, they grow large and produce more wool, but of an inferior quality." This would seem to be universally true. The great extension of the turnip husbandry, and the general introduction of a larger breed of sheep, appears, in every instance, to have lessened the value of the fleece. Speaking of the Norfolk fleeces, Mr. Fison, a wool sorter, says that 25 years ago the weight was $2\frac{1}{2}$ lbs. a fleece, and that now it is 3 lbs. or $3\frac{1}{2}$ lbs. But according to a table furnished by the same gentleman, containing the results of his experience, it appears that of 15 tods, or 420 lbs., of clothing wool grown in Norfolk in 1790, 200 lbs. were *prime*, while in 1828 the same quantity of Norfolk wool only yielded 14 lbs. *prime*. The statements of other witnesses are to the same effect. According to the estimate in Mr. Luccock's *Treatise on English Wool*, which has always enjoyed the highest reputation, the produce of all sorts of wool in England in 1800 was 384,000 packs, of 240 lbs. a pack. But Mr. Hubbard, a very intelligent and extensive wool-stapler at Leeds has shown that, supposing Mr. Luccock's estimate of the number of sheep to be correct, the quantity of wool produced in 1828 could not, owing to the greater weight of the fleece, be estimated at less than 463,169 packs; and it is now (1814) believed to amount to fully 500,000 packs. It is, therefore, probable, notwithstanding the decline in the price of wool, that, taking into account the greater weight of the carcass, and the greater weight of the fleece, sheep produce more at present to the farmer than at any former period.

We give below a statement of the quantity of the wool imported into Great Britain in fifteen years, from 1840 to 1854, inclusive.

Years.	Germany.	Australia.	Total.
	Pounds.	Pounds.	Pounds.
1840	21,812,664	9,755,248	49,446,284
1841	20,959,375	12,390,362	56,170,974
1842	15,613,269	12,478,956	45,881,630
1843	16,805,448	17,483,700	49,249,698
1844	61,847,083	17,682,247	65,713,761
1845	18,484,736	24,177,217	76,813,755
1846	15,888,705	21,789,246	65,255,452
1847	12,673,914	26,056,815	62,5 2,508
1848	14,429,161	30,018,221	70,864,847
1849	12,750,011	35,576,171	76,768,647
1850	9,166,731	39,018,221	74,326,718
1851	8,219,286	41,877,217	83,811,975
1852	12,765,253	43,267,402	98,761,458
1853	11,554,800	47,077,010	119,396,549
1854	11,448,518	47,489,659	106,121,995

AN ACCOUNT OF THE QUANTITIES OF SHEEP AND LAMBS' WOOL, FOREIGN AND COLONIAL, IMPORTED INTO GREAT BRITAIN IN THE YEAR 1851, DISTINGUISHING THE COUNTRIES FROM WHICH THEY CAME, AND THE QUANTITIES BROUGHT FROM EACH.

Imports.	Sheep and Lambs' Wool, foreign and colonial.
	Pounds.
Russia, northern ports	584,067
Russian ports within the Black Sea	5,312,139
Denmark, including Iceland	1,657,910
Prussia	42,211
Hanseatic Towns	8,216,020
Holland	142,082
Belgium	496,788
France	908,314
Portugal proper	2,356,622
Spain	383,150
Gibraltar	448,120
Sardinian territories	14,866
Tuscany	408,167
Papal territories	158,534
Naples and Sicily	220,436
Austrian territories	495,804
Malta	181,255
Turkish dominions	831,240
Egypt, Syria, and Palestine	1,748,602
Morocco	967,010
British possessions in South Africa	5,816,591
British territories in India	4,549,520
China	69,546
West Australia	368,595
South Australia	3,392,608
New South Wales	14,772,132
Victoria	17,269,521
Van Diemen's Land	5,198,083
New Zealand	809,208
United States	594,017
Brazil	179,946
Buenos Ayres or Argentine Republic	853,194
Chili	129,221
Peru	1,675,644
All other places	45,135
Total	81,298,793
Re-exports.	All Sorts.
	Pounds.
Russia	28,402
Sweden	285,533
Norway	14,000
Hanseatic Towns	800,632
Holland	1,100,483
Belgium	7,718,407
France	1,496,811
Italy	190,317
United States	2,020,968
Other places	47,170
Total	13,711,725

Of late years Russia has become of primary importance among the wool exporting countries, especially from her ports on the Black Sea. Provided tranquillity could be maintained in South Africa, the probability is that it would in no very lengthened period rival New South Wales as a wool exporting country. Alpaca, and other wools of that sort, come from Peru; goats' wool comes principally from Turkey, but the best is that of Thibet.

United States.—Analogous in the uses for which it serves to cotton, wool is a product of only less importance to the prosperity of the country than that leading staple of our agriculture and commerce. It is a very gratifying fact that though the number of sheep has

increased in ten years but 12 per cent., the aggregate weight of their fleeces has augmented 46 per cent. In 1840 there were 19,311,374 sheep, yielding 35,802,114 lbs. of wool, equal to 1·84 lb. per head. In 1850 the average weight of each fleece was 2·43 lbs., from which it would appear that such an improvement had taken place in the various breeds of the American sheep as to increase their average product about 32 per cent. throughout the United States. And a critical analysis of the returns of sheep and wool proves not only that our breeds are capable of such improvement, but that it has actually taken place.

In Vermont the greatest attention has been given to sheep-breeding; time, money, and intelligence having been freely applied to the great object of obtaining a breed combining weight and fineness of fleece. These efforts have succeeded so well, that although the number of sheep in that State had declined nearly one half in the period from the sixth to the seventh census, the yield of wool remained nearly the same. The average weight of the fleece in this State in 1840 was 2·2 lbs., and in 1850 it had increased to 3·71, the gain being almost equal to 70 per cent. In Massachusetts, also, where strenuous exertions have been made—though not on so large a scale as in Vermont—to improve their sheep, a correspondingly beneficial result has been obtained, and the average weight of the fleece has been increased from 2·5 to 3·1 lbs. The State of New York produced 226,000 lbs. more wool in 1850, from 3,453,000 sheep, than from 5,118,000 in 1840, showing that the weight of the fleece had been raised from less than two to nearly three pounds. Our imports of wool during ten years have varied as follows:

QUANTITY AND VALUE OF WOOL IMPORTED INTO THE UNITED STATES FROM 1841 TO 1850, INCLUSIVE.			
Years.	Quantity.	Value.	
1841.....	pounds 15,006,410	\$1,091,953	
1842.....	" 11,320,958	797,482	
1843—9 months	" 3,517,100	245,000	
1844.....	" 14,008,000	851,460	
1845.....	" 23,833,040	1,689,794	
1846.....	" 16,553,247	1,134,226	
1847.....	" 8,460,109	555,622	
1848.....	" 11,341,429	857,034	
1849.....	" 17,369,022	1,177,347	
1850.....	" 18,669,794	1,681,691	

By this statement it is shown that the quantity of wool brought into the country of late years amounts to almost one-third of that produced in it; while at former

periods, as from 1841 to 1845, the amount was nearly one half. The largest proportion of this imported wool came from Buenos Ayres and the neighboring states on the Rio de la Plata, and is of a coarse and cheap variety, costing from six to eight cents per pound. It always will be cheaper to bring this kind of wool from regions where sheep are reared without care or labor, than to produce it at home; but there is no country in the world in which sheep may, by judicious treatment, be made a source of greater wealth and comfort to its inhabitants than the United States. The importations of wool in 1850-'51 exhibit a remarkable increase over the preceding or any former year, amounting in quantity to 82,548,693 lbs., and to the value of \$3,800,000.

PRODUCTION OF WOOL IN THE UNITED STATES IN THE YEARS 1840 AND 1850, ACCORDING TO THE CENSUS REPORTS.

States and Territories.	1840.	1850.
Alabama.....	pounds 220,353	657,118
Arkansas.....	" 64,943	182,595
California.....	" 5,520	5,520
Columbia, Dist. of..	" 707	525
Connecticut.....	" 889,970	497,454
Delaware.....	" 64,404	57,768
Florida.....	" 7,285	23,247
Georgia.....	" 371,303	990,019
Illinois.....	" 650,007	2,150,113
Indiana.....	" 1,237,919	2,610,287
Iowa.....	" 23,039	373,898
Kentucky.....	" 1,786,847	2,297,433
Louisiana.....	" 49,283	109,897
Maine.....	" 1,465,551	1,364,034
Maryland.....	" 488,201	477,438
Massachusetts.....	" 941,906	585,136
Michigan.....	" 153,375	2,043,283
Mississippi.....	" 175,196	559,619
Missouri.....	" 562,265	1,627,164
New Hampshire.....	" 1,260,517	1,108,476
New Jersey.....	" 397,207	575,396
New York.....	" 9,845,255	10,071,301
North Carolina.....	" 625,044	970,738
Ohio.....	" 3,685,315	10,196,371
Pennsylvania.....	" 3,048,564	4,481,570
Rhode Island.....	" 138,530	129,692
South Carolina.....	" 299,170	487,233
Tennessee.....	" 1,060,332	1,364,378
Texas.....	"	131,917
Vermont.....	" 3,699,235	3,400,717
Virginia.....	" 2,538,374	2,866,765
Wisconsin.....	" 6,777	253,963
Minnesota Territory	"	85
New Mexico.....	"	32,901
Oregon.....	"	29,686
Utah.....	"	9,222
Totals.....	85,902,114	52,516,969

EXPORTS OF WOOL FROM THE UNITED STATES FOR THE FISCAL YEARS ENDING JUNE 30, 1853, 1854, 1855.

	1853.		1854.		1855.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Domestic wool.....	216,472	\$26,567	114,268	\$33,895	83,883	\$27,802
Foreign wool.....	209,194	51,387	195,143	41,668	725,904	131,442
Total.....	425,666	\$77,954	309,411	\$75,563	817,790	\$159,244

IMPORTS OF WOOL INTO THE UNITED STATES FOR THE FISCAL YEARS ENDING JUNE 30, 1853, 1854, 1855.

Whence imported.	1853.		1854.		1855.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
England.....	3,884,595	\$773,469	1,396,514	\$261,327	972,434	\$158,444
France.....	2,205,861	280,300	12,487	3,487	949,323	131,064
Turkey.....	4,351,259	372,012	4,360,326	460,285	4,261,250	386,505
Argentine Republic.....	5,745,857	558,653	6,255,638	854,232	5,966,969	627,718
Chili.....	2,664,300	255,196	1,857,447	161,066	2,846,902	317,564
Other places.....	2,743,207	490,088	6,317,638	1,081,788	3,537,532	450,844
Total.....	21,595,079	\$2,669,718	20,200,110	\$2,622,185	18,534,415	\$2,072,139

Woolen Manufacture, the art of forming wool into cloth and stuffs. The manufacture of cloth was known, it is supposed, in all civilized countries, and in very remote ages, and probably of linen also. Woolen cloths were made an article of commerce in the time of Julius Cæsar, and are familiarly alluded to by him. They were made in England before A.D. 1200, and the manufacture became extensive in the reign of Edward III., 1331. They were then called Kendal cloth and Halifax cloth.—E. B. See *article* WOOL. Blankets were first made in England about A.D. 1340.—CAMDEN. No cloth but of Wales or Ireland to be imported into England, 1463. The art of dyeing brought into England,

1608.—See *article* DYEING. Medleys, or mixed broad-cloth, first made, 1614. Manufacture of fine cloth begun at Sedan, in France, under the patronage of Cardinal Mazarine, 1646. British and Irish woollens prohibited in France, 1677. All persons obliged to be buried in woolen, or the persons directing the burial otherwise to forfeit £5, 29 Charles II., 1678. The manufacture of cloth greatly improved in England by Flemish settlers, 1688. Injudiciously restrained in Ireland, 11 William III., 1698. The exportation from Ireland wholly prohibited, except to certain ports of England, 1701. English manufacture encouraged by 10 Anne, 1712, and 2 George I., 1715. Greater in

Yorkshire in 1785, than in all England at the Revolution.—CHALMERS.

Woolen Goods, Varieties of.—The variety of goods which come under the designation of woolen manufactures is obviously increasing every year. "Broad-cloth" and "narrow cloth," "Clarendons" and "Petershams," "Cashmeres," "Cashmerettes," "kerseys," "tweeds," "tartans," "linsey-woolseys," "angolas," "vicuñas," "Venetians," "llamas," "Sardinians," "Himalayas," "moleskins," "doeskins," "beavers," "trowserings," "vestings," "coatings"—there is really no end to the names; for the manufacturers, not content with having distinguishing names for particular materials and particular modes of manufacture, conjure up new names, on any or no grounds, for the sake of novelty. Many of the names, however, might be made significant of really curious novelties in the manufacture. Thus there is a new "bis-unique cloth," of double thickness, the two surfaces having different patterns, so that the wearer may have either side outward at his pleasure. There is a cloth wholly made from beaver fur—soft, light, and warm—for winter garments. There is, as a third example, the comically-named Irish "rumswizzle," a very excellent brownish frieze made of undyed foreign wool.

Shoddy Trade.—The greater number, perhaps, of our readers may never have heard of that branch of the woolen manufacture called the *shoddy trade*, which has grown up of late years, and is now of very considerable value and importance. It is principally carried on at Dewsbury, in England, in the centre of the clothing district. Shoddy cloth is fabricated either wholly or partly of old wool; and instead of being neglected, or used only as manure, old woolen rags are now every where carefully collected, and conveyed to Dewsbury. After being subjected to various processes, they are torn to pieces by the aid of powerful machinery, and reduced to their original state of wool; and this wool, being respun, either with or without an admixture of fresh wool, is again made into cloth! Formerly, shoddy cloth was used only for padding and such like purposes; but now blankets, flushings, druggets, carpets, and table-covers, cloth for pilot and Petersham great-coats, etc., are either wholly or partly made of shoddy. The clothing of the army, and the greater part of that of the navy, consists principally of the same material, which, in fact, is occasionally worn by every body. Large quantities of shoddy cloth are exported. Great improvements have been effected of late years, not only in the fabric of the cloth, but also in the dyes: this is especially seen in the cloth for soldiers' uniforms, which is no longer of a brick-dust color, but makes a much nearer approach to scarlet. The beautiful woolen table-covers are made wholly of shoddy, being printed by *aqua fortis* from designs drawn in London and Manchester, and cut on holly and other blocks on the spot. The analogy between this manufacture and that of paper is so striking that it must force itself on the attention of every one, the vilest and most worthless materials being converted in both into the most beautiful and useful fabrics. The shoddy trade is, in fact, one of the greatest triumphs of art and civilization. Though of comparatively recent origin, it is rapidly extending itself. It is most active in summer, and is much more languid in winter.

United States.—The development and growth of our woolen manufactures depends now entirely upon our tariff. To enable our mills to compete with foreign mills, we must have a tariff to counteract the hostile legislation of those foreign countries which overrun our market with their fabrics. When England, France, Prussia, and Austria import wool for their broadcloths, free of duty, the United States must do the same; or these European manufacturers, in whose favor our tax on imported wool operates, will surpass us so largely in our own markets, that we shall be compelled to stop all our broadcloth spindles. This has been the effect

of the tariff of 1846 upon our woolen manufactures; and the prospect of relief to be afforded by Mr. Campbell's bill will give life to this decaying branch of our industry.

The relations of the tariff to our woolen manufactures has attracted so much attention of late, that the following table, showing the rate of duty fixed on wool by the various tariffs enacted by Congress since 1789, will be found interesting.

TARIFF DUTIES ON IMPORTED WOOL FROM 1789.

January, 1789, to April, 1816—free.
 April, 1816, to May, 1824—15 per cent. ad valorem.
 May, 1824, to June, 1825—costing under 10 cents per lb., 15 per cent. ad valorem.
 May, 1824, to June, 1825—costing over 10 cents per lb., 20 per cent. ad valorem.
 June, 1825, to June, 1826—costing under 10 cents per lb., 15 per cent. ad valorem.
 June, 1825, to June, 1826—costing over 10 cents per lb., 25 per cent. ad valorem.
 June, 1826, to June, 1828—costing under 10 cents per lb., 15 per cent. ad valorem.
 June, 1826, to June, 1828—costing over 10 cents per lb., 30 per cent. ad valorem.
 June, 1828, to June, 1829—4 cents per lb. specific, and 40 per cent. ad valorem.
 June, 1829, to June, 1830—4 cents per lb. specific, and 45 per cent. ad valorem.
 June, 1830, to June, 1832—4 cents per lb. specific, and 50 per cent. ad valorem.
 June, 1832, to June, 1842—costing under 8 cents per lb., free.
 June, 1832, to June, 1842—costing over 8 cents per lb., 4 cents specific, and 40 per cent. ad valorem.
 June, 1842, to July, 1846—costing under 7 cents per lb., 5 per cent. ad valorem.
 June, 1842, to July, 1846—costing over 7 cents per lb., 3 cents specific, and 30 per cent. ad valorem.
 July, 1846, to March 3, 1857—all wool 30 per cent. ad valorem.
 March 3, 1857, wool 24 per cent. Less than 20 cents a pound, at the place of exportation, free.

The fluctuations in this table are remarkable, and, considering their frequency and the extremes to which they run, it is surprising that capital should have been invested in woolen manufactures in this country.

"The statistics upon the production and importation of wool, and manufactures of wool, have been prepared with care, in order to place the questions connected with the production and importation of wool and manufactures of wool, involved in the proposition to admit wool as a raw material free of duty, fully and fairly before Congress. It will be seen that in 1840, according to the census of that year, we manufactured woolen goods to the value of \$20,696,999; and that in addition we imported manufactures of wool to the value of \$8,652,785; making our consumption of the manufactures of wool \$29,349,784, and the consumption of \$1 71 94-100 for each person then in the United States. The census of 1840 does not give the number of factories devoted to, nor the capital employed in the manufacture of wool. The census of 1850 shows there were 1559 factories in the United States, with 28,118,650 of capital devoted to the manufacture of wool, with the particular States in which the factories were situated; also that the manufactures of wool amounted to \$43,207,545, and we imported manufactures of wool to the value of \$16,976,575, making our consumption of manufactures of wool \$60,184,120, and the consumption of \$2 59½ for each person in the United States. If we estimate the increased value of our woolen manufactures since 1850 at the ratio of the increase between 1840 and 1850, it gives our manufactures of wool at \$56,406,786, for the year 1855; and we find the value of our importations of manufactures of wool for 1855 to be \$23,297,384, making our consumption \$79,704,170, and \$2 93 18-100 as the consumption of each person then in the United States. These tables also show, at the periods of 1840, 1850, and 1855, the value of the wool produced in the United States, and also the value of wool imported into the United States at the same periods, less the exports of wool. They also show the value of the wool, in the imported manufactures of wool, at each of those periods, estimating the value of

the wool at one-third of the value of the imports, and exhibit the value of the wool consumed by each person in 1840 at 71 26-100 cents; in 1850 at 75 18-100 cents; and in 1855 at 92 19-100 cents; and that we consumed in 1840 \$3,704,092 more than we produced; in 1850, \$7,317,771; and in 1855, \$9,678,690. There are no data from which to exhibit the number of factories, nor the amount of capital employed in the manufacture of wool, in 1855, nor the character of the goods manufactured; but it is represented that all our factories heretofore engaged in the manufacture of broad-cloths and the finer woolen fabrics have been forced to abandon that description of manufacture, and yield our markets for those articles to the foreign manufacturer. These tables show that in 1855 we consumed \$23,297,384 of the manufactures of wool more than we manufactured, and that we consumed \$9,678,690 of wool more than we produced, estimating the wool in the manufactured article at one-third of the value. Now we import \$1,940,697 of wool for our manufacturers, who pay a duty of 80 per cent. upon it; and we import \$23,297,384 of the manufactures of wool, on which we pay different rates of duty, viz.: 30 per cent. on part, 25 per cent. on part, and 20 per cent. on part; while with wool free of duty in other manufacturing countries, the duty operates a discrimination against the labor and capital of our own people. This is peculiarly the case as to the coarser fabrics, which we admit at less duty than we impose upon wool.

"The climate of the United States is such that manufactures of wool are used winter and summer in some of the States, and in the winter months in all, and the finer fabrics are used in all. It is an article, for clothing and other uses, that our climate and our habits do not permit us to dispense with, and which our people can and will manufacture for themselves, if our tariff laws are arranged so as not to discriminate against them, and in favor of other manufacturing nations.

"When we first imposed a tax on foreign wool, Great Britain and other manufacturing nations taxed it also, and as high as we taxed it. We discriminated in the tax upon the manufactures of wool, imposing a higher tax upon the finer fabrics; whereupon Great Britain and other manufacturing nations repealed their tax on wool, and secured to their manufacturers the advantage of obtaining the raw material free of duty. This advantage over us they will continue to enjoy as long as our tax is continued. The reasons why they admit wool free are to be found in the fact that they manufacture more than they produce, and it is necessary they should be able to sell cheap, in order to enter advantageously the markets of the world, and it may be also to secure the market of the United States, to the suppression of manufacturing in this country. We also manufacture more wool than we produce, and consume more manufactures of wool than we manufacture, and continue our tax on wool. The duty on wool was imposed to promote its production in the United States, and was expected to enhance the price. It has failed

to secure the object for which it was imposed. The production has not kept pace with our population and consumption of woolen manufactures, and although the prices have been fair, they have not been such as to make wool-growing as profitable a pursuit as many others in the country. In the trial of ten years under the tariff of 1816, there is no greater production of wool, in proportion to the population, than there was prior to that time. It is said we do not produce the inferior-priced wools, costing twenty cents per pound or less; nor the higher-priced wools, costing fifty cents or more to the pound, and that it is the lower and higher priced wools that we import for our manufactures, and that the duty has no effect, and does not enhance the price of the wool that we produce; in consequence of which we are undersold in our own markets, in both the finer and coarser fabrics; and that the repeal of the tariff on low and the higher priced wools would not affect the price of the wool we produce, and would enable our manufacturers to use more of our wool, by judicious mixture with foreign wool, and give them a fairer competition for the home market, and induce the manufacture of the finer fabrics in this country. There would be difficulty in the execution of such a tariff, because it would be the interest of the importer to put the foreign value of his wool above the fifty or below the twenty cents to obtain free entry. It is believed these causes would render the tax uncertain and unpopular, and make free trade in wool more desirable and more beneficial to the wool-grower as well as the manufacturer. In Great Britain the tax on the foreign wool, when it was as much as sixpence a pound, did not enhance the price to the English wool-grower, although it had been imposed and continued, as well to encourage the growth of wool at home as for revenue. The English prices-current and statistics show that the price of wool ranged higher the very first year after the duty was repealed than it had for years before, and has continued to range higher ever since. It is confidently believed such would be the case in this country if the duty on the importation of wool was repealed, thereby giving our manufacturers wool on the same terms the foreign manufacturers obtain theirs, viz.: by purchase in the open markets of the world, and that they would be encouraged to increase and extend their business in order to enjoy the benefit of the home market for their goods, the consequences of which would be a constant and greater home demand, at higher and better prices.

"The ratio at which our population is increasing will render necessary a continued increase in the manufactures of wool required for consumption. The importance of a home supply of this useful and indispensable article of clothing calls for the most careful investigation of the effects of our laws, and a prompt remedy by their repeal wherever they shall be found prejudicial to a constant and cheap supply from the capital and labor of our own people."—*U. S. Treasury Report*, December, 1856.

IMPORTS OF WOOLENS INTO THE UNITED STATES FOR THE YEARS ENDING JUNE 30, 1853, 1854, 1855.

Whence imported.	Cloths and Cassimeres.	Merino Shawls.	Blankets.	Honery.	Worsted Goods.	Yarn.	Woolen Embroideries.	Manufactures not specified.	Flannels.	Carpets.
1853.										
England	5,741,225	785,304	1,388,753	872,842	7,266,348	147,187	10,132	999,178	85,272	1,293,932
Hanse Towns	2,437,707	130,872	404	54,360	509,703	123,056	7,584	22,004	10,751	1,195
France	2,233,472	220,187	52,472	30,220	1,839,476	1,394	9,579	25,008	5,160	13,467
Other places	629,442	268,219	13,964	90,264	180,856	9,259	730	50,717	5,190	26,888
Total	11,071,906	1,402,582	1,455,659	1,047,686	9,796,387	230,896	23,025	1,036,907	106,381	1,335,432
1854.										
England	7,099,690	723,228	1,697,977	1,072,919	7,380,607	233,493	23,229	1,182,375	102,906	2,358,344
Bremen	3,526,327	94,419	2,046	93,382	540,592	47,857	1,621	64,937	9,213	528
France	1,771,432	325,132	82,528	36,450	2,211,944	2,896	2,507	57,297	19,733	15,657
Other places	762,134	333,293	8,039	70,106	242,826	75,055	7,899	83,455	11,227	7,334
Total	13,159,583	1,476,072	1,790,590	1,272,857	10,375,879	359,341	35,266	1,388,064	143,079	2,381,865
1855.										
England	4,547,075	963,161	1,444,693	791,982	5,916,361	98,190	....	212,915	111,078	1,567,140
Bremen	1,991,526	174,624	3,126	124,393	471,234	18,966	....	14,851	11,514	570
France	1,650,113	563,583	20,932	43,037	1,933,971	2,161	....	15,277	8,761	13,435
Other places	956,147	533,961	1,851	124,545	263,940	41,282	....	31,471	3,478	23,010
Total	9,144,861	2,240,104	1,470,642	1,083,957	8,590,506	160,599	....	274,514	134,811	1,604,155

EXPORTS OF WOOL AND MANUFACTURES OF WOOL OF FOREIGN PRODUCTION FROM THE UNITED STATES FOR THE YEAR
ENDING JUNE 30, 1857.

Whither exported.	Angora, Tibet, and other parts of Asia or Mohair.	Wool.	Piece Goods, including Wool and Cotton.	Shawls of Wool, and Cotton, Silk, and Silk and Cotton.	Blankets.	Hosiery and Articles made on Frames.	Piece Goods, including Cotton and Worsted.	Woolen and Worsted Yarn.	Manufactures of, not specified.	Flannels.	Carpeting.
Asiatic Russia	\$1,100	.....	\$701	.....	.....	.....	.....	.....	\$219
Russian Possess. in N. Am.	1,019	\$873	.....	.....	.....	.....	.....	.....	.....
Sweden and Norway	\$360	.....	.....	.....	.....	.....	.....	.....	.....	.....
Danish West Indies	687	.....	.....	.....	.....	.....	.....	.....
Hamburg	334	607	.....	.....	.....	.....	.....	.....	.....	.....
Bremen	800	.....	.....	.....	.....	.....	.....	.....	.....
England	226	791	9,975	.....	.....	.....	.....	.....	.....	.....
Scotland	1,237	.....	.....	.....	.....	.....	.....	.....	.....
Canada	\$283	.....	9,948	.....	722	\$43	\$3,096	.....	\$280,488	\$82	280
Other British N. Am. Poss.	8,979	3,401	.....	.....	2,589	.....	5,094	600	.....
British Honduras	405	.....	.....	.....	.....	.....	.....	.....
British Australia	4,092	.....	.....	.....	.....	.....	2,012	.....	.....
France on the Atlantic	1,728	85	.....	.....	1,968	.....	.....	.....	.....
French North Amer. Poss.	462	.....	.....	.....	.....	.....	.....	.....	.....
Cuba	22,075	700	493	.....	.....	.....	.....	.....
Porto Rico	488	.....	.....	.....	.....	.....	.....	.....
Turkey in Asia	1,735	.....	.....	.....	.....	.....	.....	.....
Ports in Africa	455	.....	.....	.....	.....	4,750	.....	.....
Hayti	1885	.....	.....	10,825	.....	.....	.....	.....
Mexico	4,662	10,538	2385	.....	701	.....	84	.....	.....
Central Republic	1,732	.....	.....	.....	.....	.....	.....	.....
New Granada	1,025	3,865	372	170	.....	.....	.....	.....	.....
Venezuela	1,927	.....	.....	.....	.....	.....	.....	.....
Chili	792	.....	.....	.....	.....	.....	.....	.....
Peru	420	472	.....	.....	.....	.....	.....	.....
Sandwich Islands	10,443	688	373	1478	1,873	.....	1,475	534	.....
China	277	.....	.....	.....	.....	\$649	.....	.....	.....
Total, 1856-'57	\$283	\$920	\$47,145	\$63,063	\$6698	\$2184	\$21,052	\$649	\$238,912	\$1306	\$490
From warehouse	\$226	\$36,037	\$35,109	\$3700	\$536	\$17,607	.....	\$184,598	\$1224	\$279
Not from warehouse	\$283	694	11,108	27,954	2988	1648	3,355	\$649	109,314	82	280

IMPORTS OF WOOL AND MANUFACTURES OF WOOL INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	Angora, Tibet, and other parts of Asia or Mohair.	Wool.	Piece Goods, including Wool and Cotton.	Shawls of Wool, and Cotton, Silk, and Silk and Cotton.	Blankets.	Hosiery and Articles made on Frames.	Piece Goods, including Cotton and Worsted.	Woolen and Worsted Yarn.	Manufactures of, not specified.	Flannels.	Carpeting.
Russia on the Baltic and North Seas..	1,612
Russia on Black Sea	43,626	.....	.....	.....	.....	.....	.....	.....	.....	.....
Danish West Indies	3,308	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hamburg	151	975,271	63,834	160	37,775	235,505	85,527	9,393	5,843	223
Bremen	39	526	1,089,381	154,503	286	199,169	790,826	36,211	27,522	9,807	500
Holland	11,219	2,086	.....	3,993	1,774	228	415	.....	225
Dutch West Indies	1,960	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dutch Guiana	2-8	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belgium	909,331	12,929	.....	45,651	18,445	838	8,194	32	1,104
England	498	104,736	5,771,932	732,449	1,592,383	1,372,722	7,156,118	68,177	694,116	66,898	2,135,691
Scotland	42,439	332,085	542	11,414	133,602	.....	5,073	317	19,830
Ireland	588	.....	.....	.....	.....	.....
Gibraltar	8,670	.....	.....	.....	.....	.....	.....	.....	.....	667
Malta	62,513	.....	.....	.....	.....	.....	.....	.....	.....	.....
Canada	5	1,402	163	217	22	845	3	2,181	72	195
Other Brit. N. A. Pos.	42	.....	.....	1,790	238	14	71	.....	.....
British West Indies	643	.....	.....	.....	36	.....	.....	.....	.....	108
British Honduras	762	.....	.....	.....	.....	.....	.....	.....
British Guiana	6,512	.....	.....	.....	.....	.....	.....	.....	.....	.....
British Pos. in Africa	183,426	.....	.....	.....	.....	.....	.....	17	.....	.....
Other ports in Africa	34	.....	.....	.....	.....	.....	.....	.....
British Australia	450	41	.....	.....	.....	.....	.....	.....	.....	.....
British East Indies	8,665	.....	18,896	.....	.....	.....	.....	182	.....	88
France on the Atl'ic	38	364	1,659,479	833,973	31,458	66,772	3,022,923	956	72,811	22,760	20,496
France on the Med'n	165,816	.....	.....	5,868	.....	.....	.....	.....	.....	.....
Spain on the Med'n	1,040	81	.....	.....	.....	.....	.....	.....	.....	.....
Philippine Islands	398	.....	.....	.....	.....	.....	.....	.....
Cuba	2,452	.....	.....	.....	.....	.....	.....	.....
Azores	312	.....	.....	.....	.....	240	.....	.....	.....	.....
Tuscany	30,477	313	2	.....	.....	.....	.....	.....	.....	22
Austria	560	.....	107	.....	883	.....	.....	.....	.....	.....
Turkey in Europe	5,135	.....	.....	.....	.....	.....	.....	.....	.....	.....
Turkey in Asia	395,332	.....	220	.....	.....	.....	.....	.....	.....	451
Mexico	3,054	.....	.....	.....	.....	.....	.....	.....	.....	.....
Central Republic	899	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Granada	312	48,380	5,111	51	8	5,738	90	.....	.....	.....
Venezuela	118	.....	.....	.....	.....	.....	.....	.....	.....	.....
Brazil	14,455	.....	.....	.....	.....	.....	.....	.....	.....	.....
Uruguay	10,102	.....	.....	.....	.....	.....	.....	.....	.....	.....
Argentine Republic	694,736	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chili	364,610	875	.....	.....	.....	.....	.....	.....	.....	.....
Sandwich Islands	1,061	408	.....	.....	.....	.....	123	.....	.....	.....
China	12,080	5	83,294	.....	.....	15	.....	.....	.....	79
Total, 1856-'57	575	2,125,744	11,009,605	2,245,351	1,430,973	1,740,829	11,365,669	192,147	813,472	105,779	2,181,206

NUMBER OF ESTABLISHMENTS, CAPITAL EMPLOYED, RAW MATERIAL USED, HANDS EMPLOYED, AND AVERAGE WAGES PER MONTH, IN THE MANUFACTURE OF WOOL IN THE UNITED STATES, 1850.

States.	Number of Establishments in operation.	Capital invested.	Pounds of Wool used.	Tons of Coal.	Value of all raw material.	Number of Hands employed.		Average Wages per Month.		Value of entire Products.
						Males.	Females.	Males.	Females.	
Maine	36	\$467,600	1,438,434	...	\$445,449	310	914	\$22.57	\$11.77	\$153,300
New Hampshire	61	2,437,700	3,604,103	3,600	1,267,320	926	1,201	\$22.86	14.65	2,127,745
Vermont	72	886,300	2,328,100	...	830,684	683	710	24.46	11.81	1,579,745
Massachusetts	119	9,089,342	22,229,952	15,400	5,671,871	6,167	4,963	22.75	14.22	12,779,566
Rhode Island	45	1,013,000	4,103,370	2,032	1,463,900	987	771	20.70	15.15	2,381,825
Connecticut	149	3,773,350	9,414,100	7,912	3,325,799	2,607	2,681	24.12	12.85	6,456,216
New York	249	4,359,370	12,638,756	...	3,885,292	4,262	2,412	19.97	11.76	7,630,604
New Jersey	41	494,274	1,510,289	1,889	548,367	311	497	25.92	8.60	1,164,446
Pennsylvania	380	8,005,064	7,560,379	10,777	3,282,719	3,490	2,236	19.23	10.41	6,321,896
Delaware	38	148,500	393,000	45	204,172	122	18	18.79	17.33	251,010
Maryland	35	244,000	430,300	100	165,568	262	100	19.60	11.89	295,140
Virginia	121	332,640	1,554,110	357	498,899	478	190	19.17	9.91	\$41,013
North Carolina	1	13,000	30,000	...	13,950	15	15	18.00	7.00	23,750
Georgia	11	68,000	153,816	...	30,892	40	88	27.47	14.19	68,750
Texas	1	8,000	30,000	...	10,000	4	4	20.00	20.00	18,000
Tennessee	4	10,900	6,200	...	1,675	15	2	17.66	6.00	6,310
Kentucky	25	249,820	673,900	...	205,287	256	62	15.30	11.11	318,819
Ohio	130	870,220	1,657,726	2,110	573,423	903	268	20.14	10.90	1,111,027
Michigan	15	94,000	192,250	...	43,402	73	51	21.65	11.47	90,242
Indiana	33	171,540	413,350	90	120,486	189	57	21.81	11.05	205,872
Illinois	16	154,500	316,964	987	115,367	124	54	22.00	12.52	206,572
Missouri	1	20,000	80,000	1,071	16,000	15	10	32.00	6.50	56,000
Iowa	1	10,000	14,500	...	3,500	7	...	11.14	...	13,000
Wisconsin	9	31,225	134,200	...	32,630	25	...	22.43	...	87,992
District of Columbia	1	700	5,000	...	1,630	2	...	30.00	...	2,400
Total, 1850	1559	\$28,118,650	70,862,820	46,370	\$25,755,988	22,673	16,574	...	...	\$43,201,555

None in South Carolina, Florida, Alabama, Mississippi, Louisiana, Arkansas, or California.

EXPORTS OF WOOL OF DOMESTIC PRODUCTION FROM THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whither exported.	Pounds.	Value.
England	1,002	\$3,517
Canada	42,800	12,490
Other British N. A. Possessions	6,400	3,000
Total	50,202	\$19,007

Wreck, in Navigation, is usually understood to mean any ship or goods driven ashore, or found floating at sea in a deserted or unmanageable condition. But in the legal sense of the word in England, *wreck* must have come to land; when at sea, it is distinguished by the barbarous appellations of *flotsam*, *jetsam*, and *lagan*. In nothing, perhaps, has the beneficial influence of the advance of society in civilization been more apparent than in the regulations with respect to the persons and property of shipwrecked individuals. In most rude and uncivilized countries their treatment has been cruel in the extreme. Among the early Greeks and Romans strangers and enemies were regarded in the same point of view.—*Hostis apud antiquos, peregrinus dicebatur.*—*Pomp. Festus*; see also *CICERO de Offic.* Where such inhospitable sentiments prevailed, the conduct observed toward those that were shipwrecked could not be otherwise than barbarous; and in fact they were, in most instances, either put to death or sold as slaves. But as law and good order grew up, and commerce and navigation were extended, those who escaped from the perils of the sea were treated in a way less repugnant to the dictates of humanity; and at length the Roman law made it a capital offense to destroy persons shipwrecked, or to prevent their saving the ship; and the stealing even of a plank from a vessel shipwrecked or in distress made the party liable to answer for the whole ship and cargo.—*Pand.* 47, 9, 3.

During the gloomy period which followed the subversion of the Roman empire, and the establishment of the Northern nations in the southern parts of Europe, the ancient barbarous practices with respect to shipwreck were every where renewed. Those who survived were in most countries reduced to servitude, and their goods were every where confiscated for the use of the lord on whose manor they had been thrown.—*ROBERTSON'S Charles V.* But nothing, perhaps, can so strongly evince the prevalence and nature of the enormities as the efforts that were made, as soon as governments began to acquire authority, for their suppression. The regulations as to shipwreck in the Laws of Oleron are, in this respect, most remarkable. The 35th and 38th

articles state, that "pilots, in order to ingratiate themselves with their lords, did, like faithless and treacherous villains, sometimes willingly run the ship upon the rocks," etc.; for which offense they are held to be accused and excommunicated, and punished as thieves and robbers. The fate of the lord is still more severe. "He is to be apprehended, his goods confiscated and sold, and himself fastened to a post or stake in the midst of his own mansion-house, which being fired at the four corners, all shall be burned together; the walls thereof be demolished; the stones pulled down; and the site converted into a market-place, for the sale only of hogs and swine, to all posterity." The 31st article recites, that when a vessel was lost by running on shore, and the mariners had landed, they often, instead of meeting with help, "were attacked by people more barbarous, cruel, and inhuman, than mad dogs; who, to gain their moneys, apparel, and other goods, did sometimes murder and destroy these poor distressed seamen. In this case, the lord of the country is to execute justice, by punishing them in their persons and their estates; and is commanded to plunge them in the sea till they be half dead, and then to have them drawn forth out of the sea and stoned to death." Such were the dreadful severities by which it was attempted to put a stop to the crimes against which they were directed. The violence of the remedy shows better than any thing else how inveterate the disease had become.

But the fact that divines did not scruple to prostitute religious worship by praying that the adjacent coasts might be enriched with shipwrecks, affords, perhaps, the most striking proof of the barbarism of the times referred to. And incredible as it may seem, this practice was continued down to a comparatively recent epoch. "Cependant il y a encore en Allemagne des pays où la coutume de confisquer les biens naufragés n'est point encore abolie. Il y a même des endroits où les ministres prédicateurs ne font pas difficulté de prier Dieu en chaire qu'il se fasse bien des naufrages sur leurs côtes. Et ces prières, Thomasius a entrepris sérieusement de les justifier; mais par des raisons si singulières, qu'elles ne valaient pas la peine que Barbeyrac a prisé de les réfuter."—*VALIN, Commentaire sur l'Ordonnance de 1681*, ii. 586. See also *PUFFENDORFF, Droit de la Nature et des Gens*, par Barbeyrac, ii. 706.

The law of England, like that of other modern countries, adjudged wrecks to belong to the king. But the rigor and injustice of this law was modified so early as

the reign of Henry I., when it was ruled, that if any person escaped alive out of the ship, it should be no wreck. And after various modifications, it was decided, in the reign of Henry III., that if goods were cast on shore, having any marks by which they could be identified, they were to revert to the owners, if claimed any time within a year and a day. By the statute 27 Edw. III., c. 13, if a ship be lost and the goods come to land, they are to be delivered to the merchants, paying only a reasonable reward or SALVAGE (which see) to those who saved or preserved them. But these ancient statutes, owing to the confusion and disorder of the times, were very ill enforced; and the disgraceful practices previously alluded to continued to the middle of last century. A statute of Anne (12 Ann. st. 2, c. 18), confirmed by the 4 Geo. I., c. 12, in order to put a stop to the atrocities in question, orders all head officers and others of the towns near the sea, upon application made to them, to summon as many hands as are necessary, and send them to the relief of any ship in distress, on forfeiture of £100; and in case of any assistance given, salvage is to be assessed by three justices, and paid by the owners. Persons secreting any goods cast ashore are to forfeit treble their value; and if they willfully do any act by which the ship is lost or destroyed, they are guilty of felony without benefit of clergy. But even this statute seems not to have been sufficient to accomplish the end in view; and in 1753, a new statute (26 Geo. II., c. 19) was enacted, the preamble of which is as follows: "Whereas, notwithstanding the good and salutary laws now in being against plundering and destroying vessels in distress, and against taking away shipwrecked, lost, or stranded goods, many wicked enormities have been committed, to the disgrace of the nation, and the grievous damage of merchants and mariners of our own and other countries, be it," etc.; and it is then enacted, that the preventing of the escape of any person endeavoring to save his life, or wounding him with intent to destroy him, or putting out false lights in order to bring any vessel into danger, shall be capital felony. By the same statute, the pilfering of any goods cast ashore is made petty larceny.

We regret, however, to have to state that the plunder of shipwrecked property is still by no means uncommon on the British coasts. The committee on shipwrecks in 1843 state, that "there is on many parts of the coast a want of that moral principle which should inculcate a just regard for the rights of such property. It is looked upon as a chance gift, which every one has a right to scramble for as he can, notwithstanding the laws which have been passed, from the earliest period, to prevent or punish such depredations. The plunder of shipwrecked property on the coasts has been carried on to an enormous extent, and this seems to have arisen from there having been no persons on the spot, when a wreck had taken place, to look after the property." The committee state that the establishment of the coast-guard has done much to repress these abuses. The latter, however, can not legally interfere, except when the castaway articles are subject to customs duties; and the committee suggest that all abandoned property should be vested in the government in trust for those to whom it may belong, as is done in France and Holland.—*Report of Committee of 1843*, p. viii.

The old English doctrine of wrecks was founded upon the ancient laws of Europe, confiscating stolen goods on conviction of the thief, without paying any regard to the right of the real owner.

"By the common law, as it was laid down by Sir William Blackstone, goods wrecked were adjudged to belong to the king, and the property was lost to the owner. This he admits was not consonant to reason and humanity; and the rigor of the common law was softened by the statute of West. 1, 3 Edw. I., ch. 4, which declared that if any thing alive escaped the shipwreck, be it man or animal, it was not a legal wreck, and the

owner was entitled to reclaim his property within a year and a day. Upon this statute the legal doctrine of wrecks has stood to this day. St. Germain, the author of the *Doctor and Student*, did not seem to think that even the law under this statute stood with conscience, for why should the owner forfeit the shipwrecked goods, though it should happen that no man, dog, or cat (to use the words of the statute), should come alive unto the land out of the ship? The only rational ground of the claim on the part of the crown is, that the true owner can not be ascertained. The imperial edict of the Emperor Constantine was more just than the English statute, for it gave the wrecked goods in every event to the owner; "and this statute is upon just principles, not depending upon the casual escape of an animal." "The statutes of New York, Massachusetts, and other American States, are like the edict of Constantine," "for they declare that nothing that shall be cast by the sea upon the land shall be adjudged a wreck, but the goods shall be kept safely for the space of a year for the true owner, to whom the same is to be delivered on his paying a reasonable salvage; and if the goods be not reclaimed within that time, they shall be sold, and the proceeds accounted for the State."—*KENT'S Comm.*, Lect. XXXIV.

The journal of the *Société des Arts*, gives in a late number an analysis of the statistics of the wrecks which occurred upon the coasts and in the seas of the British Isles in the year 1856, as follows:

Years.	Wrecks.	Collisions.	Together.	Lives lost.
1852.....	458	57	1015	820
1853.....	759	73	832	989
1854.....	893	94	987	1549
1855.....	894	247	1141	469
1856.....	837	316	1153	521
Total.....	4841	787	5128	4848

This shows that the number of collisions at sea has regularly increased in a proportion truly frightful; from 57 in 1852, it became 316 in 1856, or five times greater.

For the year 1856, the number of wrecks and collisions is distributed monthly as follows: January, 149; February, 154; March, 96; April, 74; May, 57; June, 32; July, 48; August, 51; September, 98; October, 99; November, 129; December, 166; total, 1153. The tonnage of these vessels amounted to 229,936; the number of men employed to 16,014, of whom 521 perished.

Of the wrecked vessels, 314, or nearly one-third the entire number, were employed solely in the carriage of coals. The coal trade is, then, for England the most dangerous of all that which causes the greatest loss of life, no doubt because the vessels employed for this trade are badly selected, badly commanded, in a very bad condition, and indeed often quite unseaworthy.

Of these wrecks 506 occurred on the east coast, between Dungeness and Pentland Frith; 307 on the west, from Land's End to Greenock; 119 on the south, from Land's End to Dungeness; 155 on the coasts of Ireland; 12 upon the Isle of Scilly; 11 upon the Isle of Lundy; 5 upon the Isle of Man; and 36 upon the Isles of the North, Orkney, etc.

Of the causes which led to these losses there were 148 wrecks from storms; 17 abandoned on account of unseaworthiness; 37 sunk on same account; 10 losses from absence of proper signals; 33 from fogs and currents; 5 from defective compass; 3 from imperfect charts; 6 by error in calculation of the point; 12 by error of estimation; 7 by error of pilot; 3 through absence of pilot; 21 by neglect of soundings; 2 on account of drunkenness; 9 on account of general negligence; 10 by neglecting to heave to; 1 by coming in contact with a foundered vessel; 4 by fire; 4 by capsizing; 7 by causes unknown.

The Duties of Consular Officers.—By the third section of the act of Congress of April 14, 1792, consular officers, in cases where ships or vessels of the United States shall be stranded on the coast of their respective con-

sulates, are required, as far as the laws of the country permit, to take proper measures, as well for saving such ships or vessels, their cargoes, and appurtenances, as for storing and securing the effects and merchandise saved, and for taking an inventory or inventories thereof; and the merchandise and effects saved, with the inventory or inventories, must, after deducting therefrom the expense, be delivered to the owner or owners. But no consular officer is permitted to take possession of any such goods, wares, merchandise, or other property, when the master, owner, or consignee thereof is present, or capable of taking possession of the same. In the execution of the duties prescribed by this part of the act, every consular officer is instructed that all vessels, parts of vessels, and any portion of their cargo, belonging to citizens of the United States, saved, and brought into the consular jurisdiction after being wrecked, or in consequence of any disaster at sea, are to be proceeded with in the same manner as if the vessel had stranded within the consular jurisdiction; and if salvage be claimed and allowed by a competent tribunal, the remainder of the effects, or the proceeds thereof, if sold, shall be disposed of in the same manner as is directed in the twenty-first chapter of these instructions respecting the estates of persons dying intestate; provided, in the case of salvage, that the court deciding the same will permit the consular officer to receive the effects and remainder of the property after the salvage is paid. In some countries (as in Sweden) chartered companies have the privilege of taking possession of all property wrecked; in others it may be vested in particular magistrates or officers. In such cases the consular officer is not to interfere with the legal function of the proper officer, but he may ask leave, as the representative of the absent master or owner, or as his official adviser if he be present, to assist at the taking of the inventory, the sale, and all other proceedings in relation to the property. It is his duty to protect the interest of the owner, and, if his reasonable requests are not complied with, to take the necessary evidence of the facts in the case, and transmit it to the Department of State.

When any American vessel is wrecked within his jurisdiction, the consular officer is to give immediate notice to the Department of State, naming the vessel and her owners or master, and giving in detail as many of the circumstances attending the loss of the property as may be known at the time. When there is no impediment from the laws of the country, all proceedings in relation to property wrecked are to be the same as those prescribed in the case of property of intestates, and so also with regard to the taking possession and disposing of whatever effects, whether wrecked, abandoned, or otherwise, unrepresented within a consulate, belonging to any citizen of the United States. He will promptly render such assistance as may be in his power to his shipwrecked countrymen, and institute, whenever it is practicable, energetic proceedings for the protection of their property; but this instruction gives no authority to incur any expense therefor in the expectation of its being defrayed by the Department of State, the appropriation for the relief and protection of American seamen in foreign countries which is made by Congress not being applicable to such purposes. Whenever it is necessary for the safety of the property, the consular officer will apply to the local authorities for assistance.

Wreck of an American Vessel.—No parts of an American vessel, nor any of her equipments, wrecked either in our own or foreign waters, are to be regarded in legal contemplation as "goods, wares, or merchandise," when returned to the person or persons owning the vessel at the time of the wreck, and on proper proof of identification. If, however, they have been subjects of purchase and sale, they become "merchandise," within the meaning of the law, and, as such, become liable to duty on importation, according to their classification

under the tariff, and value determined by appraisement.

The parts or equipments of a foreign vessel wrecked in waters not of the United States, and brought into our ports, must be regarded, on importation into the United States, as merchandise, and liable to duty.

In the case of an American vessel bound on a coasting voyage from Buffalo to Detroit, and forced by stress of weather on the Canadian shore, where she was wrecked, it was decided by the Department that the merchandise recovered from the wreck was entitled to free entry, on being returned to the United States, on satisfactory proof that the articles of foreign origin composing her cargo had once paid duty in the United States, and that she was bound in good faith on a coasting voyage, with no intention of touching at a foreign port of destination.

The tackle, apparel, furniture, and ship stores of a foreign vessel wrecked on the coast of the United States, on being recovered and brought into the ports of the United States, to be admitted to free entry, not being considered as goods, wares, or merchandise subject to duty, within the meaning of the law.

Number of Shipwrecks.—The loss of property by shipwreck is very great. It appears from an examination of *Lloyd's List* from 1793 to 1829, that the losses in the British mercantile navy only amounted, at an average of that period, to about 557 vessels a year, of the aggregate burden of about 66,000 tons, or to above 1-40th part of its entire amount in ships and tonnage. The following account of the casualties of British shipping in 1829 is taken from *Lloyd's List*:

On foreign Voyages.—157 wrecked; 284 driven on shore, of which 224 are known to have been got off, and probably more; 21 foundered or sunk; 1 run down; 35 abandoned at sea, 8 of them afterward carried into port; 12 condemned as unseaworthy; 6 upset, 1 of them righted; 27 missing, one of them a packet, no doubt foundered. *Coasters and Colliers.*—109 wrecked; 297 driven on shore, of which 121 known to have been got off, and probably more; 67 foundered or sunk, 4 of them raised; 6 run down; 13 abandoned, 5 of them afterward carried in; 3 upset, 2 of them righted; 16 missing, no doubt foundered. During the year, 4 steam vessels were wrecked; 4 driven on shore, but got off; and 2 sunk. It seemed, from the returns given in the Report of the Commons' Committee of 1843 on Shipwrecks, that these casualties were becoming less frequent. At all events, it appeared that at an average of the three years ending with 1835, 610 ships were annually lost, and that notwithstanding the increase of shipping in the interval, at an average of 1841 and 1842, the annual loss amounted to only 611 ships; the average burden of the lost ships being in both cases, as near as can be ascertained, 210 tons. Hence, if we estimate the value of the ships and cargoes at £20 a ton, the loss of property in 1841 and 1842, from shipwreck only, will have been £2,566,200 a year! The loss of life is not exactly known, but it may be taken at from 1000 to 1500 individuals a year. The increased employment of steamships, the multiplication of lights, and the improvement of harbors, all tend to diminish the number of casualties; and yet they continue to be extremely numerous. In 1852, for example, when the mercantile navy of the United Kingdom (except the colonies) comprised 26,146 ships, there were 1115 wrecks. Of these 533 were total losses, and 582 were partial but heavy losses, the ships being obliged to discharge; 83 of the former, and 24 of the latter, were occasioned by collisions. The loss of lives was estimated at 920. These heavy losses might be diminished by building better and stronger ships. No doubt, however, the carelessness, ignorance, and incapacity of the masters is the great source of loss; and nothing, certainly, will do so much to obviate this as the plan now adopted of making the obtaining of a certificate of fitness, after undergoing an examination by a public board,

indispensable to enable any individual to be appointed to the command of a ship. During the war with France, 32 ships of the line went to the bottom, besides 7 fifty-gun ships, 86 frigates, and a vast number of smaller vessels. And the losses sustained by the navies of France, Spain, Holland, Denmark, etc., must have very greatly exceeded those of ours. Hence, as Mr. Lyell has observed, it is probable that a greater number of monuments of the skill and industry of man will, in the course of ages, be collected together in the bed of the ocean, than will be seen at one time on the surface of the continent.—*Principles of Geology*.

Writing. Pictures were undoubtedly the first essay toward writing. The most ancient remains of writing which have been transmitted to us are upon hard substances, such as stones and metals, used by the ancients for edicts, and matters of public notoriety. Athotes, or Hermes, is said to have written a history

of the Egyptians, and to have been the author of hieroglyphics, 2112 B.C.—**USHER.** Writing is said to have been taught to the Latins by Europa, daughter of Agenor, King of Phœnicia, 1494 B.C.—**THUCYDIDES.** Cadmus, the founder of Cadmea, 1493 B.C., brought the Phœnician letters into Greece.—**VOSSIUS.** The commandments were written on two tables of stone, 1491 B.C.—**USHER.** The Greeks and Romans used waxed table-books, and continued the use of them long after papyrus was known.—*See PAPHYRUS, PARCHMENT, PAPER.* "I would check the petty vanity of those who slight good penmanship, as below the notice of a scholar, by reminding them that Mr. Fox was distinguished by the clearness and firmness, Mr. Professor Porson by the correctness and elegance, and Sir William Jones by the ease and beauty, of the characters they respectively employed."—**DR. PARR.**

Y.

Yacht, formerly a vessel of state, usually employed to convey princes, ambassadors, and other great personages from one kingdom to another. As the principal design of a yacht is to accommodate the passengers, it is usually fitted with a variety of convenient apartments, with suitable furniture. Private pleasure-boats, when sufficiently large for a sea-voyage, are also termed *yachts*. A more modern use of the term is to designate the model boats built for speed and for racing.

Yachts of the present day include both steam and sailing vessels. The yacht *America*, built by Mr. Steers, of New York, and afterward the winner of the prize at the yacht race, 22d August, 1851, at Cowes, in England, gave American ship-wrights a wider reputation than before. Vessels belonging to the British, American, French, and Russian yacht clubs are released from quarantine upon the same conditions as ships of war in British ports.

By acts of Congress, the Secretary of the Treasury is authorized to cause yachts, used and employed exclusively as pleasure vessels, and designed as models of naval architecture, and entitled to be enrolled as American vessels, to be licensed on terms which will authorize them to proceed from port to port of the United States without entering or clearing at the custom-house. Such license shall be in such form as the Secretary of the Treasury may prescribe: Provided, such vessels so enrolled and licensed shall not be allowed to transport merchandise or carry passengers for pay: And provided, further, that the owner of any such vessel, before taking out such license, shall give a bond, in such form and for such amount as the Secretary of the Treasury shall prescribe, conditional that the said vessel shall not engage in any unlawful trade, nor in any way violate the revenue laws of the United States, and shall comply with the laws in all other respects.

All such vessels shall, in all respects except as above, be subject to the laws of the United States, and shall be liable to seizure and forfeiture for any violation of the provisions of this act.

All such licensed yachts shall use a signal, of the form, size, and colors prescribed by the Secretary of the Navy; and the owners thereof shall at all times permit the naval architects in the employ of the United States to examine and copy the models of said yachts.

Yanan, or Yanaon, a French settlement within the limits of the British presidency of Madras, situate near the bifurcation of the Godavery (a river rising in the Deccan), and the river or harbor of Coringa, and about nine miles above the embouchure of the former. The mouth of the Godavery is obstructed by sand-

banks, which preclude the entrance of ships; but the Coringa River has a deep channel, which admits of vessels of 200 tons burden proceeding as high as Yanan. The French territory dependent on the factory stretches along the banks of the two rivers a distance of six miles, and contains an area of 8147 acres, which in 1836 were classified as follows:

Land under cultivation.....	acres 4310
Woods and forests	" 862
Barren land	" 215
Public estates.....	" 2760

The population in 1840 was 6880. Lat. 16° 44', and long. 82° 16'.

Yard, a long measure used in England, of 3 feet, or 36 inches.—*See WEIGHTS and MEASURES.*

Yarn (Ger. *Garn*; Du. *Garen*; Fr. *Fil*; It. *Filato*; Sp. *Hilo*; Port. *Fio*; Russ. *Prasha*), wool, cotton, flax, etc., spun into thread.—*See articles COTTON, LINEN, WOOL, etc.*

Year, Lunar. This is the space of time which comprehends twelve lunar months, or 454 days, 8 hours, 48 minutes, and was in use among the Chaldeans, Persians, and ancient Jews. Once in every three years was added another lunar month, so as to make the solar and lunar year nearly agree. But though the months were lunar, the year was solar; that is, the first month was of thirty days, and the second of twenty-nine, and so alternately; and the month added triennially was called the second Adar. The Jews afterward followed the Roman manner of computation.—**HAYDN.** *See ALMANAC, CALENDAR.*

Yucatan, a peninsular state of Mexico, Central America, mostly between lat. 17° 30' and 21° 30' N., and long. 87° and 91° W., having north and west the Gulf of Mexico, east the Caribbean Sea, and landward British Honduras, Guatemala, Chiapas, and Tabasco. Area, 7364 square leagues, or 52,947 square miles. Population in 1850, 680,948. Surface mostly level, fertile in the south, but deficient in regular supplies of water, though so inundated in summer as greatly to impede agriculture, in which, as well as manufactures, it appears to be behind the more northern portions of Mexico. Cattle are numerous. Other chief sources of wealth are maize, cotton, rice, tobacco, pepper, sugarcane, dye-woods, hides, and soap, mostly exported from Campeachy and Sisal. It is divided into five dependencies and eighteen districts. Principal cities and towns, Merida, the capital, Valladolid, Isamal, Campeachy, and Tekao. It also comprises the remarkable ruins of Uxmal, Chi-chen, Kabah, and Zayi. The *Bay of Yucatan* is a name sometimes given to the sea immediately north of the Bay of Honduras. The *Channel of Yucatan*, between that country and Cuba, is 120 miles across.

Z.

Zaffer, or Zafre. After the sulphur, arsenic, and other volatile parts of cobalt have been expelled by calcination, the residuum is sold, mixed or unmixed with fine sand, under the above name. When the residuum is melted with silicious earth and potash, it forms a kind of blue glass, known by the name of smaltz (see SMALTZ), of great importance in the arts. When smaltz is ground very fine, it receives in commerce the name of *powder blue*. Zaffer, like smaltz, is employed in the manufacture of earthen-ware and China, for painting the surface of the pieces a blue color. It suffers no change from the most violent fire. It is also employed to tinge the crystal glasses, made in imitation of opaque and transparent precious stones, of a blue color. It is almost wholly brought from Germany.—See article DYES.

Zante, one of the Ionian islands, Mediterranean, eight miles south of Cephalonia. Lat. of north point, $37^{\circ} 56' 5''$ N., long. $20^{\circ} 41' 5''$ E. Length $2\frac{3}{4}$ miles, breadth 6 to 11 miles. Population in 1844, 38,929. Surface mountainous in the west, flat and well cultivated in the east. Climate mild, and the island still deserves to be called the flower of the Levant, but is subject to destructive earthquakes. It has numerous olive gardens and vineyards, and produces pomegranates, melons, peaches, and citrons; but its principal export is currants. A small quantity of wine is made, half of which is exported. Olive-oil is inferior in quality. Bitumen is procured from pits in the south, and salt is manufactured chiefly for home use. Zante, the capital and only town on the east coast, is the largest in the republic. Population, 20,000. It is well built, and its square has a monument to Sir T. Maitland; its port is protected by a wall, and has a light-house. It is the see of a Greek protopapas and a Roman Catholic bishop. It was nearly destroyed by an earthquake on 30th October, 1841. Of the recent changes in the commercial policy of the Ionian Islands, the following letter from the United States Consul at Zante, under date of October 4, 1855, gives the details:

"*Currants.*—The blight which has ruined the crops of three successive years has also damaged that of this year to such an extent that Zante has produced only 600,000 pounds, and Cephalonia 6,000,000 pounds of fruit, which has been already sold and shipped for England at the enormous price of \$100, \$120, and \$122 per thousand pounds. It is hoped that next year, by applying pulverized sulphur on the fruit before it gets attacked by the blight, the plants will yield an abundant crop. The experiment made this year has proved satisfactory. Cargoes of sulphur daily arrive from Sicily and Lombardy for this purpose.

"*Wine.*—The grape vine is affected to the same extent as the currant. The production of this year is not sufficient for local consumption.

"*Olive-oil.*—The crop of the year 1855 is very abundant. It is calculated thus: Zante, 60,000 barrels; Cephalonia, 6000 barrels; Sta. Maura, 30,000 barrels; Paxo and Ithaca, 30,000 barrels; Corfu, 150,000 barrels: total, 276,000 Ionian barrels for exportation. It is hoped that this enormous production will give vigor to trade and navigation, which has been for so many years in perfect stagnation. Besides the usual affairs for Austria, England, and France, a large quantity of this fluid will probably be exported to the ports of Russia at the Black Sea by Ionian vessels."

The principle upon which duties are levied upon goods imported in the Ionian Islands, is the flag under which these are transported. If by vessels of nations under treaty with these states, duty is from 10 to 14 per cent. less, according to articles, than on those forwarded by vessels of nations which are not under treaty. In this last condition the American flag stands, and this is the principal impediment to a more regular intercourse of business between the Ionian Islands and the United States. To stop this, there is but one way, namely, to put the American flag on an equal footing with the Ionian. To insure this, Ionian vessels must enjoy the same privileges in the United States that American vessels enjoy in the Ionian Isl-

ands. The negotiation must take place in London, through the American ambassador and the English government; because, according to the Ionian constitution, all diplomatic questions and agreements between these and foreign states must be attended to by the government of the protecting sovereign. This done, every other difficulty in introducing and encouraging American trade in this market can be easily obviated. The articles enumerated in the following table always find a ready market here. The islands provide also the eastern coasts of the kingdom of Greece and Albania with these articles by transit. All these articles, corn, etc., excepted, are imported here from second-hand markets. As regards freight, one example will suffice to prove whether it is worthy the attention of American navigation or not. A vessel of 200 tons chartered for the Black Sea, going in ballast, gets about \$3300, 5 per cent. primage, and a gratuity of about \$40 and even \$100, according to circumstances. Money can be returned to the United States for goods sold here by bills drawn through London at three months date. In order to obtain money on goods shipped for the United States, a credit must be opened in London to value with bills of lading. Legal interest on money, 10 per cent. per annum.

"*Olive-oil.*—All the islands produce this fluid, and export for Russia, England, and Trieste. Its price varies according to demand. The average price is from \$8 to \$10 per barrel. This is an extensive article of commerce, and one of the principal productions of the islands. It not only affords wealth to the natives of every class, and encourages commerce, but provides also the immense soap factories of the place with the principal material out of which soap is made for consumption and exportation.

"*Currants.*—All remedies, other than sulphur, adopted by proprietors to stop the blight have proved abortive. Sulphur only gave a happy result. Although this is a remedy upon which proprietors can now rely, still they have a great many difficulties to overcome before they see their hopes realized. The first of these is the fixing the epoch or time when the plants and fruit thereof are to be sulphured. This varies according to the quality of the soil, the temperature of the atmosphere, and the difference of climate of the various localities that produce currants. Besides these primitive difficulties, we perceive another, which we consider by far greater. The most part of the proprietors are so badly off, on account of the failure of the crop for four consecutive years, that it is absolutely out of their power to provide sulphur and encounter the expenses required for such an operation. Still, in spite of all these difficulties, it is generally hoped that the crop of this year will be comparatively abundant.

Zanzibar, or Zanguebar, an island off the east coast of Africa, lat. of town $6^{\circ} 27' 7''$ S., long. $39^{\circ} 33'$ E. Length of island about 40 miles, breadth 15 miles. Population upward of 200,000, consisting of Arabs, Sowily Africans, and Negro slaves. Population of the town of Zanzibar about 80,000. The island is the metropolis of the Imaum of Muscat's possessions on the east coast of Africa. The town called Shanganny is situated on a low point of sand, has a wooden fort, and is irregularly built. The situation is very unhealthy for Europeans. A considerable trade is carried on with Arabia, and the ports in the Red Sea. Between the west shore of the island and main land are dangerous shoals, and several islets, the largest of which is Tumbal. Ship-building, stone masonry, carpenters, goldsmiths, silversmiths, coppersmiths, and blacksmiths' work is carried on, besides manufactures of inferior cotton goods and trinkets. The exports are cloves, ivory, sharks' fins, sandal-wood, amber, shells, and cocoa-nuts.

The principal produce of the island is cloves—the annual produce being from 2,000,000 to 3,000,000 lbs., of which the sultan himself produces about 1,000,000 lbs. The value of American trade with Zanzibar may be estimated at about \$1,000,000 annually; it is carried on chiefly from Salem, Massachusetts. Outward cargoes consist almost exclusively of New England manufactured cotton goods, the consumption of which reaches an annual average of about 6000 bales. The return cargoes are composed of ivory, gum-copal, cloves, hides, and some minor articles. Voyages from the United States usually occupy a year—vessels always calling at the Persian Gulf and ports of the Red Sea. In 1851 there were ten or twelve American vessels, of about 250 tons each, regularly engaged in this trade. The relations existing between American houses (several of which have been for years established at Zanzibar) and the sultan and his officials are of the most friendly and liberal character. The stipulations of the treaty with the United States are faithfully observed, and every desirable commercial facility freely extended to American commerce.

Zea, Indian Corn, or Maize. See MAIZE.

Zedoary (Ger. *Züwer*; Fr. *Zédoaire*; It. *Zedoaria*; Sp. *Cedoaria*; Arab. *Judcar*; Hind. *Nirbisi*), the root of a plant which grows in Malabar, Ceylon, Cochin China, etc., of which there are three distinct species. It is brought home in pieces of various sizes, externally wrinkled, and of an ash color, but internally of a brownish red. Those roots which are heavy and free from worms are to be chosen, rejecting those which are decayed and broken. The odor of zedoary is fragrant, and somewhat like that of camphor; the taste biting, aromatic, and bitterish, with some degree of acrimony. It was formerly employed in medicine, but is scarcely ever used by modern practitioners.—MILBURN'S *Orient. Com.*

Zinc, or Spelter (Ger. *Zink*; Fr. *Zinc*; It. *Zinco*; Sp. *Zinco*, *Cinco*; Russ. *Schpikauter*; Lat. *Zincum*), a metal of a brilliant white color, with a shade of blue, composed of a number of thin plates adhering together. When this metal is rubbed for some time between the fingers, they acquire a peculiar taste, and emit a very perceptible smell. It is rather soft; tinging the fingers, when rubbed upon them, with a black color. The specific gravity of melted zinc varies from 6.861 to 7.1, the lightest being esteemed the purest. When hammered, it becomes as high as 7.1908. This metal forms, as it were, the limit between the brittle and the malleable metals. Its malleability is by no means to be compared with that of copper, lead, or tin; yet it is not brittle, like antimony or arsenic. When struck with a hammer, it does not break, but yields, and becomes somewhat flatter; and, by a cautious and equal pressure, it may be reduced to thin plates, which are supple and elastic, but can not be folded without breaking. When heated to about 400°, it becomes so brittle that it may be reduced to powder in a mortar. It possesses a certain degree of ductility, and may, with care, be drawn out into wire. Its tenacity is such, that a wire whose diameter is equal to $\frac{1}{10}$ th of an inch is capable of supporting a weight of about 26 lbs. Zinc has never been found in a state of purity. The word zinc occurs for the first time in the writings of Paracelsus, who died in 1541; but the method of extracting it from its ores was not known till the early part of last century.—THOMSON'S *Chemistry*. The compounds of zinc and copper are of great importance.—See BRASS.

The discovery of this metal, so far as the fact is known, is due to the moderns. It is said to have been long known in China, however, and is noticed by European writers as early as A.D. 1231; though the method of extracting it from the ore was unknown for nearly 500 years after. A mine of zinc was discovered in Yorkshire, England, in 1809. Zincography was introduced in London shortly after the invention of lithography became known in England, in 1817.—HAYDN.

IMPORTS OF ZINC INTO THE UNITED STATES FOR THE YEAR ENDING JUNE 30, 1857.

Whence imported.	In Pigs. Value.	Sheets. Value.	Nails. Value.
Denmark.....	.....	\$3,368	.....
Danish West Indies ..	\$50	.....	.....
Hamburg .....	.....	120,535	.....
Holland .....	.....	6,218	.....
Dutch West Indies...	283	.....	.....
Belgium.....	26,047	394,337	\$2376
England.....	.....	20,616	77
Scotland	3,079	.....	.....
British N. Am. Poss. .	.....	1,172	.....
British West Indies ..	.....	4	.....
France on the Atlantic	15,306	.....	.....
Total, 1856-'57...	\$44,764	\$546,250	\$2453

Zinc Paint.—The zinc paint, now brought before public notice, illustrates at once the ingenuity shown in devising means for remedying an evil, and the difficulty of applying the remedy in opposition to popular custom. White-lead is deleterious to health, and nothing has succeeded in rendering it otherwise. Hence attempts are being made to find a substitute; and zinc seems at present the best fitted for this office. The manufacture of the white oxyd of zinc is a beautiful example of chemical action. Metallic zinc is heated in a furnace to which a current of air is admitted; the zinc vaporizes; the vapor passes into a series of chambers; and here it collects on the walls as a light downy flocculent oxyd, which is scraped off and removed. When ground up with linseed oil, the oxyd forms a white paint, which may be the ground or substance for other colors used in house-painting. Then comes the rivalry between the two "whites"—the oxyd of zinc and the carbonate of lead. The chemical virtues of the former are insisted upon; but the advocates for the latter have not failed to point out the qualities in which it is unquestionably the better of the two—especially in drying more quickly than the zinc white, and having more "body" or substance. One among many proposed modes of applying the zinc white is in floor-cloth painting. In this manufacture oil paint is laid on thickly, first with a brush and afterward through the medium of carved blocks. The quantity of paint consumed is so large, that the white-lead contained in it becomes a sad enemy to the men employed in the processes; and hence a recent attempt has been made to adopt zinc white as a substitute.

Zoll-Verein. The Germanic confederation of states for purposes of commerce came into practical operation by the treaty of March 22, 1833. Prior to that period, the states of which the union is composed did not allow of the introduction of merchandise across their respective frontiers without the payment of duties; numerous prohibitions existed, and the commercial relations between sovereignties, whose territories were contiguous, were fettered with oppressive and vexatious restrictions. To introduce a better system of commercial policy, and to remove all unnecessary burdens, which only tend to clog commercial enterprise and choke up the natural channels of trade between neighboring powers, these independent sovereignties have become, for commercial purposes, a consolidated government; one line of customs on the geographical boundary has been established; one tariff of duties on imports, exports, and transit, is enforced for all; and the revenue thus derived is distributed among the members of the confederation, in proportion to the population of each.—For exception to this mode of distributing the revenue, see FRANKFORT-ON-THE-MAINE.

The origin of this customs union may be traced to causes, political as well as commercial, having their existence long anterior to the treaty of 1833. Immediately after its organization, with Prussia at its head, had been proclaimed, alarms were spread throughout England, based upon the mistaken idea that the confederation was planned under the influence of Russia, as a part of her grand political scheme against British prosperity and influence; a fallacy which for a time

derived no inconsiderable plausibility from the adoption, by most of the states of the confederation, of the long-existing restrictive tariff of Prussia. British merchants became alarmed; and even the government itself shared, to some extent, in the popular delusion, which imagined the ruin of British trade, as the inevitable consequence of the united adoption, by nearly all the states of northern and southwestern Germany, of the commercial policy of the power which it was supposed the secret diplomacy of Russia had placed at the head of the *anti-British* league.

This delusion, however, was but of short duration; indeed, the general panic which it excited throughout England was quieted by the more experienced minds of that nation itself, who, viewing the formation of the Zoll-Verein in a more philosophic light, refuted the erroneous notions which had so generally obtained respecting it, and demonstrated its purely Germanic origin, by their panegyrics on those whose forecast and wisdom had conceived the project, and whose indomitable perseverance had accomplished its fulfilment. Among those whose able writings contributed most to enlighten England, as well as other nations, on the history and objects of the Zoll-Verein, Macgregor, the British statistician, occupies the first rank. Prussia, from her geographical position, was at that time more exposed to attack than any other country in Europe. Her Rhenish provinces weakened rather than strengthened her power. Easily accessible from Austria, Russia, and the Baltic, and, in the event of war, open to immediate attack on the side of France and Belgium, the Prussian cabinet was convinced that in the military strength of the territories possessed by Prussia before the treaty of Vienna consisted her only defensive strength. When the first French revolution broke out, Austria and several German states had to meet the troops of France long before they approached the Prussian frontiers; now the latter lay immediately exposed to an army marching in from France and Belgium. Hence the safety of Prussia depended, in the event of war, upon uniting all Germany by one common bond of mutual interest and security. Besides, the sagacity of the Prussian cabinet was doubly quickened by the French revolution of 1830, which had spread apprehension throughout the whole of Germany, particularly when the republican infection had spread among the students of the German universities, who, under the name of "Young Germany," had excited no little alarm on the part of the several German governments. The Belgian revolution succeeded; and then Austria shared in the apprehensions and uneasiness which had so long been felt by Prussia. The Polish revolution quickly followed; and now Prussia was ready to make any sacrifices in order to unite Germany under an apparently commercial, but in reality a political and national bond.

The necessity of such a union was at once promulgated with extraordinary industry. The press and the ablest political economists were enlisted in the general cause. Volumes were scattered among the people. The illiberal commercial systems of England and France; the prohibitory duties which Russia had just imposed on Poland, virtually closing the best market which Saxony had hitherto found for her fabrics—these considerations were strenuously urged to prove that a general union of fiscal interests was necessary for the present and future prosperity and protection of the country, and for maintaining Germany among the great powers of Europe. Their governments and people being thus prepared for union, the kingdoms of Prussia, Bavaria, Würtemberg, and Saxony, with Hesse Cassel, signed the treaty of March 22, 1833, organizing the German Customs Association, or Zoll-Verein. The Thuringian and other states, Baden, Nassau, and the free city of Frankfort-on-the-Maine, joined at subsequent periods; and on the 1st of January, 1851 (by treaty of September 7, 1851, between

Prussia and Hanover), Brunswick, Hanover, and Oldenburg. A new convention has been concluded, not varying, however, materially from the one it superseded, but providing that in January, 1858, commissioners from all the federal states shall meet at the place of sitting of the Diet, on being summoned by it, in order to bring into operation more extended relaxations than those now proposed; and then, if the now existing impediments (arising from the difference of circumstances and interests) to a perfect commercial and customs union of the whole of Germany are removed, to effect that union by way of treaty. In the mean time, by a separate article, every federal state is required to take care, in concluding or prolonging any treaties of commerce and traffic, that the same shall not hinder nor embarrass a complete commercial union of Germany, or a further approach thereto, at least not beyond the year 1858.

In the annual and triennial congress of delegates from the several states of the union, which the convention provides shall meet for settling the accounts, agreeing to alterations in the tariff, etc., Prussia has only one vote, like each of the other states. This, however, is not the only concession which she has made to the other sovereigns of the league. A reference to the geographical positions of the several states of the Zoll-Verein will show that many have no customs frontier to guard against smuggling, or along which to maintain custom-houses; while all receive an equal share of the revenue collected on goods entering along the general line of the boundary. The consequence is, that Prussia sacrifices about two millions of dollars annually to the revenues of the other states, exclusive of the fiscal loss sustained by the consumption of smuggled goods introduced along the Rhine, and along Lake Constance, into Baden, Würtemberg, and Bavaria. But Prussia was prepared for these, or even greater fiscal sacrifices, to realize the primary object of her policy—that of extending her power, as she may be said to have done, from the frontiers of France and Belgium to those of Austria and Russia—from the Alps to the Baltic; while the different states of Germany composing the union, by the removal of those barricades of national defense and international intercourse, and of the numerous lines of customs and customs officers which previously belted every large and petty state in Germany—by free trade among themselves, and the free opportunity of interchanging ideas and of receiving intelligence, may be said to have become consolidated and strengthened into one great nation.

Among the regulations of the Zoll-Verein, it is provided "that the advantage enjoyed by the inhabitants of the states of the union may be extended in reciprocity, according to circumstances, to foreign countries; while, on the contrary, disadvantageous restrictions imposed on the commerce of the union by foreign states should be retaliated by judicious measures, to be adopted for that purpose;" also, that the tariff of the union may be rectified every three years, and published for the next three years, eight weeks before the commencement of the first year—alteration in the rates of certain duties or items in the tariff to be made, if necessary, once a year, and to be published eight weeks before the 1st January, on which day such alteration to be in force. Article 23 of the convention provides "that a meeting of plenipotentiaries of the respective states shall be convened in June each year, to settle accounts, and agree to any change or modification of duties." By this article all the provisions for a change in the tariff have been retained. It therefore remains for other countries to reciprocate with the Zoll-Verein for an interchange of their respective productions and fabrics.

Natural Resources of the principal States composing the Zoll-Verein.—The states composing the Zoll-Verein possess the most abundant natural resources. The forests of Germany are extensive and valuable, and her mineral

riches are in many parts equal, and in some superior, to those of France. The soil, though in some parts of the north light and rocky, is generally fertile, and produces all kinds of corn and culinary vegetables, besides hemp, flax, tobacco, maize, etc.; while in the Rhenish countries, and in some parts south of Cologne, vineyards are extensively cultivated, which produce those agreeable and cool wines generally called Hock and Moselle, the consumption of which is rapidly increasing in the United States. The physical aspect of the states of the confederacy presents almost every feature of natural or cultivated appearance. "The lowlands, light soils, and alluvions of the north; the hilly country of Nassau; the undulations of Westphalia, of the Moselle, and west of the Rhine; the highlands of the Black Forest, and the Odenwald, Thuringia, and Suabia, of Darmstadt, Württemberg, and Baden, to the south; the mountains of the Harz and Taunus; the Erz-gebirge of Saxony; the valleys, plains, and heights of Silesia; the plains and Alps of Bavaria; the Rhine, Danube, Elbe, and numerous other rivers; rocks, corn-fields, vineyards, and pastures, are the principal aspect of the confederation."

In facilities for commercial intercommunication, nature has been equally bountiful to Germany. About sixty navigable rivers, or branches of rivers, intersect this country. They are generally connected by means of canals and railroads, some of which are still in progress of construction.

The Rhine, from its excellent navigation to the ocean, may be considered one vast port, the principal entrepôts of which are Cologne, Coblenz, Mayence, and Frankfort-on-the-Maine. The Danube carries down the produce of Germany to Austria, Hungary, and the Black Sea. The Elbe, navigable from Bohemia to Hamburg, and to the sea, waters Bohemia, Saxony, and Prussia, and is connected with the Danube by railroad, at a point where that river is navigable to Lintz, the capital of Upper Austria, from which steamboats ply to Vienna and the Black Sea. The Memel, and its numerous branches, bring down the timber and other produce of Poland and Lithuania to the ports of the Baltic; and the Oder and Vistula flow through Prussia, and are navigable to the Baltic.

On the 1st of January, 1854, the German Customs Union, or the Zoll-Verein, entered upon the third period of its existence. The first continued eight years—from the commencement of 1834 to the end of 1841; the second, twelve years—from the commencement of 1842 to the end of 1853; and the third, upon which it entered

at the beginning of 1854, is to continue also for twelve years. Two facts of importance mark the commencement of the third period: one, the accession of the Steuer-Verein; the other, the conclusion of a commercial treaty between Austria and Prussia, which may be regarded as the basis of a future Austro-Germanic Customs League. The following recapitulation of facts connected with these two important events are compiled from official documents, and are deemed necessary to a clear comprehension of the present as well as of the prospective *status* of the Zoll-Verein. On the 7th of September, 1851, the two kingdoms of Prussia and of Hanover separately concluded a treaty of a customs union, which, ten years before, had been a subject of fruitless negotiation, reserving the question of a union between their respective Customs Associations (the Zoll-Verein and the Steuer-Verein). As the stipulations of this treaty would require a reconstruction of the Zoll-Verein, and, consequently, a renunciation of the treaty of 1841 between the old members of that league, the Prussian cabinet, in the following November, gave notice of this renunciation, not for the purpose of retiring from a league so beneficial in all its results, but with a view of reorganizing it on a new basis. The Prussian government further gave notice that it would soon communicate propositions to that end, and that a conference, or congress, to take the subject into consideration, would assemble at Berlin.

The following statement will prove interesting, as exhibiting the revenue and population of the Zoll-Verein from its commencement down to the year 1851:

Years.	Population.	Revenue in Thalers.
1834.....	23,478,120	14,515,722
1835.....	23,478,120	16,580,180
1836.....	25,150,216	18,462,873
1837.....	25,150,698	17,997,295
1838.....	26,048,970	20,419,287
1839.....	26,048,971	20,869,483
1840.....	26,048,091	21,606,191
1841.....	27,124,116	22,295,452
1842.....	27,578,710	23,788,794
1843.....	27,623,815	25,762,023
1844.....	28,498,186	26,850,794
1845.....	28,499,566	27,915,956
1846.....	28,506,486	26,701,969
1847.....	29,461,381	27,834,668
1848.....	29,460,764	28,083,138
1849.....	29,461,093	24,144,573
1850.....	29,800,063	23,525,092
1851.....	29,728,335	22,545,687

—*Com. Rel. U. S.* For the port regulations of Prussia, see PRUSSIA; and for more extended information regarding the states composing the Zoll-Verein the reader is referred to the articles on the states separately.

ALPHABETICAL INDEX

TO

IMPORTANT SUBJECTS

UPON WHICH INFORMATION CAN BE FOUND IN ADDITION TO THAT GIVEN UNDER THEIR PROPER HEADS.

- ABANDONMENT, 1057.
 Acceptance, 170, 173, 1029.
 Acetic acid, 5.
 Acid, 1203, 1384, 1600.
 Adjustment, 1044, 1057.
 Admiralty, 557.
 Adulteration of food, 691.
 Advertising, 1425.
 Affreightment, 291, 751.
 Africa, 274, 435, 441 (cotton), 790, 805, 832, 835, 994, 1118, 1205, 1378, 1384, 1443, 1469, 1717, 1943 (weights and measures).
 African Company, 395.
 Agent, 646, 1051.
 Agriculture, 246, 602, 704, 812, 849, 1091, 1802, 1896.
 Aguardiente, 488.
 Alabama, 141, 439 (cotton), 1084, 1365.
 Ale, 158, 212, 990, 1159, 1749.
 Alexandria, 577, 584.
 Algiers, 440 (cotton), 741, 1943.
 Alicante, 1742.
 Aliens, 1009, 1347.
 Alliance, Holy, 984.
 Alloys, 425 (copper).
 Allspice, 1531, 1748.
 Almanac, 288.
 Alpaca wool, 1987.
 America, 227 [North, 371], 383, 438 (cotton), 800, 1444, 1576 [South, 1736], 1754, 1944.
 American commerce, 385.
 Ammonia, 24, 1668.
 Amoy, 260, 1700.
 Amsterdam, Bank of, 121; canals, 248.
 Anchors, 226, 271, 428, 1148, 1545.
 Ancient coins, 352.
 Annuities, 1039, 1063, 1067, 1857.
 Antwerp, 383.
 Aquafortis, 7.
 Arabia, 9, 223, 547, 1145, 1384.
 Archangel, 1334, 1971.
 Architecture, Naval, 1390.
 Arcs, Meridian, 572.
 Arctic Ocean, 802, 892, 1447, 1539.
 Ardent spirit, 17.
 Arecibo, 1546.
 Argand lamps, 1229.
 Argentine Confederation, 219, 1172, 1862, 1913.
 Arkansas, 139, 1034.
 Arkwright, 465.
 Armament, 257.
 Artificial flowers, 688.
 Asbestos, 37.
 Ashes, 1571.
 Asia, 428, 832, 1030, 1112, 1656, 1711, 1945.
 Asia Minor. *See* TURKEY and the LEVANT.
 Asphaltum, 180.
 Assay, 499.
 Assurance. *See* INSURANCE.
 Astronomy, 793.
 Asuncion, 1493.
 Athens, 380.
 Atlantic Ocean, 241, 500, 915, 1735.
 Atlantic telegraph. *See* TELEGRAPH.
 Atrata, 37.
 Auction, 257.
 Australasia, 1459, 1540.
 Australia, 9 [Colonies, 365], 366, 833, 1341, 1424, 1459, 1576, 1586, 1754, 1789, 1932.
 Australia Felix. *See* VICTORIA.
 Austria, 250 (canals), 376, 998, 1179, 1608, 1862, 1871, 1928, 1946.
 Average, 1043, 1588.
 Azimuth compass, 397.
 Azores, 654.
 Bacon, 974, 1543.
 Baden, Duchy of, 1847, 1946.
 Baggage, 600.
 Bags, 919.
 Balance of trade, 631.
 Bale, Cotton, 460.
 Ballast, 565.
 Balm of Gilead, 87, 819.
 Balm of Peru, 88.
 Baltic Sea, 249, 528, 537, 619.
 Baltimore, 1839.
 Banana, 1537.
 Banda, Oriental, 1918.
 Bandana handkerchiefs, 468.
 Bank-notes, 97, 384.
 Bank of England, 93, 100, 1278.
 Bank of France, 121.
 Bank of United States, 144.
 Bankruptcy, 237, 1033.
 Banks, 1, 281, 294, 309, 476, 480, 537, 544, 546, 761, 786, 1078, 1096, 1203, 1274, 1463, 1579, 1798, 1859.
 Banks, Irish, 119.
 Banks, Provincial, 114.
 Banks, Scotch, 117.
 Baracoa, 497.
 Barbadoes, 365.
 Barbary States. *See* MOROCCO, TRIPOLI, TUNIS, etc.
 Barcelona, 1742.
 Barges, 184.
 Barratry, 1043.
 Barrel, 1952.
 Bavaria, 250 (canals), 1179, 1847, 1946.
 Bay of Chaleurs, 1402.
 Bay of Fundy, 764.
 Beacons, 1238, 1251.
 Beads, 55.
 Beaver, 282, 764.
 Beef, 283, 490, 875.
 Beer, 17, 212, 715, 990, 1159, 1908.
 Beeswax, 1940.
 Beet sugar, 716, 1776.
 Behring, 500.
 Belgium, 51, 213, 214, 341 (coins), 458 (cotton), 815, 1179, 1807, 1862, 1913, 1947.
 Belize, 984.
 Bell Rock light-house, 1221.
 Bells, 700.
 Bengal, 230, 236, 508, 579, 989, 1024, 1028.
 Benzoic acid, 6.
 Benzoin, 88.
 Benzole, 1470.
 Bills of exchange, 94, 294, 623, 1029, 1450, 1918.
 Bills of health, 1601, 1708.
 Bills of lading, 1708.
 Biography, 568.
 Birch canoes, 258.
 Bitumen, 69, 1389.
 Bituminous coal, 318.
 Black Sea, 1460.
 Blockades, 1398.
 Blue vitriol, 1127.
 Boats, 28, 157, 223, 258, 427, 432, 506, 515, 658, 779, 837, 1005, 1151, 1176, 1210, 1219, 1285, 1395, 1456, 1532, 1591, 1627, 1650, 1690, 1729, 1879, 1996.
 Bobbins, 1156.
 Bolivia, 31, 342 (coins), 1166, 1863.
 Bombay, 231, 1024.
 Bonds, 476.
 Book-keeping, 281, 1147, 1199.
 Books, 167, 1208, 1426.
 Boots and shoes, 1196, 1710.
 Boracic acid, 6.
 Borneo, 1155, 1863.
 Bosphorus, 401.
 Boston, 1002, 1058, 1425, 1710, 1839.
 Bottomry, 1046, 1324, 1629.
 Bounties, 665, 742, 1772.
 Bourbon Island, 741.
 Brandy, 193, 4551.
 Brass, 48.
 Brazil, 30, 83, 336, 435, 457, 459 (cotton), 1490, 1514, 1550, 1637, 1757, 1807 (tariff), 1913, 1944.
 Breadstuffs, 218, 685, 843, 844, 1802.
 Breakwater, Delaware, 519, 681, 937, 1268.
 Bremen, 931, 1180, 1947.
 Brewing. *See* BEER.
 Bridges, 602, 704, 1279.
 Brimstone, 1778.
 Britain. *See* GREAT BRITAIN.
 British Guiana, 908.
 British North American Possessions, 883, 1154, 1376, 1401, 1404, 1452, 1583, 1663, 1668.
 Brokers, 1042.
 Bruges, 382.
 Brunswick, Georgia, 809.
 Brussels carpet, 277.
 Bubbles, Commercial, 397, 1177, 1739.
 Buccaneers, 748.

- Buenos Ayres, 1172.
 Building, 1390 (ships).
 Bullion, 71, 628, 1578.
 Bunk, 433.
 Buoy, 1238, 1252.
 Burgundy, 1977.
 Burnmah, 1625.
 Butter, 294, 477, 508, 815.

 Cables, 271, 428, 616, 837, 956, 966, 1647, 1830.
 Cacao-nut, 304, 332.
 Cadiz, 1742.
 Cagliari, 1886.
 Cairo, 273, 439.
 Calcutta, 1021, 1027, 1473.
 Calendar, 1127.
 California, 344 (coins), 645, 833, 836, 1034, 1575, 1586, 1604, 1621 (railroads), 1679.
 Calms, 554.
 Camels, 273.
 Camphor, 243.
 Canada, 146, 254, 675, 883, 1154, 1178, 1375, 1602, 1614 (railroads), 1663.
 Canals, 21 (Red Sea and Nile), 36 (Atlantic and Pacific), 212, 238, 602, 703, 842, 975, 1165, 1428, 1485, 1765.
 Canaries, 1743, 1832, 1943.
 Candia, 1467, 1884.
 Canes, 1625, 1936.
 Canoe, 28.
 Canton, 302, 1699.
 Caoutchouc, 919, 1025.
 Cape de Verd Islands, 1930, 1943.
 Cape Haytien, 961, 964.
 Cape Horn, 991.
 Cape of Good Hope, 268, 269, 837, 1118.
 Capital, 375.
 Caps, 947.
 Carats, 71.
 Caravans, 66, 229, 242, 509.
 Carbonic acid, 6.
 Cardenas, 497.
 Cardinal Points, 397.
 Carding-machines, 464.
 Cargo. *See* FREIGHT.
 Caribbean Sea, 915.
 Carpets, 711.
 Carriage, 1706.
 Carriages, 312, 921.
 Cartagena, 1410.
 Carthage, 380.
 Cashmere, 1702, 1987.
 Caspian Sea, 1656.
 Cassia, 1748.
 Casting, 609.
 Catechu, 1833.
 Cayenne, 741, 912 [pepper, 1512, 1747].
 Cayman Islands, 1126.
 Census, 1541.
 Central America, 342 (coins), 432, 907, 1442, 1913.
 Ceylon, 337, 370.
 Chagres, 1412.
 Champagne, 1976.
 Channel, 610.
 Charcoal, 760, 1104.
 Charges, Consular, 414.
 Charleston, 1738, 1840.
 Charms, 43.
 Charter party, 13, 752, 1708.
 Charts, 327, 518, 1001, 1317, 1346, 1398.
 Chasing, 601, 1629.
 Cheese, 224, 477, 508.
 Cherbourg Breakwater, 938.
 Chesapeake and Ohio Canal, 253.
 Chesapeake Bay, 519.
 Chestnut, 981.
 Chihua, 1853.
 Chili, 342 (coins), 1863, 1913, 1921.
 China, 68, 259 [Cochin, 331], 342 (coins), 428, 461 (cotton manufactures), 650, 689, 697, 921, 927, 988, 1295, 1387, 1473, 1554, 1657, 1698, 1719, 1720, 1725, 1820, 1822, 1843, 1863, 1913, 1946.
 China-ware, 1642.
 Chincha Islands, 902.
 Chinese sugar-cane, 1778.
 Chronometers, 1280.
 Cigars, 488, 1851.
 Cincinnati, 974.
 Cinnamon, 287, 288, 370, 1748.
 Cinq Codes, 394.
 Cisplatin Republic, 1918.
 Citric acid, 6, 1203.
 Citron, 165.
 Civic companies, 396.
 Claims, Court of, 476.
 Claret, 1976.
 Climates, 436 (cotton), 574, 618, 1113.
 Clocks, 1230, 1938.
 Cloth, 681, 845, 1297, 1987.
 Clothing, 1941.
 Clover, 956.
 Cloves, 1749.
 Clyde, 821.
 Coak. *See* COKE.
 Coal, 356, 498, 757, 783, 1104, 1144, 1403, 1470, 1613.
 Coasting trade, 673, 869.
 Coast survey, 570, 945, 1242, 1317, 1838.
 Cochineal, 256, 567.
 Cocoa-nut, 287, 370, 1483.
 Cod-fisheries, 665, 672.
 Coffee, 370, 489, 693, 954, 1367, 1548, 1639, 1826.
 Coinage, 61, 62, 69, 95, 272, 365, 499, 516, 541, 627, 830, 1031, 1096, 1351, 1360, 1511, 1579, 1654, 1680, 1701.
 Coins, 2, 3, 4, 8, 12, 28, 47, 63, 69, 76, 86, 166, 263, 286, 423, 427, 483, 504, 513, 525, 542, 554, 555, 564, 567, 653, 684, 700, 776, 837, 897, 913, 1119, 1269, 1286, 1324, 1528, 1601, 1603, 1626, 1646, 1649, 1651, 1697, 1704, 1724, 1739, 1769, 1791, 1835, 1854.
 Coke, 356, 1104.
 Collins steamers, 1754.
 Collision, 1043.
 Cologne water, 582.
 Colombia, 908, 1408.
 Colonies, 386, 716, 740 [British, 878, 983, 1020], [Dutch, 1397], [Spanish, 1746].
 Columbia River, 1841.
 Columbus, Christopher, 799.
 Commandite en companies, 396.
 Commerce, 66, 68, 273, 362 (colonies), 717, 797, 1017, 1898, 1804, 1905.
 Commercial agents, 403, 415.
 Commercial law, 55, 567, 696, 906, 1029, 1040, 1179, 1188, 1456, 1495, 1794.
 Commercial policy, 402.
 Commercial treaties. *See* TREATIES.
 Commission, 521, 647.
 Companies, Africa, 15.
 Companies, Dutch, 39.
 Companies, East India, 574, 1279.
 Companies, Hudson's Bay, 766, 802, 995.
 Companies, Northwest, 765.
 Companies, Russian, 1658.
 Companies, Stock, 394, 1145.
 Compass, 275, 518, 542, 1302, 1319, 1538.
 Connecticut, 1034.
 Constantinople, 381, 1882.
 Consular agents, 415.
 Consuls, 590, 1501, 1694, 1708, 1885, 1994.
 Contraband, 1398, 1730.
 Contract, 71, 200, 518, 1042.
 Convoy, 394, 484.
 Cook, Captain, 802.
 Coolie trade, 1728.
 Copenhagen, 527.
 Copper, 48, 203, 603, 1703.
 Copper coins, 286.
 Copyright, 190.
 Corfu, 1085.
 Corn, 210, 843, 876.
 Cornelian, 15.
 Corporations, 396.
 Cosmetics, 1649.—*See* PERFUMES.
 Costa Rica, 337, 1441, 1864.
 Cotton, 19, 235, 271, 532, 585, 679, 712, 729, 731, 873, 874, 917, 932, 954, 1366, 1419, 1515, 1645, 1654, 1658, 1686, 1713, 1723, 1784, 1787, 1903.
 Cotton manufactures, 9, 59, 165, 182, 185, 239, 242, 267, 274, 304, 311, 356, 503, 539, 542, 593, 661, 681, 712, 761, 774, 815, 821, 845, 1017, 1119, 1150, 1156, 1283, 1297, 1311, 1329, 1386, 1589, 1785.
 Court of Admiralty, 10.
 Cream of tartar, 58, 1818.
 Credit, Letters of, 1204.
 Credit Mobilier, 122, 124.
 Credits, 378.
 Crimea, 1460.
 Cronstadt, 1667.
 Croton aqueduct, 55, 1435.
 Crystals, 681.
 Cuba, 425 (copper), 949, 1742, 1846, 1851.
 Cunard steamers, 1754.
 Currents, 889.
 Currency, 1370, 1579.
 Currents, Ocean, 915, 936, 1481.
 Customs, 3, 53, 418, 509, 516, 640, 749, 1169, 1570, 1597, 1629, 1706, 1729, 1794.
 Cutlery, 946, 1152, 1387.
 Cutters, 184.
 Cyclopaedia. *See* ENCYCLOPEDIA.

 Damascus, 273.
 Danish colonies, 368, 1954.
 Dantzig, 526.
 Danube, 619, 776.
 Darc, 8.
 Darien, Isthmus of, 1484.
 Dead letters, 1557.
 Debt, 622, 764, 848, 1034, 1094, 1271, 1390, 1430, 1436, 1464, 1739, 1763.
 Degree, 569, 795.
 Delaware, 135, 267, 1034.
 Delaware and Hudson Canal, 253.
 Delaware Bay, 519.
 Denmark, 249 (canals), 423, 588, 653, 1180, 1662, 1667, 1733, 1864, 1913, 1948 (weights and measures), 1954.
 Deposit, Banks of, 93.
 Desertion, 1694.
 Detroit, 1358.
 Dike, 567, 975.
 Diplomacy, 407.
 Discount, 108.
 District of Columbia, 1937.
 Docks, 232, 243 [Dry, 548], 894, 944, 1267, 1276, 1395.
 Dock-yards, 552.
 Domain, 600.
 Domicile, 1050.
 Drafts, 294.
 Dragon's blood, 88.
 Dress, 433.
 Drugs, 243, 358, 432, 481, 645, 778, 1455, 1479, 1522, 1602, 1632, 1647, 1661, 1674, 1688, 1689, 1697, 1751, 1881, 1886.
 Drummond light, 1227.
 Dry-rot, 658.
 Dues, Sound. *See* SOUND DUES.
 Dues, State, 923.—*See* TOLLS.
 Dundee, 1263.
 Dutch, 39 [Colonies, 368], [East India Company, 896], 976, 1132, 1397 [West Indies, 1954], [Whale-fishery, 1960].

Dutch Guiana, 911.
 Duties, 237, 503, 544, 556, 1082, 1481.
 Dyes, 5, 49, 275, 476, 498, 546, 554, 556, 567, 714, 774, 780, 1150, 1155, 1297, 1384, 1478, 1596, 1603, 1661, 1688, 1729, 1886, 1891, 1931, 1953, 1983, 1997.
 Dye-woods, 154, 1161.
 Earth, 787.
 Earthen-ware, 1543.
 East India Company, British, 395, 434 (cotton), 441, 574, 1014, 1474.
 East India Company, Dutch, 396.
 East Indies, British. *See* INDIA.
 East Indies, Dutch, 1136, 1454, 1779.
 East Indies, French, 1541. — *See* FRANCE.
 Ecuador, 612, 1864.
 Eddystone light-house, 1220.
 Egypt, 18, 229, 440 (cotton), 459, 1443, 1943.
 Elbe, 923, 929, 1967.
 Electric telegraph. — *See* TELEGRAPH.
 Electrotyping, 1537.
 Elsinour, 527, 535.
 Emancipation, 1727.
 Ambassador, 590.
 Embroideries, 1159.
 Emden, 928.
 Emigrants, 925, 1499.
 Emigration, 1008.
 Encyclopedia, 507, 541.
 Endorsement, 168, 172, 1029.
 Enemies, 1050.
 Engine, 663.
 England, 212, 430 (corn laws), 667, 826, 846, 970, 1070, 1276, 1451, 1689, 1967.
 Engrossing, 696.
 Enrollment, 1627.
 Erie Canal, 253, 1428.
 Erie, Lake, 1162.
 Erie, Port, 1511.
 Etching, 611.
 Europe, 1623.
 Euxine Sea, 182.
 Exchange, Bills of, 94, 167, 1918.
 Exchange, Royal, 1650.
 Exchange, Stock, 1763.
 Exchange, 1.
 Expeditions, 56, 1629.
 Exports, 1904.
 Factor, 213.
 Factories, 259.
 Feathers, 555, 585, 1604.
 Fees, Consular, 414.
 Felting, 948.
 Filigree, 660.
 Finance. *See* BANKS and MONEY.
 Finland, 1170, 1654.
 Fire-arms, 1534.
 Fire-escape, 1208.
 Fire insurance, 1058.
 Firs, 1532.
 Fish, 46, 84, 185, 284, 932, 583, 688, 921, 1271, 1480, 1877.
 Fisheries, 184 [Pearl, 287], 289, 383, 387, 604, 717, 721, 741, 960, 1154, 1199, 1242, 1357, 1396, 1401, 1405, 1506, 1528 [Salmon, 1668], 1685, 1691, 1702, 1765 [Whale, 1958], 1963.
 Flags, 1509.
 Flanders, 382.
 Flax, 713, 966, 1092, 1147, 1261, 1655.
 Fleet, 684.
 Florida, 143, 1034, 1151, 1249.
 Florin, 982.
 Flour, 208, 486, 490, 694, 875.
 Fluoric acid, 6.
 Fog signals, 1252.
 Foo-chow, 689.
 Foo-chow-foo, 260, 1700.
 Food, 1336.

Food, Adulteration of, 11.
 Foreigners, 599.
 Fractions, Decimal, 516.
 France, 192, 229, 250 (canals), 277, 287, 295, 337 (coffee), 341 (coins), 368 (colonies), 373, 455 (cotton), 649, 665, 765, 952, 1083, 1071, 1102, 1157, 1180, 1229, 1285, 1294, 1324, 1397, 1438, 1450, 1494, 1609 (railroads), 1777, 1805 (tariff), 1825, 1847, 1855, 1864, 1913, 1956 (West Indies), 1962 (whale-fishery), 1977 (wine).
 France, Bank of, 121, 1948 (weights and measures).
 Franking, 1569.
 Franklin, Sir John, 802.
 Free trade, 385.
 Freight, 82, 291, 1045, 1588, 1607, 1619, 1629, 1693, 1707.
 French East India Company, 578.
 French Guiana, 912.
 Fresnel lights, 1226, 1240.
 Fruits, 295, 477, 499, 514, 660, 908, 1203, 1261, 1311, 1386, 1477, 1505, 1532, 1587, 1598, 1540, 1593, 1604, 1634, 1792, 1793.
 Fuel, 1104, 1242, 1508.
 Fuerteventura, 256.
 Fullers' thistle, 1826.
 Funding system, 1763.
 Funds, 400.
 Furnaces, 1099.
 Furs, 283, 616, 1455, 1509, 1661.
 Galatz, 513, 775, 1883.
 Galena, 1193.
 Gallic acid, 6.
 Gall-nuts, 1456.
 Gallon, 1952.
 Galveston, 1840.
 Gas, 760, 1227.
 Gauge, 775.
 Gauntlet, 783.
 Genoa, 381, 1686.
 Geodesy, 322, 569.
 Georgia, 143, 438 (cotton), 1034, 1634, 1688.
 German Commercial Union, 813, 1596, 1998.
 Germany [Banks of, 122], 342 (coins), 510, 597, 649, 747, 922, 928, 1103, 1179, 1470, 1554, 1593, 1648, 1979, 1998.
 Gin, 785, 1147.
 Gin, Cotton, 442.
 Ginger, 1747.
 Glass, 47, 483, 681, 1751.
 Glut, 524.
 Gold, 86, 241, 272 [coins, 345], 353, 365, 626, 1031, 1157, 1342, 1361, 1537, 1574, 1581, 1586, 1654, 1680, 1803.
 Gold Coast, 913.
 Gold discovery, 78.
 Gonaives, 961.
 Good Hope, Cape of, 267, 269, 837, 1118, 1943.
 Grace, Days of, 515, 638, 843.
 Grain, 685, 1267, 1456, 1462, 1660, 1749, 1965.
 Gramme, 1152.
 Grass seeds, 956.
 Great Britain, 251 (canals), 315 (coal), 347 (coins), 361 (colonies), 375, 384, 425 (copper), 430 (corn laws), 453 (cotton), 469 (cotton manufactures), 599, 601, 648, 667, 675, 997, 1019, 1083, 1087, 1100, 1181, 1192, 1231, 1263, 1266, 1274, 1438, 1451, 1511, 1554, 1610 (railroads), 1704, 1719, 1753, 1771, 1805 (tariff), 1825, 1842, 1846, 1865, 1913, 1936, 1948 (weights and measures), 1955 (West Indies), 1960 (whale-fishery), 1966, 1988 (wool).
 Grecian coins, 352.

Greece, 380, 1181, 1502.
 Ground-nut, 1452.
 Guadeloupe, 741.
 Guatemala, 1865.
 Guayama, 1547.
 Guayaquil, 614.
 Guerrero, 1354.
 Guiana, 835, 1943.
 Guiana, British, 741, 808.
 Guiana, Dutch, 1494.
 Guiana, French, 284.
 Guild, 913.
 Gulf of St. Lawrence, 1178.
 Gulf Stream, 326, 500.
 Gums, 156, 778, 782, 819, 1152, 1155, 1470, 1476, 1661, 1685, 1791, 1833, 1859, 1886.
 Gutta-percha, 267, 1025.
 Hair, 243, 1972.
 Halibut, 673.
 Hamburg, Bank of, 121, 931, 1181, 1948.
 Hams, 83.
 Handkerchiefs, 92, 467.
 Hanover, 946, 1181, 1865, 1949.
 Hanse Towns, 211, 882, 457 (cotton), 526, 922, 930, 1180, 1288, 1865, 1913.
 Harbors, 477, 601, 860, 1257, 1544, 1839.
 Hardware, 505, 606, 714, 1387, 1512.
 Hargreaves, James, 463.
 Hartshorn, 24.
 Havana, 484, 497.
 Haven. *See* HARBOR.
 Hayti, 267, 342 (coins), 841, 1119, 1181, 1544, 1674, 1767, 1913, 1944.
 Hazel-nut, 1454.
 Health, Bill of, 178.
 Hemp, 714, 837, 919, 1147, 1527, 1655.
 Herrings, 604, 668, 673, 1405.
 Hides, 502, 1195, 1515, 1726.
 Hindostan, 222, 498, 1010. — *See* INDIA.
 History of Commerce, 379.
 Hogs. *See* PORK TRADE.
 Hogsheed, 1952.
 Holland, 39, 248 (canals), 378, 382, 1134, 1182, 1396, 1649, 1806 (tariff), 1865, 1949.
 Holland, New, 76.
 Holstein, Duchy of, 530.
 Hong Kong, 261.
 Hongs, 259, 264.
 Honolulu, 1675.
 Hooks, 676.
 Horizon, Artificial, 62, 587.
 Hose and hosiery, 1761.
 Hospital [Greenwich, 895], 1694.
 Hudson, Henry, 519.
 Hudson River, 1428.
 Hudson's Bay Company, 766, 802.
 Hungary, 831.
 Hurl-Gate, 966.
 Huron, Lake, 1163.
 Hydriodic acid, 6.
 Hydrocyanic acid, 7.
 Hydrography, 323.
 Ibraila, 777.
 Iceland moss, 1381.
 Illinois, 197, 253, 283, 296, 1034, 1193.
 Immigrants, 594.
 Imports and exports, 629, 1799, 1907, 1910.
 Impost. *See* TARIFF and TAXES.
 India, British, 20, 163, 222, 230, 242, 276, 281, 383, 441 (cotton), 461, 498, 575, 576, 616, 650, 791, 989, 1004, 1027, 1161, 1301, 1334, 1474, 1575, 1660, 1703, 1712, 1725, 1754, 1818.
 India, French East India Company, 578.
 Indiana, 137, 253, 1034.

- Indian corn, 210, 429.
 India rubber, 267, 919, 1297, 1766.
 Indigo, 284, 567, 1013.
 Indorsement, 168, 172.
 Ink, 1025.
 Inland exchange, 622.
 Inland navigation, 247, 975.
 Inns, 274.
 Insolvency, 150.
 Insolvents, 150.
 Insurance, Fire, 1208.
 Insurance, Life, 8, 49, 1857.
 Insurance, Marine, 2, 10, 13, 79, 200, 291, 356, 525, 590, 684, 750, 1209, 1270, 1324, 1540, 1588, 1629, 1673, 1693, 1696, 1765.
 Interest, 764, 1039, 1063, 1919.
 Inventions, 1501.
 Invoices, 1708.
 Ionian Islands, 890, 1182, 1997.
 Iowa, 1034.
 Ireland, 158, 252 (canals), 510, 563, 597, 846, 1071, 1611 (railroads), 1689.
 Irish banks, 119.
 Iron, 48, 282, 505, 603, 688, 696, 699, 714, 780, 946, 1387, 1758, 1782, 1903.
 Islands [Coral, 428], [Ice, 1005].
 Isle of Wight, 477.
 Isthmus of Darien, 1484.
 Isthmus of Suez, 1766.
 Isthmus of Tehuantepec, 1826.
 Italy, 248 (canals), 649, 779, 786, 798, 826, 1182, 1388, 1451, 1486, 1913, 1950, 1979.
 Jaconet, 467.
 Jamaica, 364.
 Japan, 1159, 1387, 1866.
 Java, 154, 337.
 Jenny spinning, 463.
 Jersey City, 1415.
 Jetsam, 684.
 Jettison, 1046.
 Jewelry. *See* PRECIOUS STONES.
 Jewish coins, 352.
 Jobber, Stock, 1761.
 Joint-stock companies, 394.
 Juniper berries, 165.
 Junks, 266, 1146.
 Jurisdiction of Consuls, 406.
 Jute, 967.
 Kane, Dr. E. K., 896.
 Kentucky, 138, 1034.
 Key West, 683, 1840.
 Kiachta, 1657.
 Kingston, 1123.
 Labrador, 1404.
 Lace, 836, 1093.
 Lading, Bill of, 178.
 Lakes, 245 [Champlain, 289], 426 (copper), [Erie, 615], [Huron, 1001], 1088, 1244, 1250, 1472 [Superior, 1779], 1891.
 Lamps, 1229, 1240.
 Lanyard, 1169.
 La Plata River, 220.
 Larch, 1532.
 Lard, 487.
 Latitude, 519, 569, 795, 992.
 Law of nations, 417, 1043.
 Law's bubble, 397.
 Laws, Corn, 430.
 Laws of Commerce. *See* COMMERCIAL LAW.
 Laws of merchants, 1347.
 Laws of navigation. *See* NAVIGATION LAWS.
 Laws of shipping. *See* SHIPPING LAWS OF.
 Lazarettos. *See* QUARANTINE.
 Lead, Black, 181.
 Lead, Sounding, 1734.
 League, Hanseatic, 930.
 Leather, 221, 502, 592, 607, 1659, 1698.
 Leeward Islands, 1954.
 Legal tender, 97, 1831.
 Leghorn, 1888.
 Lenses, 1231.
 Letters, 1558.
 Letters of Marque, 1589.
 Levant [Company, 395], 401, 417, 507, 514, 1871, 1882.
 Liability of carriers, 280.
 Liberia, 466 (cotton).
 Life-boats, 1214, 1237.
 Life-buoy, 222, 1212, 1227.
 Life-preservers, 429.
 Life insurance, 8, 49, 1062, 1857.
 Light-houses, 481, 558, 755, 870, 1167, 1877.
 Light-ships, 1229, 1237.
 Lignum vitæ, 898.
 Lime, 285, 851, 920.
 Limited partnerships, 1496.
 Linen, 510, 541, 555, 606, 677, 678, 713, 1092, 1156, 1178.
 Linseed, 680.
 Liquor, 499, 814, 819.
 Lisbon, 1975.
 Lithography, 611.
 Liverpool, 602, 1755.
 Live stock, 1897.
 Llama, 29.
 Lloys', 1041.
 Lloans, 1763.
 Loans, Maritime, 1324.
 Lobos Islands, 900.
 Locomotives, 1606.
 Logarithms, 1889.
 Log-book, 1708.
 London, 601, 1650.
 Long-boat, 184.
 Longitude, 325, 519, 569, 795.
 Loom, 461.
 Losses, 1042, 1057.
 Louisiana, 140, 439 (cotton), 682, 1034, 1417, 1768, 1769.
 Lübeck, 526, 1182.
 Luca, 1889.
 Lucifer matches, 1833.
 Lumber, 296, 305, 516, 1536, 1842, 1984.
 Mace, 1747.
 Mackerel, 672.
 Madeira, 1978.
 Madras, 231.
 Magnet, 1270.
 Magnetic needle, 397.
 Magnetic telegraph. *See* TELEGRAPH.
 Mahogany, 985.
 Mails, 20, 21, 1753. *See* POSTAGE.
 Maine, 253 (canals), 1034, 1245, 1645.
 Maize, 429.
 Malaga, 1741.
 Malic acid, 6.
 Mälstroem, 1272.
 Malt, 17, 608.
 Malta, 1183.
 Manhattan Island, 1433.
 Manilla, 1526, 1743.
 Manufacture, 460 (cotton), 539, 544, 593, 605, 679, 710, 761, 864, 929, 1016, 1263, 1288, 1297, 1329, 1652, 1785, 1903.
 Maple-sugar, 1778.
 Maps, 291, 327, 793, 1001.
 Marine insurance, 2, 10, 13, 79, 200, 291, 356, 525, 590, 684, 750, 1041, 1209, 1629, 1673, 1693, 1696, 1765.
 Mariners. *See* SEAMEN.
 Mariner's compass, 397.
 Maritime laws, 1188, 1332, 1398, 1590, 1629, 1673, 1690, 1694.
 Markets, 524, 648.
 Marmora, Sea of, 401, 414, 513.
 Martha's Vineyard, 1247.
 Martin, 767.
 Martinique, 368, 745, 1326.
 Maryland, 90, 134, 295, 1035.
 Masters, 1692, 1707.
 Massachusetts, 128, 196, 671, 1002, 1035, 1247, 1500, 1619 (railroads), 1710.
 Mastic, 916.
 Matanzas, 497.
 Mayagüez, 1547.
 M'Clure, Captain, 802.
 Measures, 8, 47, 288, 296, 498 [Decimal, 517], 654, 663, 696, 726, 1152, 1194, 1263, 1358, 1494, 1509, 1512, 1533, 1941.
 Mecca, 273.
 Mecklenburg, 1648, 1866.
 Meconic acid, 6.
 Mediterranean Sea, 500, 619, 787, 1744.
 Meerschaum pipes, 1533.
 Melbourne, 1933.
 Mercantile actions, 874.
 Mercantile laws, 1450.
 Merchandise, 1752.
 Merchant adventurers, 12.
 Merchants, 505, 564, 1653.
 Mercury, 1604.
 Meridian, 570, 1279.
 Merino wool, 1988.
 Metals, 424 (copper), 830, 1192, 1806, 1443, 1522, 1537, 1733, 1842.
 Mexico, 342 (coins), 437 (cotton), 459, 832, 1724, 1745, 1793, 1866, 1913, 1929, 1944.
 Mezzotint, 611.
 Michigan, 539, 1035.
 Michigan, Lake, 1165.
 Middle Ages, Commerce of, 381.
 Mile, 1952.
 Milk, 477, 508, 690, 694.
 Mines, 240, 602, 709, 1089.
 Mining [Coal, 314], 483, 688, 696, 699, 949, 1098, 1167.
 Ministers, Foreign, 407, 590.
 Mink, 767.
 Minnesota, 773.
 Mint, 340, 346, 353, 1511, 1579, 1680.
 Mississippi River, 139, 682, 915, 1287, 1394, 1417, 1423, 1840.
 Mississippi State, 439, 1035.
 Missouri River, 1363.
 Missouri State, 143, 1035, 1107, 1110, 1664.
 Mobile, 1840.
 Mobilier, Credit, 480.
 Modena, 1889.
 Mohammedan States, 417.
 Molasses, 488, 1420, 1548, 1651, 1768.
 Moldavia, 776.
 Money, 15, 72, 427 (copper), 544, 626, 764, 1078, 1203, 1274, 1586, 1792, 1919, 1936.
 Money orders, 1559.
 Monopolies, 377, 524, 696, 1583, 1848.
 Mont de Piété, 1203, 1503.
 Montreal, 245, 1603.
 Mooring, 46.
 Morocco, 1368, 1866, 1944.
 Morocco leather, 1198.
 Mother of pearl, 1507.
 Mulberry-tree, 714.
 Mule jenny, 465.
 Muratic acid, 6.
 Muscat, 1866.
 Muskrat, 767.
 Muslins, 467.
 Mustard, 1747.
 Muster-roll, 1708.
 Nankeens, 463.
 Naples, 1471, 1713, 1856.
 Nations, Law of. *See* LAW OF NATIONS.
 Naturalization, 22.
 Nautical Almanac, 28.
 Naval stores, 61, 257, 280, 875, 916, 917.
 Navesink light, 1247.
 Navigation, Laws of, 1317, 1765.
 Navigation, Steam, 1752.

- Navigation, 28, 157, 247, 396, 483, 515, 569, 575, 915, 919, 971, 979, 1199, 1279, 1291, 1311, 1331, 1398, 1462, 1536, 1601, 1626, 1629, 1633, 1635, 1646, 1661, 1697.
- Navigators, 308, 610.
- Navy, 681, 684.
- Navy yard, 553.
- Needle, Magnetic, 397, 518, 542.
- Negotiable paper. *See* PROMISSORY NOTES AND BILLS OF EXCHANGE.
- Nests, Birds', 179.
- Netherlands [Bank of, 121], 343 (coins), 382, 974, 1856, 1913.
- Neutral, 419, 1056, 1323.
- Neutrality, 1050.
- Neutrality, Armed, 60, 526.
- Neva River, 1667.
- New Brunswick, British Province, 1668.
- New England, 128, 1617 (railroads).
- Newfoundland, 664, 667, 1663, 1669.
- New Granada, 280, 343 (coins), 832, 1484, 1867.
- New Hampshire, 1035.
- New Holland, 76, 804.
- New Jersey, 135, 253 (canals), 1085, 1247.
- New Orleans, 1288, 1840.
- New South Wales, 883, 1789.
- Newspapers, 12 (advertisements), 1558.
- New York City, 582, 1247, 1369, 1390, 1678, 1755, 1776, 1839.
- New York State, 180, 221, 253 (canals), 996, 1035, 1496, 1616 (railroads), 1671.
- New Zealand, 804.
- Nicaragua, 36, 1626.
- Niger, 805.
- Nile, 18, 439 (cotton).
- Ningpo, 260, 1700.
- Nitric acid, 7.
- Noah's ark, 58.
- North America, 33, 227, 363 (colonies), 371, 884, 438 (cotton), 800.
- North Carolina, 142, 267, 353, 1036, 1248, 1737.
- North Sea. *See* ARCTIC OCEAN.
- Northwest Company, 765.
- Northwest passage, 802, 1148.
- Norway, 804, 343 (coins), 842, 1183, 1272, 1760, 1780, 1856.
- Notes, Bank, 98.
- Notes, Promissory. *See* PROMISSORY NOTES.
- Nova Scotia, 669, 921.
- Nutmegs, 1747.
- Nutria, 768.
- Nuts, 205, 281, 295, 780, 1900, 1534, 1726, 1936.
- Oak, 428, 780, 1266.
- Oak bark, 153.
- Oakum, 241.
- Oats, 686.
- Observatories, 570.
- Ocean, Arctic, 57.
- Ocean, Atlantic, 73, 241, 500, 915.
- Ocean, Indian, 1024.
- Ocean, Pacific, 500, 1481.
- Ocean steam navigation. *See* STEAM NAVIGATION.
- Odessa, 1636, 1967.
- Ohio, 136, 306, 309, 974, 1036.
- Ohio River, 1863.
- Oil-cloth, 682.
- Oil of vitriol, 7.
- Oils [Camphor, 224], 282 [Clove, 311], [Cod liver, 334], [Shark, 334], 373, 616 [Fusel, 774], 780, 1227, 1242, 1405 [Olive, 1471], [Palm, 1483], [Rape, 1625], [Whale, 1958].
- Oil-stone, 988.
- Olaja, 1354.
- Oldenburg, 930, 1867.
- Olibanum, 700.
- Olive oil, 1467.
- Olives, 887.
- Ontario, Lake, 246, 1162.
- Opium, 234, 261, 1013, 1021.
- Operto, 1551, 1975.
- Ordnance, 253, 399, 505 [Survey, 571], 917, 918.
- Oregon, 369.
- Ores, 1100.
- Ornaments, 567.
- Orris root, 1098.
- Ostrich feathers, 657.
- Ottar of roses, 75.
- Otter, 768.
- Owner of ships, 1706.
- Oxalic acid, 7.
- Oysters, 287.
- Pacific Ocean, 1540.
- Pacific Railroad, 1621.
- Pack, 86.
- Painted glass, 827.
- Painting, 600, 755, 1470.
- Paints, 422, 782, 1194, 1501, 1998.
- Palermo, 1716.
- Palestine, 1790.
- Palm oil, 1469, 1717.
- Panama, 63, 513, 1410.
- Panama Isthmus, 36, 37, 1441.
- Papal Dominions, 308.
- Paper, 1605, 1626, 1635.
- Paper money, 72, 628.
- Para, 31.
- Paraguay, 72.
- Parana River, 1173.
- Parasols, 1891.
- Paris, 719.
- Parma, 1889.
- Par of exchange, 626.
- Parry, Edward, 802.
- Partnerships, 396 (companies), 420.
- Passengers, 596, 876, 1009, 1619, 1680.
- Passports, 415, 1708.
- Pawnbrokers, 52, 1203.
- Pearl ashes, 24.
- Pearls [Fisheries, 287], 616, 1382.
- Peat, 757, 1104.
- Peddlers, 956.
- Pedtry, 770.
- Pencils, Lead, 181, 477, 921.
- Pennsylvania, 133, 253 (canals), 1036, 1107, 1523.
- Penny postage, 1555.
- Pensacola, 683.
- Pensions, 49.
- Pepper, 284, 300, 1713, 1746.
- Perfumes, 308, 432, 700, 921, 1386, 1647.
- Periodicals, 1426, 1600, 1749.
- Persia, 67, 223, 276, 609.
- Peru, 241, 343 (coins), 899, 1261, 1867.
- Peruvian bark, 152, 1410.
- Pest-houses, 1601.
- Philadelphia, 685, 1511, 1839.
- Philippine Islands, 1312, 1743.
- Phœnicia, 379, 1890.
- Phosphoric acid, 7.
- Piers, 942.
- Pilotage, 232, 871.
- Pimento, 1748.
- Pinnaces, 184.
- Pipes, 990, 1348.
- Pirate, 214.
- Pisa, 381.
- Pitch, 222, 509, 1392, 1793, 1886.
- Pittsburgh, 1107.
- Plaster, Court, 476.
- Plata River, 220, 1172.
- Plumbago, 181.
- Policies, 1047, 1051.
- Polynesia, 1459.
- Ponce, 1547.
- Poppy, 1475.
- Population, 285, 622, 726, 1895.
- Porcelain, 715.
- Pork trade, 83, 735, 876, 973.
- Port, 935, 1839, 1974.
- Port au Prince, 959.
- Porter, 17, 158.
- Portland, Maine, 1805, 1839.
- Porto Rico, 496, 1684, 1742.
- Ports, Cinque, 308.
- Portsmouth [England, 553], [New Hampshire, 1414, 1839].
- Portugal, 459 (cotton), 799, 1184, 1264, 1295, 1299, 1476, 1856, 1867, 1913, 1949.
- Postage, 1753.
- Post-office, 21, 1512, 1553.
- Potass, 24, 1672.
- Pound sterling, 1759.
- Powder. *See* GUNPOWDER.
- Power, 993.
- Prairies, 242, 538.
- Precious metals, 36, 95, 240, 383, 385, 1537, 1723, 1808.
- Precious stones, 243, 274, 275, 540, 594, 783, 1016, 1119, 1136, 1170, 1472, 1506, 1646, 1650, 1685, 1688, 1857, 1887.
- Premiums, 1042.
- Preservers, Life, 1211.
- Press-gang, 1010.
- Prices, 102, 523, 685, 833, 1798, 1923.
- Principles of commerce, 376.
- Printing, 919, 1582.
- Privateering, 1323, 1399.
- Production, 523.
- Promissory note, 1029, 1450.
- Protection, 748, 1797.
- Protest, 175, 1451, 1709.
- Provincial banks, 114.
- Provisions, 1336, 1421, 1543, 1802.
- Prussia, 211, 250 (canals), 843 (coins), 812, 1103, 1153, 1843, 1609, 1759, 1868, 1949, 1998.
- Prussic acid, 7.
- Public lands, 1168.
- Punta Arenas, 433.
- Pyroligneous acid, 6.
- Pyx, Trial of, 70.
- Quadrant, 919.
- Quebec, 244, 1376.
- Quicksilver, 240, 1348, 1680.
- Rafts, 1209.
- Rags, 1488.
- Railroads, 400, 704, 986, 1013, 1098, 1109, 1430, 1485, 1647, 1688, 1689.
- Raisins, 1307.
- Rape-seed [Oil, 1242], 1264.
- Ratan, 1626.
- Reciprocity treaty, 246 (Canada), 247, 675, 732.
- Red River, 1863.
- Resins, 916, 1791, 1925.—*See* GUMS.
- Respondentia, 1046.
- Revenue [Cutters, 506], 622, 723, 1081, 1094, 1159.
- Revenue, Laws of, 1042, 1795.
- Rhine, 778.
- Rhode Island, 1036, 1593.
- Rhumb line, 1392.
- Ribbons, 1633.
- Rice, 1012, 1713.
- Right of search, 1399.
- Rio de Janeiro, 336.
- Rivers, 618.
- Roads, 1295.
- Rockets [Congreve, 399], 1213.
- Rome, 381.
- Roots, 293, 303, 370, 756.
- Roses, Ottar of, 75.
- Rosin. *See* TURPENTINE.
- Rot, Dry, 558.
- Royal Exchange, 896, 1278.
- Russia, 56, 250 (canals), 343 (coins), 425, 458 (cotton), 481, 482, 650, 662, 832, 963, 1151, 1159, 1171, 1184, 1334, 1460, 1608 (railroads), 1635, 1665, 1791, 1792, 1824, 1868, 1913, 1950.

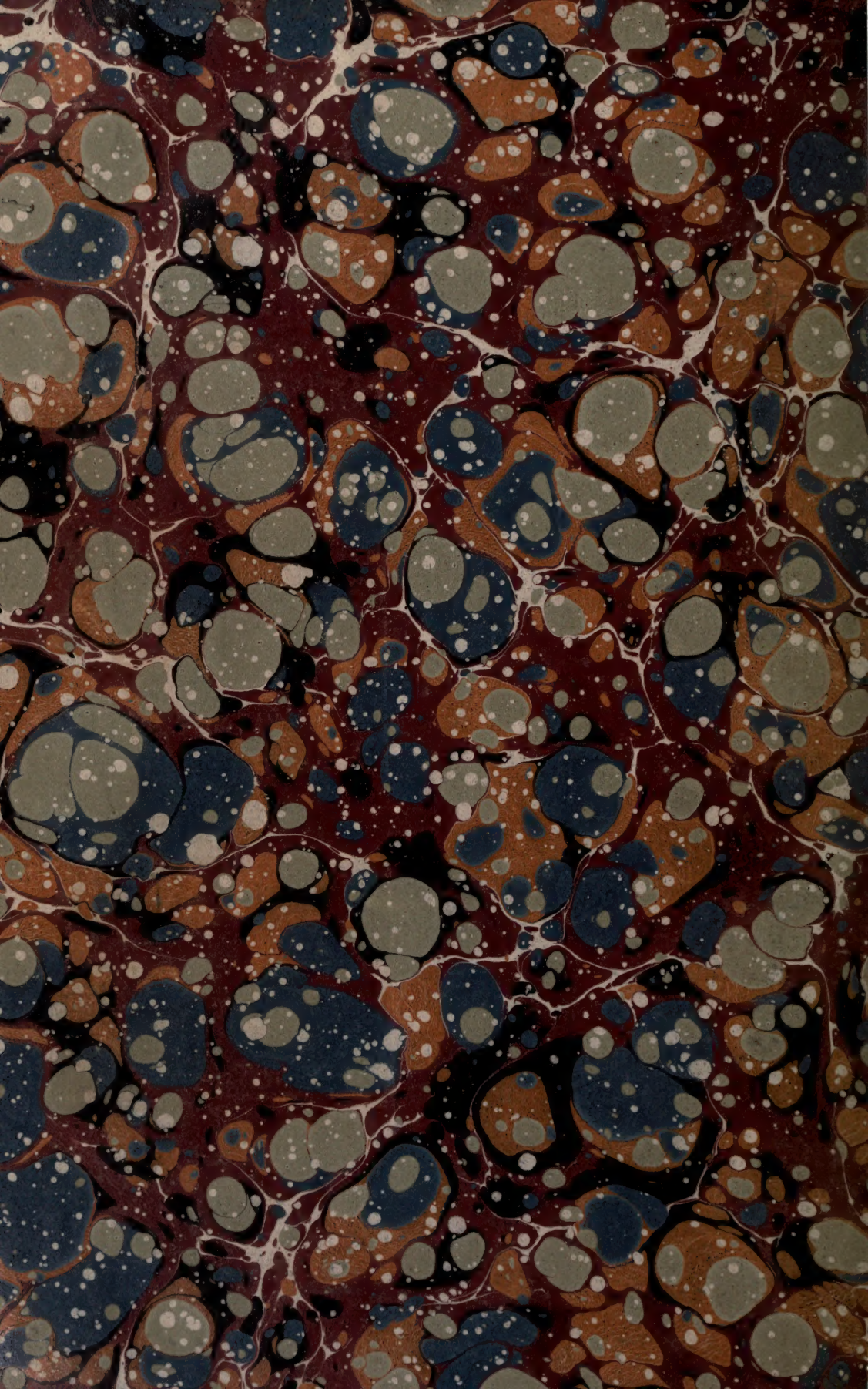
- Rum, 488, 1749.
 Rupees, Lac of, 1156.
 Russian Company, 395.
 Rye, 210.
- Sables, 767.
 Sails, 267.
 Saint Clair, Lake, 1163.
 St. Helena, 965, 1663.
 St. Jago, 497.
 St. Kitt's, 306.
 St. Lawrence, 244, 1178, 1394, 1402.
 St. Louis, 283.
 St. Petersburg, 1658.
 St. Pierre, 743.
 St. Thomas, 530.
 Sale [Bill of, 178], 421 (contract), 646, 1764.
 Salmon, 1405.
 Salonia, 1883.
 Salt, 604, 710.
 Salvage, 3.
 San Domingo, 214, 336, 364, 744, 957, 1544, 1768.
 San Francisco, 240, 1841.
 San Juan, 1441 [Porto Rico, 1546].
 San Salvador, 83, 1868.
 Sandwich Islands, 1868.
 Sandy Hook, 326.
 Santa Cruz, 530.
 Sardinia, 229, 458 (cotton), 1184, 1869, 1950.
 Savannah, 809, 1840.
 Savings banks, 148.
 Saxony, 1201, 1950.
 Schleswig, Duchy of, 530.
 Scotch banks, 117.
 Scotland, 232 (canals), 311, 565, 697, 820, 846, 1071, 1202, 1263, 1611 (railroads).
 Scurvy, 1336.
 Sea, Caspian, 281.
 Sea, Dead, 515.
 Sea-island cotton, 443, 444.
 Sea of Azof, 1460.
 Sea of Marmora, 401, 414, 513.
 Sea of Okotsk, 501.
 Seals, 668, 768, 1405.
 Seamen, 407, 415, 481, 588, 543, 592, 1010, 1709.
 Search, Right of, 1399.
 Seas, 971, 1394, 1457, 1711.
 Seas, Sovereignty of the, 1739.
 Sea-worthy, 1043.
 Seeds, 274, 311, 443, 498, 680, 956, 969, 1204, 1264.
 Segars. *See* CIGARS.
 Seignorage, 628.
 Seizure of vessels, 388.
 Senegal, 741.
 Shanghai, 259, 260, 302.
 Shawls, 243, 281, 711.
 Sheep, 1348.
 Sheffield, 505.
 Shellac, 1156, 1692.
 Shells, 289, 477, 991, 1858.
 Sheriffs, 84.
 Sherry, 1976.
 Shipping, Laws of, 2, 10, 13, 78, 183, 200, 222, 291, 356, 407, 525, 543, 590, 592, 697, 750, 866, 877, 979, 1039, 1165, 1208, 1239, 1319, 1331, 1399, 1533, 1589, 1601, 1627, 1629, 1673, 1692.
 Ships, 44, 52, 58, 86, 163, 167, 191, 201, 226, 243, 266, 271, 272, 275, 397, 414, 426, 428, 433, 477, 483, 515, 538, 551, 557, 696, 699, 755, 779, 782, 919, 920, 927, 947, 949, 956, 965, 984, 1045, 1145, 1148, 1152, 1154, 1176, 1195, 1199, 1203, 1210, 1253, 1278, 1291, 1311, 1330, 1333, 1390, 1392, 1395, 1396, 1439, 1456, 1478, 1480, 1582, 1590, 1602, 1624, 1627, 1629, 1635, 1636, 1647, 1650, 1661, 1690, 1698, 1703, 1729, 1751, 1758, 1779, 1791, 1833, 1841, 1871, 1916, 1937, 1940, 1973, 1996.
 Shipping, 237, 414, 421, 481, 518, 542, 558, 717, 722, 738, 856, 858, 1159, 1242, 1696, 1910.
 Ship's papers, 332.
 Shipwreck. *See* WRECKS.
 Shoals, 329.
 Shoes [Makers of, 428], 1196.
 Siam, 92, 150, 343 (coins), 1869.
 Siberia, 1656.
 Sicilies, Two, 1115, 1185, 1349, 1482, 1870, 1951.
 Sidon, 379.
 Sierra Leone, 914, 1207.
 Sight bill, 178.
 Signals, 1252.
 Silk, 303, 607, 684, 714, 851, 1093, 1699.
 Silk manufactures, 213, 510, 714, 1119, 1294, 1368, 1538, 1688, 1791, 1801.
 Silver, 36 [Coins, 346], 353, 383, 1157, 1574, 1579, 1654.
 Simoda, 1133.
 Singapore, 266, 919.
 Skins, 233, 502, 764, 970, 1167, 1195, 1455.
 Slaughter-houses, 3.
 Slave-trade, 1123, 1717.
 Smyrna, 514, 1883.
 Snuff-boxes, 499.
 Soda, 26.
 Somers' Isles, 165.
 Sorghum, 1778.
 Sound dues, 527, 534, 588, 931, 1854.
 Soundings, 501, 1194.
 South America, 33, 832.
 South Carolina, 142, 290, 438 (cotton), 1036, 1248, 1633.
 Southern Ocean, 1589.
 South Sea bubble, 397.
 Spain, 22, 151, 167, 251 (canals), 382, 457 (cotton), 487, 666, 831, 1033, 1185, 1306, 1609 (railroads), 1674, 1807 (tariff), 1855, 1913, 1951, 1957 (West Indies), 1975.
 Spanish Colonies, 365, 367, 1957.
 Speculation, 377, 1584.
 Sperm whale, 1958.
 Spices, 275, 281, 307, 308, 311, 370, 498, 694, 820, 843, 1296, 1386, 1454, 1831.
 Spindles, 463, 679.
 Spinning, 59, 228, 461, 463, 679.
 Spinning-jenny, 463.
 Spirits, 17, 60, 545, 608, 707, 785, 814, 1093, 1289, 1650, 1971.
 Spirits of turpentine. *See* TURPENTINE.
 Stade dues, 923, 930.
 Stages, 312, 1606.
 Stamps, 476, 1557.
 Standard of coins, 840.
 Starch, 690.
 Stationery, 1485.
 Steam-engine, 761, 1606, 1752.
 Steamers, 21, 357, 621, 859, 1341, 1656, 1752.
 Steel, 48, 505, 510.
 Sterling silver, 349.
 Stock companies, 394, 1145.
 Stock exchange, 1472.
 Storax, 88.
 Store, Bill of, 179.
 Stores, Naval. *See* NAVAL STORES.
 Storms, 1001.
 Straits of Dover, 555.
 Straits of Gibraltar, 817.
 Stranding, 1046.
 Straw hats, 948.
 Submarine telegraph. *See* TELEGRAPH.
 Succory, 298.
 Suez, Isthmus of, 21.
 Sugar, 235, 489, 490, 694, 707, 716, 781, 954, 1315, 1335, 1369, 1420, 1515, 1527, 1548, 1640, 1645, 1712, 1903.
 Sulphuric acid, 7.
 Sulphurous acid, 7.
 Sumac, 1711.
 Sumatra, 337, 1513.
 Superior, Lake, 426 (copper), 1164.
 Supply, 522, 1583.
 Surinam, 911.
 Survey, Coast, 321, 570.
 Sweden, 249 (canals), 343 (coins), 425, 459 (cotton), 504, 1103, 1185, 1448, 1759, 1869, 1913, 1951, 1957 (West Indies).
 Sweet potatoes, 1571.
 Switzerland, 458 (cotton), 1186, 1869, 1951.
 Swords, 510.
 Syria, 166.
- Tallow, 1666.
 Tampico, 1353.
 Tanning, 546, 1195, 1833, 1921.
 Tapestry, 829.
 Tar, 1392.
 Tares, 27.
 Tariff, 12, 282, 237, 387, 418, 503, 544, 556, 680, 718, 738, 742, 745, 749, 865, 955, 1082, 1142, 1169, 1356, 1396, 1407, 1551, 1570, 1592, 1653, 1729, 1786, 1874, 1990.
 Tartar, 58.
 Tartaric acid, 8.
 Tasmania, 1924.
 Taxes, 71, 724, 1435, 1584, 1844.
 Tea, 264, 265, 303, 691, 1151, 1657, 1699, 1702.
 Tehuantepec, Isthmus of, 86.
 Telegraph, 73, 602, 1253, 1283 [Atlantic, 1735].
 Temperature, 618.
 Tender, Legal, 97.
 Tenerife, 255.
 Tennessee, 139, 1036.
 Texas, 242, 437 (cotton), 780, 1036, 1745, 1772.
 Thames, 1881.
 Thermometer, 153, 1113.
 Tides, 616, 936, 1396.
 Tiles, 212.
 Timber, 559, 658, 943, 1152, 1176, 1291, 1330, 1391, 1456, 1759, 1833, 1984.
 Timbuctoo, 805.
 Timothy seeds, 957.
 Tincal, 191.
 Tobacco, 91, 487, 488, 531, 730, 874, 876, 982, 1419, 1548, 1686, 1732, 1741, 1788, 1903.
 Tobasco, 1352.
 Tokay, 1979.
 Tolls [Canal, 254], 535, 587, 928, 932, 1607, 1733.
 Tonnage, 237, 738, 871, 1159, 1165 [Steam, 1756], 1910, 1916.
 Torches, 677.
 Toronto, 1376.
 Trade, 1584.
 Trade, Balance of, 84, 631.
 Trade, Board of, 184.
 Trade, Coasting, 319.
 Trade, Free, 748.
 Trade-winds, 73, 241, 1872, 1972.
 Tramroads, 1605.
 Transit duties, 237.
 Transit routes, 986, 1485.
 Transitu, Stoppage in, 1764.
 Treasure. *See* PRECIOUS METALS.
 Treasury, 663 [Sub, 1765], 1797.
 Treasury notes, 640.
 Treaties, 410, 664 [Reciprocity, 675], 732, 883, 888, 980, 1022, 1132, 1173, 1407, 1408, 1521, 1597, 1734, 1874, 1878, 1885, 1923.
 Tree, Cotton, 434.
 Tret, 27.
 Trinidad, 497.
 Trinity House, 357, 1258.
 Tripoli, 1869, 1944.
 Tunis, 1186, 1870, 1944.
 Turpentine, 422, 509, 1892, 1793.

- Turkey, 56, 276, 343 (coins), 395 (company), 401, 404, 509, 513, 556, 650, 1187, 1545, 1669, 1720, 1730, 1870, 1871.
 Tuscany, 1187, 1200, 1952.
 Two Sicilies, 18.—*See* SICILIES.
 Tyre, 379, 380.
- Underwriter, 1037, 1054, 1270.
 United Kingdom. *See* GREAT BRITAIN.
 United States, 387, 389, 419, 669, 675, 818, 861, 879, 945, 979, 1002, 1034, 1049, 1105, 1133, 1188, 1451, 1597, 1771, 1795, 1820, 1921.
 United States and France, 727.
 United States, Banking in, 125.
 United States, Bank of, 144.
 United States canals, 254.
 United States coal, 316.
 United States coast, 320.
 United States coast survey, 321.
 United States coffee, 338.
 United States coins, 343.
 United States colonies, 362.
 United States, Commerce of, 840, 875.
 United States consular system, 406.
 United States copper, 426.
 United States cotton, 437, 442.
 United States cotton manufactures, 471.
 United States currency, 502.
 United States emigrants, 595, 1008.
 United States fisheries, 333.
 United States light-house system, 1233.
 United States pilots, 1530.
 United States Post-office, 1562.
 United States production of gold, 354.
 United States public lands, 1169.
 United States railroads, 1615.
 United States shipping, 1627.
 United States steam tonnage, 1756.
 United States tonnage, 1856.
 United States treaties, 1022.
 United States usury laws, 1920.
 United States weights and measures, 1944.
 United States whale-fishery, 1962.
- United States wheat, 1968.
 United States wine, 1980.
 United States wool, 1988.
 Upland cotton, 436, 443.
 Upper Canada, 245.
 Uric acid, 8.
 Uruguay, 1374.
 Uruguay River, 1173.
 Usances, 638.
 Usury, 1067, 1072.
- Valetta, 1309.
 Vancouver's Island, 757.
 Van Diemen's Land, 804, 1818.
 Variation of the compass, 398.
 Varnish, 422, 1186, 1159, 1482, 1674.
 Vellum, 1494.
 Venezuela, 272, 337, 1159, 1870, 1913.
 Venice, 381, 798, 826, 1873.
 Venice, Bank of, 121.
 Vera Cruz, 1352.
 Verd Islands, Cape, 271.
 Vermont, 1036.
 Vessels. *See* SHIPS.
 Victoria, 833, 1841, 1782.
 Vienna, 29.
 Vinegar, 5, 659, 1600, 1931.
 Violins, 660.
 Virginia, 141, 267, 927, 1036, 1168, 1248, 1635.
 Vitriol, 427.
 Volga, 619, 1657.
 Voyages, 1043.
- Wages, 1695.
 Wales, 847, 1613 (railroads).
 Walnuts, 1300.
 War, Contraband of, 418.
 Wares, Wedgwood, 574.
 Watches, 306, 310, 1280, 1787.
 Water, 53.
 Waves, 936.
 Wax, 988, 1691.
 Wealth, 374.
 Weaving, 1283, 1937.
 Wedgwood ware, 574.
 Weights, 8, 63, 76, 83, 230 [Decimal, 517], 726, 1152, 1176, 1573, 1602, 1791, 1854, 1878.
 Wells, Artesian, 61.
- West Indies, 151, 275, 337 [Colonies, 363], 483 [Danish, 533], 555 [French, 743], [British, 880], [Spanish, 957], 1120, 1544, 1546, 1662, 1667, 1674, 1727 [Spanish, 1746], [Swedish, 1786].
 Western Islands, 654.
 Whale-fisheries, 388, 671, 947, 1400, 1468, 1676, 1746.
 Wheat, 208, 210, 236, 511, 685, 843, 1269, 1461.
 Whisky, 1749.
 White fish, 1357.
 Wicks, 257.
 Wilton carpet, 278.
 Winds, 47, 73, 1372, 1858.
 Windward Islands, 1954.
 Wines, 12, 192, 228, 256, 289, 309, 706, 733, 812, 845, 887, 999, 1299, 1307, 1476, 1551, 1704, 1854, 1903.
 Wisconsin, 138, 1036.
 Wismar, 1648.
 Wood, 157, 179, 202, 205, 225, 229, 244, 284, 295, 428, 476, 498, 507, 554, 558, 583, 587, 593, 658, 757, 841, 898, 917, 944, 966, 983, 991, 1112, 1176, 1261, 1271, 1291, 1302, 1315, 1382, 1390, 1443, 1455, 1472, 1483, 1504, 1532, 1536, 1538, 1541, 1587, 1604, 1647, 1673, 1685, 1688, 1713, 1826, 1833, 1841, 1879.
 Wool, 29, 398, 339, 1175, 1342, 1655, 1704, 1731, 1789, 1800.
 Woolen manufactures, 243, 275, 281, 311, 658, 677, 711, 761, 851, 1538, 1702, 1799, 1826.
 Wrecks, 526, 547, 1058, 1166, 1209, 1215, 1693.
- Yarns, 356, 461.
 Yawls, 184.
 Year, Fiscal, 663.
 Yeddo, 1144.
 Yucatan, 1161, 1352.
- Zante, 1085.
 Zinc, 203, 427, 1889.
 Zoll-Verein, 211, 1593, 1688, 1759.
 Zones, 573.
 Zuyder Zee, 249.









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